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United States Environmental Protection Agency,
Region IV
Waste Management Division
Attn: Ms. Gena Townsend
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Re: Response to EPA Region IV Comments on the Draft RI for Operable Unit No. 1, Marine Corps Base Camp Lejeune, North Carolina

Dear Ms. Townsend:

Enclosed are the responses to comments dated February 22, 1994 and February 28, 1994 provided by EPA Region IV on the above referenced report. These comments were discussed during the meeting held at EPA Region IV offices on May 3, 1994. Any questions concerning these responses should be directed to Ms. Linda Berry who may be reached at (804) 322-4793.

Sincerely,

L. A. BOUCHER, P.E.
Head
Installation Restoration Section
(South)
Environmental Programs Branch
Environmental Quality Division
By direction of the Commander

Enclosure

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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 condusive 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 biohabitat 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 biohabitat map that depicts the various ecosystems associated with the site and adjacent areas to the site will be developed. The site biohabitat 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 biohabitat 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 biohabitat 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 workplans 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 biohabitat map will provide a correlation of ecologically relevant media

and sampling locations. The workplans 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 biohabitat 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 biohabitat 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 biohabitat 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 workplans did not include this type of temporal media sampling.

9. The site biohabitat 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 south-west). 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 workplans 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 didi not state that there were no protected, threatened, and endagered species at OU No. 1. The biohabitat 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 biohabitat 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 biohabitat 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 biosurvey 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 workplans 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 biosurvey 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 biohabitat 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 colums 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. On March 22, 1992, LANTDIV met with EPA Region IV (Michelle Glenn) and members of the ETAG (Waynon Johnson and Lynn Wellman) to discuss how ecological risk assessments (ERAs) would be performed at MCB Camp Lejeune. At that time, EPA/ETAG was interested in conducting a base-wide ERA. LANTDIV proposed doing the ERA on an "operable unit" basis. Specifically, ERAs would be performed in conjunction with the RI/FS for a particular operable unit in order to sign record of decisions in an expedited manner. After all of the operable units are investigated, the data would be evaluated and a base-wide ERA would be conducted. Data gaps would be identified and addressed. The EPA/ETAG agreed to this approach.

   LANTDIV feels that the current approach to performing ERAs (i.e., in conjunction with the RI/FS for an operable unit) is more feasible than adopting the base-wide ERA for several reasons. First, the results of the ERA for a particular operable unit can be directly correlated with the RI results. Second, the results of the ERA can be used to assist in determining the remedial action. Third, the results of the base-wide ERA will not result in determining what site or areas need to be remediated. The purpose of performing an ERA is to "provide decision makers with information on threats to the natural environment associated with contaminants or with actions designed to remediate the site" (EPA/540.1-89.001). Given this objective or purpose, LANTDIV feels that the current approach is far more adequate than using the results of a base-wide ERA.

   Since March 1992, RI/FSs either have been completed or are ongoing at 7 of the 13 operable units. ERAs have been performed in conjunction with the RI/FS at each operable unit. The results of the ERA have been or will be used to assist in determining whether remediation is warranted. The ERAs at the remaining six operable units are anticipated to

be completed in 1996. At that time, LANTDIV will compile the results of the ERAs performed at each operable unit into a base-wide ERA per the agreement made with EPA/ETAG in March 1992.

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 judgement 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.

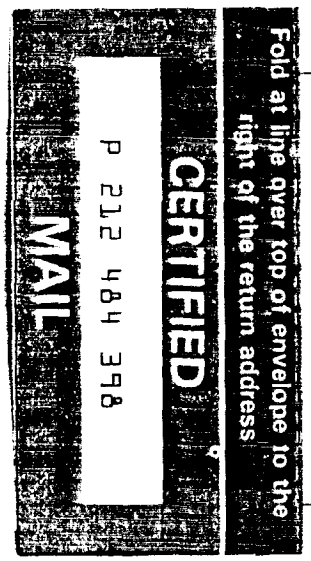
13. Appendix L

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.



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