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DEPARTMENT OF THE NAVY

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18 JUN 1996

From: Commanding Officer, Navy Environmental Health Center
To: Commander, Atlantic Division, Naval Facilities Engineering
Command, Attn: Katherine Landman, 1510 Gilbert Street,
Norfolk, VA 23511-2699

Subj: REVIEW OF INSTALLATION RESTORATION PROGRAM DOCUMENTS FOR
MARINE CORPS BASE, CAMP LEJEUNE, NC

Ref: (a) Baker Environmental, Inc. transmittal ltr of 16 Apr 96

Encl: (1) Medical Review of "Remedial Investigation Report,
Operable Unit No. 13 (Site 63), Marine Corps Base,
Camp Lejeune, North Carolina"
(2) Medical/Health Comments Survey

1. Per reference (a), we have completed a medical review of the
"Remedial Investigation Report, Operable Unit No. 13 (Site 63),
Marine Corps Base, Camp Lejeune, North Carolina."

2. Please complete and return enclosure (2). Your comments are
needed to continually improve our services to you.

3. We are available to discuss the enclosed information by
telephone with you and, if necessary, with you and your
contractor. If you require additional assistance, please call
Ms. Katharine Kurtz or Mr. David McConaughy at (804) 363-5553 or
(804) 363-5557, DSN prefix 864.

W. E. Luttrell
W. E. LUTTRELL
By direction

**MEDICAL REVIEW OF
DRAFT REMEDIAL INVESTIGATION REPORT FOR
OPERABLE UNIT NO. 13 (SITE 63)
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA**

Ref: (a) Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program, June 1988 (NEESA 20.2-047B)

General Comments:

1. The draft document entitled "Remedial Investigation Report, Operable Unit No. 13 (Site 63), Marine Corps Base, Camp Lejeune, North Carolina" dated 16 April 1996 was provided to the Navy Environmental Health Center (NAVENVIRHLTHCEN) for review on 19 April 1996. The draft Remedial Investigation (RI) Report was prepared for the Atlantic Division, Naval Facilities Engineering Command by Baker Environmental, Inc.
2. The report recommends that a Proposed Remedial Action Plan (PRAP) that details a "No Further Action Alternative" should be prepared for Site 63. In addition, the text recommends that preparation of a Feasibility Study not be required for this site. The report further recommends that the three permanent wells that were installed at Site 63 should be removed. Evaluation of the risk estimates for current and future potential human exposures indicate that there are no unacceptable site-related carcinogenic risks associated with exposure to environmental media at Site 63.
3. The report concludes, from an assessment of the potential noncarcinogenic risks, that future residents could experience some adverse health effects, primarily from presumed shallow groundwater ingestion. Thus, we support the decision of a "No Further Action Alternative" based on the site remaining strictly for industrial use. The results of the Human Health Risk Assessment (HHRA) indicate that contaminants such as iron, zinc and lead at Site 63 currently exceed several residential cleanup standards and therefore, Site 63 may be considered unacceptable for residential use at present. The Camp Lejeune Base Master Plan and the Record of Decision (ROD) should stipulate that site remediation issues need to be readdressed should Site 63 be considered for future residential use. Review comments and recommendations are provided below.

Review Comments and Recommendations:

1. Page ES-6, "Remedial Investigation Activities"
Page 3-3, Section 3.2.4, "Quality Assurance and Quality Control"
Page 3-7, Section 3.3.7, "Analytical Program"

Comments:

a. Although the text on page ES-6 indicates that the majority of environmental samples were analyzed by Contract Laboratory Program (CLP) methods using Level IV Data Quality Objectives (DQO), elsewhere in the report the text indicates that Level III DQO's were implemented for the Quality Assurance/Quality Control (QA/QC) and groundwater samples. There are five general levels of analytical options used to support data collections under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Reference (a) indicates that three of these analytical levels (i.e., C, D, and E) are used by the U. S. Navy as QA requirements, of which Level D QC is used for sites on the National Priorities List (NPL). The level of QC required at the site is decided by the Navy Engineer In Charge (EIC) or Remedial Project Manager (RPM).

b. Marine Corps Base (MCB) Camp Lejeune was placed on the CERCLA NPL on October 4, 1989.

Recommendation: Define the rationale for performing Level III QC on analytical data when reference (a) requires Level IV QC for sites listed on the NPL. Revise the text to indicate the actual DQO Level(s) used for the investigation.

2. Page ES-11, "Groundwater"

Pages 4-10, 4-11, Section 4.4.2.1, "Metals"

Table 4-1, "Summary of Site Contaminants"

Page 5-5, Section 5.3.4, "Metals"

Pages 6-29, 6-30, Section 6.4.3, "Lead"

Comments:

a. Although zinc was detected at a concentration of 17,000 micrograms per liter (ug/L) in the sample obtained from 63-TW07, the text indicates its presence is not indicative of former or ongoing disposal activities. Temporary well 63-TW07 is located within one of the areas reported to have elevated concentrations of zinc in soil and is hydraulically downgradient from the suspected disposal area. Thus, it appears premature to conclude that the detection of zinc is not related to former or ongoing disposal activities at Site 63.

b. A total of thirteen inorganics reportedly were detected above twice their average base-specific background levels. Although arsenic, barium, and nickel reportedly were detected in soil samples above the United States Environmental Protection Agency (USEPA) Region III soil screening values protective of groundwater, actual groundwater sample results did not exceed the North Carolina Water Quality Standards (NCWQS) requirements.

c. Page 4-11 of the text states that "The presence and concentrations of both iron and manganese in groundwater samples obtained at Site 63 appear to be indicative of natural site

conditions rather than disposal operations.” Yet, the maximum detection of iron in surface soil samples reportedly is 149,000 milligrams per kilogram (mg/kg), versus 7,135 mg/kg for average base-specific background iron soil concentrations.

d. In general, the report appears to minimize the potential relationship between contaminants detected in various sampling media and past (and current) disposal practices that may have occurred on-site. On page 5-5 of the text, the report states that “There appears to be no correlation between the presence of subsurface metal debris with elevated concentrations of metal analytes in soils...the sample contained rusty metal debris...the presence of these analytes is associated with the metal debris, not necessarily the soil matrix.”

Recommendations:

a. Present stronger justification to support the preliminary conclusions that certain total metal concentrations in groundwater are due more to naturally occurring concentrations, unconsolidated solids, and sample acquisition methods than to fate and transport of metal contaminants in various site-related media.

b. Provide further explanation for the substantial increase in site-related contaminants detected in various media, including groundwater, relative to background sample results.

c. Ensure that the conclusions drawn from the potential human health risk from exposure to contaminants, such as iron in groundwater and subsurface soil, agree with information concerning past and current disposal practices, the locations where visual metal debris were sighted, and the human health impact of the levels of contaminants found in samples from both on-site and neighboring site locations. Indicate if curtailment of any current and/or future activities is advised due to the level of metal contamination detected.

3. Pages 1-4, 1-5, Section 1.2.7, “Hydrogeology”

Comment: According to the report, although the surficial aquifer itself is not used for water supply at MCB Camp Lejeune, it does supply the primary recharge to the Castle Hayne aquifer (potable water supply). The distance to the nearest supply well is not provided in the text, although the report does state that there are no supply wells within a one-mile radius of Site 63. From a review of the hydrogeological data presented, it appears that possible contamination from Site 63 could impact the Castle Hayne aquifer. The report indicates that there are existing shallow ground water sampling data that exceed the tap water risk-based concentrations (RBC) that are issued by the USEPA Region III for potential carcinogens and noncarcinogens. Therefore, we believe that additional information should be presented to indicate that the shallow groundwater at Site 63 will have no future impact on the Castle Hayne aquifer.

Recommendation: Either provide stronger justification to substantiate no future impact on the Caste Hayne aquifer from the potential migration of contaminants from the shallow water at Site 63, or discuss the possibility of future impact on the potable water supply.

4. Page 3-2, Section 3.2.1, "Soil Sampling Procedures"

Comments:

a. According to the text, soil samples collected for volatile organic analysis (VOA) were extracted with a stainless-steel spoon from different sections of the extruded soil core so that the resulting composite was representative of the entire sampling interval.

b. The potential problems associated with composite sampling versus discrete sampling is that low concentrations of contaminants present in individual composite aliquots may be diluted to the extent that the total composite concentration is below the applicable regulatory limit. Also, the composite sample may not have contaminants distributed homogeneously throughout, which would hinder analysis of a representative sample.

Recommendation: Either provide stronger justification for using a composite sampling technique or consider collecting discrete soil samples to fulfill future analytical data collection requirements.

5. Page 3-6, Section 3.3.5, "Sampling Procedures"
Page 4-2, Section 4.2.2, "Naturally-Occurring Inorganic Analytes"

Comment: The method used to sample the potential site-related contaminants in groundwater should be the same as the method used to determine the facility-wide background levels, if comparison to background is a method employed to select Contaminants of Potential Concern (COPCs). Because background levels of several inorganics are high in groundwater, it is advisable to ensure that different sampling methods do not introduce a bias when results are compared.

Recommendation: Ensure that background monitoring sampling data (including data from base-wide background groundwater monitoring investigations) are used for comparison purposes to select COPCs only if the sampling method employed to determine background levels is the same as used in the site investigation (e.g., low flow sampling technique). If different techniques are employed, provide stronger justification for any conclusions drawn from their comparison. Include more detailed information concerning the sampling procedures employed.

6. Table 4-1, "Summary of Site Contamination"
Page 4-5, Section 4.3.1.1, "Surface Soil"

Comment: The notes at the end of Table 4-1 state that "Concentrations are presented in ug/L [microgram per liter] for liquid and ug/kg [microgram per kilogram] for solids (ppb) [parts per billion], metal concentrations for soils and sediments are presented in mg/kg (ppm) [parts per million]." However, the text on page 4-5 states that "Pesticide concentrations ranged from 1.9 J mg/kg of endosulfan sulfate to 55 J mg/kg of 4,4'-DDE." Although the numbers agree between Table 4-1 and the text, the units differ.

Recommendation: Correct the discrepancies between the text and the table.

7. Page 6-12, Section 6.3.1.2, "Current and Future Scenarios"
Page 6-36, Section 6.8, "Conclusions of the BRA [Baseline Risk Assessment] for Site 63"

Comment: The text states on page 6-12 that "For future construction workers, potential exposure pathways are subsurface soil incidental ingestion, dermal contact, and inhalation of fugitive dust." However, the text on page 6-36 states that "Subsurface soil, groundwater, surface water, and sediment exposure were evaluated for the future receptors." The statement on page 6-36 does not indicate that the inhalation of dust was evaluated for construction workers.

Recommendation: Revise the statement on page 6-36.

8. Page 6-35, Section 6.7.3, "Sampling Strategy"

Comment: The text indicates that the subsurface soil analytical results were not segregated by likely receptor exposure depth, but were evaluated as a single data set. Samples reportedly were collected at soil boring depths ranging from one to 20 feet bgs. The realistic nature of this approach depends on the distribution of contaminants in the subsurface soil. If the likely receptor contact area contains higher levels of toxic contaminants than the single data set, then the approach used to evaluate the exposure potential may underestimate the risk for Site 63, rather than overestimating the risk, as indicated in the report.

Recommendation: For future investigative work, consider segregating the sampling depth data to correspond with the likely receptor exposure scenario.

FROM: _____
 (YOUR NAME/COMMAND)
TO: NAVENVIRHLTHCEN, ENVIRONMENTAL PROGRAMS
FAX: COM: (804) 444-7261/DSN: 564-7261

MEDICAL/HEALTH COMMENTS - YOUR VIEW

Please help us improve our review process by indicating the extent to which you agree or disagree with the comments we provided your activity.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. "Value added" to IR/BRAC process?	1	2	3	4	5
2. Received in a timely manner?	1	2	3	4	5
3. High level of technical expertise?	1	2	3	4	5
4. Very useful to the RPM?	1	2	3	4	5
5. Contractor incorporated comments?	1	2	3	4	5
6. Easily readable/useful format?	1	2	3	4	5
7. Overall review was of high quality?	1	2	3	4	5
8. NAVENVIRHLTHCEN was easily accessible?	1	2	3	4	5
9. NAVENVIRHLTHCEN input during scoping or workplan development would be "value added"?	1	2	3	4	5
10. Added involvement in IR/BRAC document needed?	1	2	3	4	5

Please return by fax using the box provided at the top of this page. If you have any other comments, please list them below or call Mr. David McConaughy, Head, Health/Risk Assessment Department, at (804) 363-5557, DSN 864 at any time to discuss your viewpoint. As our customer, your comments and suggestions of how we can improve our services to you are important!