Baker

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April 15, 1994

Commander
Atlantic Division
Naval Facilities Engineering Command
1510 Gilbert Street (Building N-26)
Norfolk, Virginia 23511-2699

Attn: Ms. Linda Berry, P.E.
Code 1823

Re: Navy CLEAN, District III
Contract Task Order (CTO) 0177
Draft Final Remedial Investigation Report for
Operable Unit No. 1 (Sites 21, 24, and 78)
MCB, Camp Lejeune, North Carolina

Dear Ms. Berry:

Baker Environmental, Inc. (Baker) is pleased to submit for your review two copies of the Draft Final Remedial Investigation (RI) Report for Operable Unit (OU) No. 1 - Sites 21, 24, and 78. Two copies of this report have been forwarded to Mr. Neal Paul at MCB, Camp Lejeune. Please note that the reduced number of copies is per your verbal request. Copies of this report have also been submitted to the United States Environmental Protection Agency (USEPA), the North Carolina Department of Environmental Health and Natural Resources (NC DEHNR), and the Technical Review Committee (TRC) members as indicated on the attached transmittal letters. Note that Ms. Gena Townsend has requested that the USEPA receive five copies of the reports for review.

Please note that only complete copies of the text (Volumes I and II) are being issued. For the appendices, only those changes which were made are being submitted. Adjustments that will need to be made to the existing copies of the appendices include: the addition of new boring logs to Appendix E and the entire replacement of Appendix M. In addition, new spines and covers are being supplied for the Draft Final version of the appendices.

The Draft Final RI Report reflects the comments received from the USEPA via letters on February 22 and February 28, 1994, and also comments received from the NC DEHNR on March 23, 1994. Comments from the Navy Environmental Health Center (NEHEC) were not incorporated due to their late receipt (April 13, 1994). However, NEHEC comments will be considered for the Final RI Report. No comments were received from the Activity or from LANTDIV. Responses to USEPA's and NC DEHNR's comments are included as attachments to this letter.

Submittal of the Draft Final RI Report meets a revised deliverable date. The original deliverable date was April 11, 1994. However, written approval was received by Baker from you and the Contract Specialist (Ms. Beth Hacic) on April 12, 1994, modifying the submittal date of the report to April 18, 1994.

In accordance with the project schedule included in the Final IP/FP dated June 24, 1993, comments on this report are needed no later than May 11, 1994 so that the Final RI Report can be submitted by June 10, 1994.

If you have any questions regarding this submittal, please contact me at (412) 269-2023, or Mr. Raymond Wattras (Activity Coordinator) at (412) 269-2016.

Sincerely,

BAKER ENVIRONMENTAL, INC.

Tammi A. Halapin
Project Manager

TAH/jc

cc: Ms. Beth Hacic, Code 02231 (letter only)
Ms. Lee Anne Rapp, Code 183 (letter only)
Mr. Neal Paul, MCB Camp Lejeune (2 copies)

ATTACHMENT A

Response to Comments Submitted by USEPA Region IV on the Draft Remedial Investigation Report for Sites 21, 24, and 78 (Operable Unit No. 1), MCB, Camp Lejeune, North Carolina

Comment Letter by Ms. Gena D. Townsend dated February 22, 1994

1.0 RESPONSE TO GENERAL COMMENTS 1 THROUGH 7 -

1. Contaminants identified in soils collected near the buildings investigated (Buildings 903, 1103, 1300, 1502, 1601, and 1608) will be further evaluated to identify potential sources associated with the buildings. Section 4.3 of the RI will include a discussion of the subsurface contamination identified around Building 1601.

2. Data presented on the figures and text will be rechecked against the summary tables included in Section 4.0. Due to the large volume of data collected during this investigation, it would be difficult to provide the original laboratory data in the report.

3. The evaluation of the ecological risk assessment data utilized a Phase I approach where environmental media concentrations were compared to media-specific and/or contaminant-specific endpoints. This approach may be considered a screening approach to see if additional evaluation is warranted. If the results of the Phase I indicated unacceptable risks to potential ecological receptors, then a Phase II approach would have been recommended. With respect to OU No. 1, a Phase II approach is not necessary.

4. The text will be revised in the risk assessment (Section 6.0), the conclusions (Section 8.0), and the Executive Summary to indicate the issues regarding lead. Specifically, the text will indicate that lead was mainly detected in the shallow groundwater and not the deeper portions of the aquifer. Potential exposure is unlikely since the shallow groundwater is not conducive to usage.

5. Surface water, sediment, and soil data were collected to meet the objective of whether past reported disposal practices at OU No. 1 potentially are adversely impacting the ecological integrity of the terrestrial and aquatic habitats on, or adjacent to the site. This objective was met by the conduct of a Phase I evaluation. Based on the results of the Phase I evaluation, there is no significant adverse impact to the aquatic and terrestrial ecosystems at OU No. 1 by the site contaminants of potential concern and there is no support for the assertion of a potential adverse impact to the aquatic and terrestrial ecosystems that was indicated by the historical information. To support the conclusion of no adverse impact, additional bio-habitat information will be included in the Draft Final Ecological Risk Assessment Report.

6. Additional information to support the conclusion that there is no adverse impact to sensitive environments (wetlands, protected species, and fish nursery areas) will be included in the Draft Final Ecological Risk Assessment Report. A site bio-habitat map that depicts the various ecosystems associated with the site and adjacent areas to the site will be developed. The site bio-habitat map will include data for those ecosystem components (wetlands, fisheries, waterways, woodlands, and protected, threatened, and endangered species) that are available from the information

compiled to date for the site. No additional site investigations or studies will be conducted to provide this information.

Based on the results of the Phase I evaluation, a site-specific wetlands delineation is not warranted at this time. The current information on the wetlands at the site will be included on the bio-habitat maps (see Response No 5). If future remedial activities at OU No. 1 are warranted and if these activities are located in areas of suspect wetlands, a site-specific wetlands delineation will be conducted.

7. The evaluation of the appropriate remedial action for this site for the overall protection of public health and the environment will be conducted in the Feasibility Study and is not part of the Remedial Investigation.

   The sampling locations were established to provide data for the Phase I evaluation. The locations were based on historical information available for the site and a site visit to evaluate potential ecosystems and ecological receptors. If the results of the Phase I evaluation indicated unacceptable risks to potential ecological receptors, then a Phase II approach would be recommended and additional sampling locations would be sampled. Based on the results of the Phase I evaluation, future sample locations will not be sampled.

   The site bio-habitat map will include site sampling locations and thus will allow the determination of the extent of contamination concentrations detected at the site relative to site ecosystems.

   The work plans developed for OU No. 1 (which were approved by USEPA) did not include any site-specific ecological surveys or toxicity tests. The sampling locations were established to provide data for the Phase I evaluation. The locations were based on historical information available for the site and a site visit to evaluate potential ecosystems and ecological receptors. The inclusion of the bio-habitat map will provide a correlation of ecologically relevant media and sampling locations. The work plans also did not include sampling of a reference site. Reference site sampling currently is being conducted in the White Oak River estuary.

   The Phase I evaluation (screening method) did fulfill the requirements of the objective of the Ecological Risk Assessment. Based on the industrial nature of the site and the results of the Phase I evaluation, conclusions concerning the ecological significance of any potential adverse effects are valid and can be used to guide risk management decisions.

Response to recommendations:

1. The results of the Phase I evaluation and the industrial nature of the site do not warrant the conduct of on-site ecological surveys of the aquatic and terrestrial ecosystems.

2. The results of the Phase I evaluation and the industrial nature of the site do not warrant the conduct of on-site site-specific wetlands delineations unless future remedial activities at OU No. 1 are warranted and these activities are located in areas of suspect wetlands.

3. The results of the Phase I evaluation and the industrial nature of the site do not warrant the conduct of on-site aquatic toxicity tests for water and sediments.

4. A bio-habitat map will be provided that depicts the various ecosystems associated with the site and adjacent areas to the site and will include data for those ecosystem components (wetlands, fisheries, waterways, woodlands, and protected, threatened, and endangered species) that are available from the information compiled to date for the site. No additional site investigations or studies will be conducted to provide this information.

5. The site bio-habitat map will include site sampling locations and will allow the necessary determination of the extent of contamination concentrations detected at the site relative to site ecosystems.

6. The Phase I evaluation utilizes endpoints for environmental media comparisons that incorporate the potential for adverse effects to ecological receptors and provides a generic reference comparison. If a Phase II evaluation was warranted, additional sampling data, including a reference site data, would be used to provide a region-specific comparison.

7. The site bio-habitat map will provide information on the association of chemical concentrations in the various media and the locations of components of the aquatic and terrestrial ecosystems.

8. The analysis of the temporal trend of contaminants of potential concern in the various environmental media would necessitate multiple sampling of each sample location over a designated period of time. The work plans did not include this type of temporal media sampling.

9. The site bio-habitat map will include site sampling locations and will allow the necessary determination of the extent of contamination concentrations detected at the site relative to site ecosystems.

2.0 RESPONSE TO SPECIFIC COMMENTS 1 THROUGH 31 -

1. The text in the Executive Summary will be revised per the comment.

2. The last sentence in Paragraphs 2 and 4 on page ES-19 have been revised. The sentence in Paragraph 2 now reads, "The clean-up goals will be developed so that the potential risks remaining at the site will result in an ICR within USEPA's target risk range and an HI below unity."

   The sentence in Paragraph 4 now reads, "The clean-up goals will be developed to meet groundwater criteria (i.e., State or Federal ARARs); to result in an ICR within USEPA's target risk range; and to result in an HI below unity."

3. The groundwater elevations depicted on Figure 3-8 for May 18, 1993 were measured prior to the installation of the Baker wells and, therefore, groundwater elevations on the southern portion of Site 78 were unavailable. Although the contour maps for May and August depict slightly different groundwater flow directions (due to the lack of data in the southern portion of the site), their general flow directions are the same in the direction of the New River (west to southwest). A sentence will be added to the text (page 3-20) to explain this occurrence.

4. Figure 3-10 shows the locations of the supply wells. This figure will be revised to include the locations of all three sites. In addition, the locations of the water supply wells will be added to Figures 3-8, 3-9, and 4-19 through 4-27.

5. The text will be revised to state (page 3-45) that water supply well HP-603 is in the down gradient flow direction. Further, the affect long term pumping by HP-603 will be considered regarding contaminant movement.

6. Based on conversations with Mr. Stanley Miller of Camp Lejeune Base Water Department, water supply well HP-630 is no longer in service. This information will be updated throughout the report and on the figures.

7. The information presented on the tables is correct. There were no detections of SVOCs in borings 21PCBSB17, 21PCBSB18, and 21PCBSB19. Accordingly, Figure 4-1 will be revised.

8. The information presented on Figure 4-1 and Table 4-1 is correct. The highest PCB concentrations were detected at sample locations 21PCBSB17, 21PCBSB18, and 21PCBSB19. Accordingly, the text will be revised to correspond to the figure and table.

   The analytical data presented on the tables in the RI report was taken from the original raw data. The PCB contaminant levels detected in samples collected near the disposal area, therefore, are accurate based the laboratory analysis.

9. The sample designation for test sample 24TP01 is correct. The test pit numbers on Figure 4-8 will be revised to correspond to the tables and Figure 2-4.

10. Samples collected from Building 1300 were not analyzed for VOCs or SVOCs. Accordingly, Figure 4-15 will be revised as "NA". Other "ND" data will be reconfirmed.

11. The reference to Table 4-18 in the comment is incorrect. Figure 4-18 is presumed to be the correct reference. This figure will be revised.

12. The reference to Building 1103 will be changed to Building 1502.

13. As stated in the response to General Comment, the UST is mentioned as a potential source of contamination at Building 1601. This discussion is presented on Page 4-33 of the RI report. The text will be revised to add a discussion of the subsurface results.

    The reference to Building 1103 will be changed to Building 1601.

14. The reference to Figure 4-17 on Page 4-87 is incorrect. Page 4-79 is presumed to be the correct page number. This figure will be revised.

15. The groundwater flow direction arrows depicted on Figures 4-19 through 4-27 will be revised to correspond to Figure 3-9 in Section 3.0.

    Groundwater elevations measured on August 2, 1993 depicted on Figure 3-9 were used to determine groundwater flow direction. The August 2, 1993 data were to determine groundwater flow because the groundwater elevation data from the new wells Baker installed was available (these wells were not available for the May 1993 measurement). The newly installed Baker wells are located within the southern portion of the Site 78. These additional groundwater elevations from the new wells provide a more detailed depiction of groundwater flow at the site.

16. The TCE concentration for well 78-GW31-2 shown on Table 4-6 of 3.0 ug/l is correct. Accordingly, Figure 4-23 will be modified.

17. As stated in Specific Response No. 6, Figure 4-1 will be revised to indicate non-detectable quantities of SVOCs in soils collected near the Former PCB Oil Disposal Pit. Accordingly, the statement presented on Page 4-107 is correct.

18. For risk assessment, representativeness is the extent to which data define the true risk to human health and the environment. Samples must be collected to reflect the site's characteristics. For risk assessment, sampling must adequately represent each exposure area or the definition of an exposure boundary. The sampling locations at Site 78 were selected to characterize potential hot spots. This judgmental sample design was based on existing site knowledge. Therefore, using statistical designs for the purposes of risk assessment would result in unacceptable large sampling variability. When a limited number of samples are taken, judgmental sampling may identify the chemicals of concern, but cannot estimate the uncertainty of the chemical quantities. The reasonable maximum exposure or upper confidence limit cannot be calculated from results of a judgmental design. Therefore, potential risks associated with exposure to the surface soil at Site 78 was not assessed.

19. See Response 18 above.

20. Sample data sets with fewer than 20 samples may not provide a true estimate of the 95 percent UCL. In general, the UCL approaches the true mean as more samples are included in the estimation. This may account for the discrepancy between the mean and the 95 percent UCL. In addition, if a small sample set has one elevated result, the 95 percent UCL may not represent the data set.

21. The text has been corrected. "Shallow groundwater is not currently being used as a potable supply at OU No. 1."

22. The text will be revised to remove the reference "to be safe and protective of public health."

23. Page 7-15, Paragraph 1

    The statement regarding "the water solubility for metals" will be deleted.

    The surface water samples were not filtered for the ecological risk assessment because State water quality standards are based on total concentrations.

    Location of the samples was based on the historical information available for the site and a site visit to evaluate potential ecosystems and ecological receptors. The text on page 7-30 concerning potential exposure scenarios will be revised to include this information.

    The analysis of the temporal trend of contaminants of potential concern in the various environmental media would necessitate multiple sampling of each sample location over a designated period of time. The work plans did not include this type of temporal media sampling.

    The surface water samples were located with the sediment samples. The locations and sample methods are described in Section 2.3.5 of this RI report.

24. Page 7-20, Paragraph 2

An ecological field survey was not conducted. The statement that "no aquatic organisms were observed in Cogdels Creek or Beaver Dam Creek" was misleading. The text will be clarified and made internally consistent. The results of the Phase I evaluation and the industrial nature of the site do not warrant the conduct of on-site ecological surveys and toxicity assessments of the aquatic and terrestrial ecosystems. The text will be clarified regarding the reference of "creek" to one or both creeks.

25. Page 7-25, Paragraphs 3 and 5

Information regarding protected, threatened, and endangered species was obtained from investigations conducted either for or by the Natural Resources staff. No further investigations were conducted for the ERA. The text did not state that there were no protected, threatened, and endangered species at OU No. 1. The bio-habitat map will include any areas where these species have been observed. However, based on the existing information, there are no areas where these species have been observed at OU No. 1.

26. Page 7-27, Other Sensitive Environments

A bio-habitat map will be provided that depicts the various ecosystems associated with the site and adjacent areas to the site and will include data for those ecosystem components (wetlands, fisheries, waterways, woodlands, and protected, threatened, and endangered species) that are available from the information compiled to date for the site. No additional site investigations or studies will be conducted to provide this information. The site bio-habitat map will include site sampling locations and will allow the necessary determination of the extent of contamination concentrations detected at the site.

27. Page 7-28, Paragraph 6

The creeks probably are areas for spawning of selected fishery species. However, these creeks have not been identified as critical spawning areas for maintenance of fish and shellfish in the New River estuary. The results of the Phase I evaluation and the industrial nature of the site do not warrant the conduct of a Phase II evaluation including a bio-survey for sampling fish and shellfish.

28. Page 7-28, Paragraph 7

Data to establish the downstream impacts from surface water runoff and erosion were collected as specified in the work plans for OU No. 1 that were approved by EPA. The text regarding the presence of anadromous populations of fishes in Cogdels Creek and Beaver Dam Creek is based on the results of previous field investigations that included population estimates and that were conducted in similar creeks on the Base. The results of the Phase I evaluation and the industrial nature of the site do not warrant the conduct of a Phase II evaluation that would include a bio-survey of the anadromous fish populations in these creeks.

29. Page 7-28, Paragraph 8

Although areas of the Base do support large and dense aggregations of terrestrial species, the OU No. 1 site is an industrial area. The potential for aggregation of large animals, especially for purposes of breeding, within the site is unlikely. This fact will be substantiated by the bio-habitat map.

30. Section 8.0 will be revised as per the comment.

31. The text will be revised to include a discussion of the non-TCLP test pit sample results.

3.0 RESPONSE TO ECOLOGICAL REVIEW COMMENTS 1 THROUGH 4 -

1. Table 7-9

The acute and chronic columns are not reversed. They represent and quotient index and not the Water Quality Screening Value. The title of these columns will be revised to include "Quotient Index".

2. Table 7-10

The calculations will be checked and revised as necessary.

3. There were no site-specific hardness measurements for the sampled surface waters. The use of 100 mg/l of calcium carbonate for OU No. 5 was changed to 50 ug/l, which is a more conservative value.

4. INSERT A (SEE ATTACHED SHEET)

ATTACHMENT B

Response to Comments Submitted by USEPA Region IV on the Draft Remedial Investigation Report for Sites 21, 24, and 78 (Operable Unit No. 1), MCB, Camp Lejeune, North Carolina

Comment Letter by Ms. Gena D. Townsend dated February 28, 1994

1. Section 6.2.1.8 page 6-8

   For the selection of COPCs, two times the average site-specific background concentration will be compared to sample concentration ranges or the 95% UCL. The average background soil concentration will be determined from the 5 surface and 5 subsurface soil samples collected as part of field investigations conducted at MCB Camp Lejeune.

2. Section 6.2.2.1 page 6-9

   Agreed. Although prevalence criteria was used in the selection of COPCs for the semivolatile compounds, it was not the sole basis for selection. In addition to the prevalence criteria, toxic potential for the PAH compounds was considered for their retention. The retention of these compounds does not produce an excess incremental risk, therefore, they will be retained.

3. Section 6.2.2.1 page 6-10

   The maximum concentration of acetone (780 ppb) in the surface soil samples collected at Site 24 does exceed ten times the maximum concentration detected in the blank. This exceedance occurs in only 1 of 25 samples, therefore, prevalence of acetone in the surface soil is less than 5 percent. Consequently, acetone will not be retained as a COPC, and the text will be revised to explain this rationale.

4. Section 6.2.2.1 page 6-10

   To respond to the comment, the concentrations of mercury and nickel were compared to two times the average background surface soil concentration. The reported sample concentrations for these inorganics did not exceed two times the average background, therefore these inorganics will not be retained as COPCs.

5. Section 6.2.2.1 page 6-10

   For risk assessment, representativeness is the extent to which data define the true risk to human health and the environment. Samples must be collected to reflect the site's characteristics. For risk assessment, sampling must adequately represent each exposure area or the definition of an exposure boundary. The sampling locations at Site 78 were selected to define potential hot spots. This judgmental sample design was based on existing site knowledge. Therefore, using statistical designs for the purposes of risk assessment would result in unacceptable large sampling variability. When a limited number of samples are taken, judgmental sampling may identify the chemicals of concern, but cannot estimate the uncertainty of the chemical quantities. The reasonable maximum exposure or upper confidence limit cannot be calculated from results of a judgmental design.

6. Section 6.2.2.3 page 6-14

Agreed. The text will be revised to state that naphthalene will be retained as a COPC for groundwater.

7. Section 6.3.2.5 page 6-22

Justification for not estimating a "fish ingestion" scenario will be added to the text.

8. Section 6.3.4.1 page 6-25

For the sake of conservatism, an exposure frequency of 350 days per year was used to assess exposure to military personnel. Professional judgment was used to determine the exposure duration (ED) for the military personnel. The ED use for all military personnel scenarios should be 4 years. The exposure duration discrepancy will be corrected in the text and on tables.

9. Section 6.3.4.7 (page 6-34)

The default exposure inputs established for a swimming scenario were used for the ingestion scenario. These conservative values were used due to insufficient statistical data being established for these inputs. The surface water in this area is not suitable for swimming, however, under a future scenario ingestion is possible, although unlikely.

10. Table 6-11

Table 6-11 will be revised per comments.

11. Table 6-12

Ask Aaron how these SW bodies are classified.

12. Table 6-30

Toxicity factors will be corrected. Table 6-30 and exposure scenarios (Appendix M) will be revised.

13. Appendix L

Sample data sets with fewer than 20 samples may not provide a true estimate of the 95 percent UCL. In general, the UCL approaches the true mean as more samples are included in the estimation. This may account for the discrepancy between the mean and the 95 percent UCL. In addition, if a small sample set has one elevated result, the 95 percent UCL may not represent the data set.

14. Appendix M

The exposure point concentrations will be corrected. The spreadsheets for soil dermal exposure will be corrected. Significant uncertainty is associated with modification of the Oral Reference Dose (RfD) or Carcinogenic Potency Factor (CPF) to determine an absorbed dose. RfDs and CPFs are usually expressed as administered dose. Use of administered dose toxicity values is appropriate when

evaluating similar routes of exposure. However, when evaluating dermal exposure to a chemical, an adsorbed dose is derived by the risk assessor. Technically, it is not appropriate to evaluate potential health effects associated with an adsorbed dose using a toxicity value generated from an administered dose. Modifying the RfD and CPF (derived from an administered dose) by some arbitrary oral absorption factor does not produce a better or more accurate toxicity index for evaluating potential dermal exposure.

USEPA promulgated absorption values are not available because of the uncertainty in the available adsorption data. For example, an absorption value for a given chemical differs from different animal species and the media by which the chemical is administered (i.e., rat vs guinea pig vs mouse; corn oil vs food). Furthermore, available default absorption values cannot account for the variability of absorption between test animals and humans, nor can they account for absorption differences in individual diets or individuals of different ages, weights, race, or socio-economic status. Until more appropriate dose-response factors are derived or promulgated absorption factors are published by the USEPA, adsorbed dose RfDs or CPFs cannot be derived and used in place of promulgated USEPA administered dose RfDs and CPFs.

ATTACHMENT C

Response to Comments Submitted by NC DEHNR on Draft Remedial Investigation Report for Sites 21, 24, and 78 (Operable Unit No. 1), MCB, Camp Lejeune, North Carolina

Comment Letter by Mr. Patrick Watters dated March 23, 1994

RESPONSE TO SPECIFIC COMMENTS 1 THROUGH 22 -

1. The recommendations presented on page ES-24 will be revised to indicate that the deeper aquifer may require remediation or long-term monitoring.

2. The figure will be revised to include the location of the two wells. A note will be added to indicate that wells 24GW05 and 24GW07 no longer exist, and that well 24GW07 was later reinstalled at a different location.

3. Table 1-1 and Figure 1-6 will be revised to match each other.

4. Table 1-3 will be revised.

5. A sentence will be added indicating that the data from Site 22-related monitoring wells will be considered in the RI.

6. Supply wells will be shown where applicable on Figures 1-3 through 1-5.

7. Due to the size of Site 78 (HPIA) and the number of facilities, it would be difficult to consider the entire HPIA drainage system for this RI. Most of the drainage is influenced by storm water drainage systems along the reads and buildings. For purposes of this RI, the groundwater investigation should be adequate to identify potential source areas.

8. The text will be changed per the comment.

9. Table 2-1 will be revised to include areas of concern indicated on Figure 1-3.

   The focus of the investigation at Site 21 was to evaluate impacts from pesticide and PCB disposal. Since these contaminants are not very mobile in the environment, the installation of deep monitoring wells is not practicable.

   The deeper aquifer which underlies Site 21 is the same aquifer which underlies Site 78. Although there are no deep monitoring wells at Site 21, there are several existing deep wells at Site 78 which are located adjacent to the Site 21. The source of the VOC contamination in the shallow groundwater at Site 21 originated from Site 78 and is not related to disposal activities at Site 21.

10. Based on site history and recent groundwater sampling results for deep supply wells in the area (April 1993), the deep groundwater at Site 24 is not impacted by elevated concentrations of contaminants. Accordingly, deep monitoring wells were not installed at the site.

11. The scope of work for the soil investigation at Site 78 focused on the buildings identified on the table only. A soil gas survey, however, was conducted throughout the site at a number of the buildings identified as potential sources of contamination. Please refer to Figure 2-1 for the locations of the soil gas samples.

    Table 2-3 will be modified to include an investigation of the intermediate and deep groundwater at Site 78.

12. Figure 2-1 will be modified to include Buildings 1106, 1205, 1604, and 1765. Building 1480, however, was not a building targeted for soil gas samples.

13. The area identified on Figure 1-3 as "probable refuse (1944)" was based on interpretations from the EPIC study. Because the area was identified as "refuse" and not "stained" or "ground scar", it was assumed that the area contained surface debris, most likely garbage or scraps. Accordingly, the area was not investigated since the "refuse" was most likely unrelated to the pesticide disposal.

14. Building 902 which is identified on Table 2-3 should be 903. This change will be made on the table. Building 1608 was added to the RI during the field program because of its close proximity to Building 1601 and, therefore, was not considered as part of the original study. Accordingly, it was not included on the table.

15. Although manganese was detected at concentrations above base-specific background levels in surface soils at Site 21, it is not believed that a source of the is manganese is related to site activities (i.e., pesticide and PCB disposal). Concentrations of this magnitude are not uncommon at the Base.

16. This section will be modified to include a discussion of PCBs in the sediment.

17. The buildings within HPIA were previously investigated by ESE via a records search and site visits (Characterization Step Report). In addition, although some of the individual facilities were not investigated (through a soil investigation) during this RI, the groundwater at HPIA was evaluated over a larger portion of the area.

18. No text changes made. Agree that the decrease in contaminant levels in the shallow aquifer could be due to the vertical migration of contaminants. The results from the wells sampled in December 1993 appear to agree with this trend.

19. The paragraph will be revised.

20. The paragraph will be revised.

21. The sentence will be revised.

22. A copy of the EPIC photographs will be submitted to the NC DEHNR in the next version of the report.

Baker
Baker Environmental, Inc

Baker Environmental, Inc.
Consulting Engineers
Airport Office Park - Bldg. 3
420 Rouser Road
Coraopolis, PA 15108
(412) 269-6000

LETTER OF TRANSMITTAL

To: NC Div. of Env. Mgmt.
Water Quality Section
Archdale Bldg., 512 N. Salisbury St.
Raleigh, NC 27604-1148
Attn. Mr. Stephen Tedder, Section Chief

S.O. No. 62470-177-0000-02300
Project: CTO-0177
Date: April 15, 1994

We are forwarding the following: ☒ Attached ☐ Under Separate Cover

DWG. NO.	NO. COPIES	TITLE OR DESCRIPTION	COMMENTS
	1	Draft Final Remedial Investigation for Operable Unit No. 1 (Sites 21, 24, and 78) MCB, Camp Lejeune, NC	Please submit comments to Mr. Patrick Watters (NC DEHNR) no later than May 9, 1994
		Instructions for appendices revisions:	
		(1) Appendix E (2) Appendix M (3) Spines and Covers	(1) Add new boring logs (2) Replace (3) Replacements for appendices

THESE ARE TRANSMITTED as checked below:

☐ As requested
☒ For review and comment
☐ For your information
☐ No exception taken
☐ Rejected - See remarks
☐ Proceed subject to corrections noted
☐ Revise and resubmit
☐ Submit specified items
☐ _____

GENERAL COMMENTS:

cc: Ms. Linda Berry, P.E. (LANTDIV)
Mr. Patrick Watters, (NC DEHNR)

BAKER ENVIRONMENTAL, INC.

By: Tammi Halapin
Title: Project Manager
Page 1 of 1

Baker
Baker Environmental, Inc

Baker Environmental, Inc.
Consulting Engineers
Airport Office Park - Bldg. 3
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Coraopolis, PA 15108
(412) 269-6000

LETTER OF TRANSMITTAL

To: NC Div. of Env. Mgmt.
Groundwater Section
Archdale Bldg., 512 N. Salisbury St.
Raleigh, NC 27604-1148
Attn. Mr. Arthur Mouberry, Section Chief

S.O. No. 62470-177-0000-02300
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Date: April 15, 1994

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☐ Revise and resubmit
☐ Submit specified items
☐ _____

GENERAL COMMENTS:

cc: Ms. Linda Berry, P.E. (LANTDIV)
Mr. Patrick Watters, (NC DEHNR)

BAKER ENVIRONMENTAL, INC.

By: Tammi Halapin
Title: Project Manager
Page 1 of 1

Baker
Baker Environmental, Inc

Baker Environmental, Inc.
Consulting Engineers
Airport Office Park - Bldg. 3
420 Rouser Road
Coraopolis, PA 15108
(412) 269-6000

LETTER OF TRANSMITTAL

To: NC Div. of Environmental Mgmt.
127 Cardinal Drive Ext.
Wilmington, NC 28405-3845

S.O. No. 62470-177-0000-02300
Project: CTO-0177
Date: April 15, 1994

Attn. Mr. Rick Shiver, Regional Supv.

We are forwarding the following: ☒ Attached ☐ Under Separate Cover

DWG. NO.	NO. COPIES	TITLE OR DESCRIPTION	COMMENTS
	1	Draft Final Remedial Investigation for Operable Unit No. 1 (Sites 21, 24, and 78) MCB, Camp Lejeune, NC	Please submit comments to Mr. Patrick Watters (NC DEHNR) no later than May 9, 1994
		Instructions for appendices revisions:	
		(1) Appendix E (2) Appendix M (3) Spines and Covers	(1) Add new boring logs (2) Replace (3) Replacements for appendices

THESE ARE TRANSMITTED as checked below:

☐ As requested
☒ For review and comment
☐ For your information
☐ No exception taken
☐ Rejected - See remarks
☐ Proceed subject to corrections noted
☐ Revise and resubmit
☐ Submit specified items
☐ _____

GENERAL COMMENTS:

cc: Ms. Linda Berry, P.E. (LANTDIV)
Mr. Patrick Watters, (NC DEHNR)

BAKER ENVIRONMENTAL, INC.

By: Tammi Halapin
Title: Project Manager
Page 1 of 1

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(412) 269-6000

LETTER OF TRANSMITTAL

To: US EPA, Region IV
Waste Management Div.
345 Courtland Street
Atlanta, GA 30365
Attn. Ms. Gena Townsend

S.O. No. 62470-177-0000-02300
Project: CTO-0177
Date: April 15, 1994

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cc: Ms. Linda Berry, P.E. (LANTDIV)

BAKER ENVIRONMENTAL, INC.

By: Tammi Halapin
Title: Project Manager
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(412) 269-6000

LETTER OF TRANSMITTAL

To: Dept. of Environmental Health
and Natural Resources
PO Box 27687, 401 Oberlin Road
Raleigh, NC 27611
Attn. Mr. Patrick Watters, Superfund Section

S.O. No. 62470-177-0000-02300
Project: CTO-0177
Date: April 15, 1994

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(412) 269-6000

LETTER OF TRANSMITTAL

To: Mr. Ray Humphries
514 Brynn Marr Road
Jacksonville, NC 28540

S.O. No. 62470-177-0000-02300
Project: CTO-0177
Date: April 15, 1994

Attn. Mr. Ray Humphries

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LETTER OF TRANSMITTAL

To: Jacksonville City Manager
PO Box 128
Jacksonville, NC 28541

S.O. No. 62470-177-0000-02300
Project: CTO-0177
Date: April 15, 1994

Attn. Mr. Jerry Bittner

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(412) 269-6000

LETTER OF TRANSMITTAL

To: National Oceanic & Atmospheric Adm.
c/o EPA Region IV, 345 Courtland St. NE
Atlanta, GA 30365

S.O. No. 62470-177-0000-02300
Project: CTO-0177
Date: April 15, 1994

Attn. Mr. Waynon Johnson

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(412) 269-6000

LETTER OF TRANSMITTAL

To: Mr. Cameron Lanier
612 College Street
Jacksonville, NC 28540

S.O. No. 62470-177-0000-02300
Project: CTO-0177
Date: April 15, 1994

Attn. Mr. Cameron Lanier

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420 Rouser Road
Coraopolis, PA 15108
(412) 269-6000

LETTER OF TRANSMITTAL

To: Colonel (Retired) Jack Mader
1216 Country Club Road
Jacksonville, NC 28540

S.O. No. 62470-177-0000-02300
Project: CTO-0177
Date: April 15, 1994

Attn. Colonel (Retired) Jack Mader

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Coraopolis, PA 15108
(412) 269-6000

LETTER OF TRANSMITTAL

To: Naval Environmental Health Center
2510 Walmer Avenue
Norfolk, VA 23513-2617

S.O. No. 62470-177-0000-02300
Project: CTO-0177
Date: April 15, 1994

Attn. Ms. Sheila Bergman

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(412) 269-6000

LETTER OF TRANSMITTAL

To: US Dept. of the Interior
Regional Environmental Office
75 Spring Street SW
Atlanta, GA 30303
Attn. Mr. James H. Lee

S.O. No. 62470-177-0000-02300
Project: CTO-0177
Date: April 15, 1994

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Coraopolis, PA 15108
(412) 269-6000

LETTER OF TRANSMITTAL

To: US Fish and Wildlife Service
PO Box 33726
Raleigh, NC 27636-3726

S.O. No. 62470-177-0000-02300
Project: CTO-0177
Date: April 15, 1994

Attn. Mr. Tom Augspurger

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