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19 DEC 1991

REGISTERED MAIL - RETURN RECEIPT REQUESTED

Waste Management Division
U. S. Environmental Protection Agency
Attn: Mr. Carl Froede
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Re: MCB Camp Lejeune; Response to EPA Comments on Draft RI/RA/FS for Hadnot Point Shallow Soils/Deep Groundwater and Draft Site Assessment Report for Sites 6, 48, and 69

Dear Mr. Froede:

We have received the Environmental Protection Agency Region IV comments (letter dated October 28, 1991 received in our office on October 30, 1991) to the subject draft documents. The Navy/Marine Corps response to these comments is enclosed.

The Draft Final version of these reports will be forwarded no later than December 26, 1991.

Should you have any questions concerning this matter, please contact Ms. Laurie Boucher, P.E., at (804) 445-1814.

Sincerely,

P. A. RAKOWSKI, P.E.
Head
Environmental Programs Branch
Environmental Quality Division
By direction of the Commander

Copy to (w/encl):
MCB Camp Lejeune (AC/S, Environmental Management)
N.C. DEHNR (Attn: Mr. Jack Butler)

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PS Form 3800, June 1985

**NAVY/MARINE CORPS RESPONSE TO EPA COMMENTS TO DRAFT RI/RA/FS REPORTS FOR HADNOT POINT INDUSTRIAL AREA AND DRAFT SITE ASSESSMENT REPORT FOR SITES 6, 48, AND 69**

**REMEDIAL INVESTIGATION (RI) REPORT (VOLUMES I, II, AND III)**

**GENERAL COMMENTS**

**1. The aquifers of concern at this site are the Castle Hayne aquifer averaging 340 feet thick and the surficial aquifer ranging from being non-existent near drainage areas to 75 feet thick near the Hadnot Point Industrial Area. Groundwater from the Castle Hayne aquifer is used as a regional drinking water supply. As outlined by the *Guidelines for Ground-Water Classification under the EPA Ground-Water Protection Strategy*, Final Draft, December 1986, the Castle Hayne aquifer is classified and Class IIA, A Current Source of Drinking Water Supply. Based on information provided in the Remedial Investigation report, the groundwater from the surficial aquifer is not currently used as a drinking water source. Therefore, the surficial aquifer is tentatively classified as Class IIB, A Potential Source of Drinking Water. Water level data collected 2/20/91 at the Hadnot Point Industrial Area indicate that the surficial aquifer is a potential source of recharge to the Castle Hayne aquifer. As more hydrogeologic data are supplied, the classification of the aquifer may change. Class IIA and Class IIIB aquifers are subject to stringent clean-up standards based upon protection of human health (MCLs, proposed NCs, MCLGs, and other criteria based upon protection of human health). Further monitoring of all intermediate and deep aquifer wells (including potable wells at Hadnot Point Industrial Area should be performed by the Navy to determine the potential contamination threat to the deep aquifer.**

Response: Investigation of the Castle Hayne aquifer will continue. A draft Sampling Plan will be presented to EPA Region IV in March 1992.

**2. A specific method has not been proposed for establishing soil clean-up goals with respect to groundwater. Soil partitioning coefficients should be determined to evaluate soil clean-up goals that are protective of groundwater. The methods and sources utilized to establish these parameters should be provided. If soil column testing is used to determine partition coefficients, the organic carbon content of the soils should be measured for use in the calculations (see U.S. EPA Region IV SOP Manual).**

Response: This issue will be addressed upon final remediation of the surficial aquifer.

Enclosure (1)

SPECIFIC COMMENTS

VOLUME I

**1. Page 2-3, Section 2.4: Which monitoring wells contained these contaminants? Revise to include this information.**

Response: These monitor wells were Obrien & Gere wells MW2, MW7, MW12, MW15, MW16 and MW18 installed as part of the fuel tank farm investigation. The information pertaining to the contaminated wells will be presented in the text.

**2. Page 3-2, Top Of Page: Were any of these pits, tanks, etc. sampled?**

Response: No. The focus of the investigation was the identification of the general areas which presented a high potential of contamination as a result of past disposal practices or operations.

**3. Page 3-3, Section 3.2.2: These data plots should be included in an appendix.**

Response: These sampling locations and sample data are presented as Appendix P.

**4. Page 3-12, 3.3.3 Groundwater Sampling: EPA will not accept one round of sampling from the intermediate and deep wells as "representative" of conditions found in the subsurface. Further sampling will be necessary to define the amount and extent of contamination in the intermediate/deep aquifer.**

Response: Investigation on the Castle Hayne aquifer will continue. A draft Sampling Plan will be provided to EPA Region IV in March 1992.

**5. Page 3-14, Table 3-1. Hadnot Point Groundwater Field Measurements Summary: The ranges of variance for all three parameters appear to be drastic. Why the wide range of values? A column needs to be added showing the total depth of each well listed. Which wells are considered background?**

Response: No determination has been made for the variation of values other than the variation of surficial groundwater over such a large and diversely utilized area. The monitor well depths are consistent. Shallow wells are 25-ft deep, intermediate wells (noted with a "-2" suffix) are 75-ft and deep wells (noted with a "-3" suffix) are 150-ft. This information will be added to the bottom of the table. No wells were installed with the sole purpose of being background wells.

**6. Page 3-15, para. 4-a: Teflon bailers are to be used according to EPA/ESD QA/QC SOP (Section 4.9.3).**

Response: The use of dedicated PVC bailers was identified in the Final Work Plan and Sampling Plan, which EPA Region IV previously approved.

**7. Page 3-18, 3.3.4 Water Level Measurements: Two rounds of water level measurements at HPIA during January and February 1991, will not be acceptable as representative of subsurface hydrologic gradient conditions. Groundwater monitoring of the potentiometric surface should be obtained throughout the year to determine if the gradient is consistent in one direction.**

Response: Repeated monitoring of water levels within the surficial aquifer has been completed over the years. The Navy/Marine Corps proposal for repeated monitoring of the Castle Hayne aquifer will be presented to EPA Region IV in March 1992 in a draft Sampling Plan.

**8. Page 4-3, Section 4.2.2: The statement is made that there was no attempt to correlate the hydrogeologic zones with the regional hydrogeology. In the report, the unconfined aquifer was referred to as the shallow aquifer and the lower semi-confined aquifer as the deep aquifer. On page 4-10 an implication was made that the deep aquifer and the Castle Hayne aquifer were the same. Based on the hydrogeologic description provided, the shallow wells (25 feet deep) penetrate the surficial aquifer, the intermediate wells (75 feet deep) penetrate the Castle Hayne aquifer, and the deep wells (150 feet deep) also penetrate the Castle Hayne Aquifer. Reference to the aquifers should be consistent and regional hydrogeologic names should be used to avoid confusion with respect to the aquifers under discussion.**

Response: In the revised reports the shallow unconfined aquifer, monitored by the 25-ft wells, will be called the surficial aquifer. The intermediate and deep monitored zones will be referred to as the Castle Hayne aquifer, although there still may be distinction referenced between the intermediate and deep portions of the aquifer as defined by the wells.

**9. Page 4-8, Section 4.3.3 Hydraulic Gradients: The direction of groundwater flow at the site is toward the west-southwest based on 2/20/91 water level measurements. However, the hydraulic gradient is low in the aquifer (0.003) which could allow the plume to migrate radially. Further water sampling efforts might be necessary before an accurate statement can be made with regards to contaminant movement.**

Response: It is agreed that radial dispersion of the plume has indeed occurred, and that is reflected in the contaminant isopleth maps. Shallow water levels have been measured repeatedly over the years, and while the water table elevation has varied with season, the general flow direction has remained steady.

**10. Page 4-9, 4.3.3 Hydraulic Gradients, first paragraph: The two wells used to calculate the intermediate and deep potentiometric surface beneath HPIA should clearly be shown. The values used to calculate the hydraulic gradient should be included. All contour lines shown between these values should be dashed with the figure legend reflecting that these dashed lines are projections. Once again values from only one sampling event (February 1991) will not be acceptable as representing the subsurface hydraulic gradient beneath HPIA. Further water level measurements will be necessary.**

Response: It is understood that all contour lines generated in any investigation are projected and that the only known point is measured at a wellpoint. It is common to draw solid lines where data is inferred between known points and dashed lines as they are interpolated out.

The Navy/Marine Corps proposal for repeated monitoring of the Castle Hayne aquifer will be presented to EPA Region IV March 1992 in a draft Sampling Plan.

**11. Page 4-9, 4.3.3 Hydraulic Gradients, fourth paragraph: How far away is the "closest producing wells...located to the northwest"? At what depth is it producing water? Is it sampled regularly (VOC's, metals, etc.)? Has the radius of influence been calculated to determine if a reverse in flow direction is occurring, drawing contamination to the northwest?**

Response: Potable well 642 is approximately 2,500 ft to the northwest. This well is completed to a depth of approximately 200 ft. Although a sampling program is not currently in place at the installation, one is in the planning stages. The pump test was conducted for approximately 43 hours at a pumping rate of 85 gpm. Drawdown in the pumping well was in excess of 57 feet, while at a distance of 300 feet, drawdown was approximately 2.87 feet.

**12. Page 4-10, 4.3.3 Hydraulic Conductivity, second paragraph: At what depth is the "limestone portion of the deep (Castle Hayne) aquifer" from which this pump test was performed?**

Response: The producing well is completed to a depth of approximately 200 ft.

**13. Page 4-10, 4.3.3 Hydraulic Conductivity, third paragraph: The statement is made regarding recharge of the limestone portion of the deep aquifer from the overlaying clayey layer. What wells in the HPIA are the deepest and have the greatest potential for drawing contaminants downward the furthest?**

Response: The potable wells, with a typical depth of 200 ft, have the greatest drawdown potential. However, potable wells within the HPIA area have been shutdown and no longer pose a drawdown threat.

**14. Page 4-10, 4.4 METEOROLOGY: Data presented in this section reflect the possibility of a varied potentiometric hydraulic gradient in the subsurface and support further water level sampling to establish long term groundwater flow direction.**

Response: It is agreed that rainfall will change the water elevations and subsequently produce local variability in the groundwater flow direction at areas of recharge (i.e. grassed areas or open dirt). Distribution of contaminants due to radial flow resulting from meteorological events has been observed and is reflected on the contaminant plume maps (large rounded areas of contamination due to dispersion as opposed to classical "teardrop" shape).

**15. Page 5-1, 5.0 RESULTS OF INVESTIGATION: EPA will expect further sampling to be performed for both the intermediate and deep groundwater monitoring wells, due to possible laboratory contamination of samples and the fact that only one round of sampling has been performed.**

Response: The laboratory contaminants observed were generally below the reportable limit by the instrument and were therefore too small to mask other contaminants. These lab contaminants were generally not those of concern during the investigation. Additional sampling is planned as the investigation of the Castle Hayne aquifer continues.

**16. Page 5-1, 5.0 RESULTS OF INVESTIGATION: Does the Navy suspect that the laboratory "Hits" masked or interfered with data resulting in contaminants going undetected?**

Response: The laboratory contaminants observed were generally below the reportable limit by the instrument and were therefore too small to mask other contaminants.

**17. Page 5-1, RESULTS OF INVESTIGATION: The total depth of the water supply wells and the screen interval should be provided. If well construction data cannot be provided, additional monitoring wells that penetrate the castle hayne aquifer must be constructed to determine the vertical extent of the contaminant plume. Water level data from these wells are necessary to determine the vertical direction of the groundwater flow at this site.**

Response: The requested data has been included as a table in the revised report.

**18. Page 5-3, 5.2.1 Soil Gas Survey, Bldgs. 901, 902, and 903, second paragraph: The underground storage tank (UST) referenced here should be closed and/or removed. If this UST has leaked TCE into the subsurface, surrounding soils should be removed and disposed. This tank, along with any surrounding soils, will act as a source of contamination until they are removed.**

Response: The investigations did not confirm the presence of a soil contaminant plume in the area described by this tank. The Navy/Marine Corps intends to conduct geophysical survey or use other appropriate means to define if the tank exists. If the tank still exists, the Navy/Marine Corps will remove this tank under the appropriate regulatory guidance. EPA will be kept informed of the progress of this action.

**19. Page 5-3, Bldg. 1100: Does an underground storage tank (UST) exist at this site and, if so, has it been tested and/or removed? If it exists, has it ever been used for storage of any hazardous substances? A leaking drum is referenced, were any soils removed from beneath the drum (potential source area)?**

Response: The record's search indicated the empty drum labeled "1,1,2,2-tetrachloroethane" was found adjacent to the building, not underground. The investigations did not confirm the presence of a soil contaminant plume in the area described by this tank. If the empty tank still exists adjacent to this building, the Navy/Marine Corps will remove this tank under the appropriate regulatory guidance. EPA will be kept informed of the progress of this action.

**20. Page 5-3.A, Figure 5-1, SOIL GAS FINDINGS - BLDGS. 901, 902, AND 903 - CONFIRMATORY STUDY: All monitor well locations within the confines of this and every other site specific location map should be identified. The wells should include both the name and depth of the well. This will better determine monitor well placement in relation to the soil samples obtained and groundwater flow direction.**

Response: The wells will be added to the figures as requested. The depth of the monitor wells is associated with the well nomenclature (25-ft, -2 is 75-, and -3 is 150-ft) and need not be on the map.

**21. Page 5-5, Bldgs. 1502, 1601, and 1602: The underground storage tank at this site should be tagged for closure/removal to eliminate any possibility of further contamination.**

Response: The investigations did not confirm the presence of an UST at this site. The investigations did not confirm the presence of a soil contaminant plume in the area described by this tank. The Navy/Marine Corps intends to conduct geophysical survey or use other appropriate means to define if the tank exists. If it does, the Navy/Marine Corps will remove this tank under the appropriate regulatory guidance. EPA will be kept informed of the progress of this action.

**22. Page 5-5, Bldgs. 1709 and 1710: The underground storage tank at this site should be tagged for closure/removal to eliminate any possibility of further contamination.**

Response: The investigations did not confirm the presence of a soil contaminant plume in the area described by this tank. The Navy/Marine Corps intends to conduct geophysical survey or use other appropriate means to define if the tank exists. If it does, the Navy/Marine Corps will remove this tank under the appropriate regulatory guidance. EPA will be kept informed of the progress of this action.

**23. Page 5-7, para. 4: If 19 of 27 samples contain acetone and methyl chloride, then stricter QA/QC standards are needed to eliminate these constituents from the list of possible contaminants. What are the Navy's plans to insure this does not happen in the future?**

Response: Current Navy QA/QC policy requires that all analytical data obtained during an investigation be the result of analysis under Data Quality Objective (DQO) Level D. DQO Level D correlates to EPA Level 4 and is required for sites that are on or about to be on the NPL. Level D QC includes review and approval of the laboratory QA plan, the site work plan, and the field QA plan.

The laboratories must successfully analyze a performance sample, undergo an audit, correct deficiencies found during the audit, and provide monthly progress reports on QA. These activities are administered and evaluated by the NEESA Contract Representative. This audit and the analysis performance sample are in addition to those related to the EPA Superfund Program. The laboratory that performs Level D QC must have passed the performance sample furnished through the Superfund Contract Laboratory Protocol (CLP) and must be able to generate the CLP deliverables. For a Level D site, the CLP methods are used and the CLP package generated.

**24. Page 5-7, Building 902: Was this underground storage tank (UST) ever located? The UST at this site should be tagged for closure/removal to eliminate any possibility of further contamination.**

Response: The investigations did not confirm the presence of a soil contaminant plume in the area described by this tank. The Navy/Marine Corps intends to conduct geophysical survey or use other appropriate means to define if the tank exists. If the tank still exists, the Navy/Marine Corps will remove this tank under the appropriate regulatory guidance. EPA will be kept informed of the progress of this action.

**25. Page 5-11, Table 5-1, COMPARISON OF ANALYTICAL RESULTS - HITS ONLY SHALLOW GROUNDWATER MONITORING WELLS: The MCL's and proposed action levels for these contaminants should be shown somewhere in this table. This will enable the reader to determine which wells have contaminants above acceptable levels and the level of contamination found at that well.**

Response: MCL's will be added as requested.

**26. Page 5-16, para. 2: The current MCL for lead in groundwater is 15 ppb. This places 22GWI and 22GW2 in Set 1 and Set 2 above the MCL.**

Response: Set 1 and Set 2 data represent historical sampling data. The investigation and cleanup should focus on current conditions as opposed to historical. The current 1990-1991 data has been evaluated in light of the more recent MCL criteria.

**27. Page 5-16.A, Figure 5-4 TOTAL VOC ISOPLETH MAP - SHALLOW AQUIFER, CONFIRMATORY STUDY, HADNOT POINT INDUSTRIAL AREA: The fact that this figure is the result of 1987 data needs to be stated. It is confusing looking from this figure to the next one (next page) and determine exactly what you are looking at - without knowing that this is historical data.**

Response: The legend will be expanded to present this data.

**28. Page 5-18, para. 5: Is the lead concentration that is "not of concern" based on the inaccurate MCL of 50 µg/l?**

Response: The sample was collected when the MCL was 50ug/L. The new data (1991) will be evaluated in light of the new MCL.

**29. Page 5-36, Sect. 5.4: Is "ultrapure water" organic free water or deionized water?**

Response: organic free water

**30. Page 5-42, Section 5.5.3: What is the thickness of the aquifer at each of the wells used for the aquifer test? Are the wells fully or partially penetrating? Are corrections for partial penetration necessary for any of the wells?**

Response: The RI report states (page 4-4) that freshwater extends to a depth of 300 feet and that the aquifer would be the useable portion of the Castle Hayne aquifer. Wells go down to 200 feet are are partially penetrating the Castle Hayne aquifer. The pump test did take into account the partial penetration of these wells.

**31. Page 6-5, Supplemental Characterization, second paragraph: The acronym "TCL" is not defined in the list of abbreviations and acronyms. Also the list of "full TCL parameters" is never identified. Please revise to include this information.**

Response: This information will be incorporated.

**32. Page 6-7, Intermediate and Deep Wells: The acronym "TIC" is not defined in the list of abbreviations and acronyms. Please revise to include this information.**

Response: This information will be incorporated.

**33. Page 6-10, para. 5: The average storage coefficient is reported as 8.8 x $10^{-4}$, but the estimated storage coefficient reported on Page 4-10 and 5-43 is 8 x $10^{-4}$. If the difference here is the term 'estimated', 8.8 should be rounded to 9 instead of 8.**

Response: The text will be revised. This change does not affect the analysis.

VOLUME II

**1. Appendix A - Decontamination Procedures: The procedures discussed here are inconsistent with the procedures outlined on Page 3-7 (ESE, Draft RI-HPIA, 1991). Appendix A should have been followed, not the steps described on Page 3-7.**

The text will be corrected to reflect the correct decontamination procedures (Appendix A), which was followed.

VOLUME III

**1. Appendix F-O: A key to the symbols used in the Analytical Results section should be included at least at the bottom of the first page of every section, if not at the bottom of each page of data.**

Response: A cover sheet containing abbreviations used will be included at the start of each appendix referenced.

FEASIBILITY STUDY (FS) REPORT

GENERAL COMMENTS

**1. As per agreement at the meeting of October 16, 1991 between NDEHNR, EPA and the Navy, an executive summary should be provided and referenced summarizing the historical nature of all sampling efforts undertaken by the Navy at Hadnot Point Industrial Area (to be designated an Operable Unit), providing justification for why these specific buildings (Bldgs. 900 and 1200) are the only areas of concern in relation to shallow soils contamination for HPIA.**

Response: This summary is provided.

**2. The "FS" does not adequately address the amount and extent of contamination found in the deep aquifer. As such, the EPA will require the Navy to remove the deep aquifer from this document.**

Response: Investigation on the Castle Hayne aquifer will continue. A draft Sampling Plan for continuation of the investigation of the deep aquifer will be provided to EPA Region IV in March 1992.

SPECIFIC COMMENTS

**1. Page 1-2, Section 1.1: Risk Assessment Calculations should consider residential development in Future Land Use. ESE's assumptions of restricted use are not acceptable.**

Response: Residential units, in the form of barracks, do currently exist within the HPIA. However, the units are only used by military personnel (e.g. single men and women, no children) who are assigned to the barracks for a maximum of 2 years and are reassigned, and the risks are insignificant. No residential construction in the form of family housing is planned in the area.

**2. Page 1-9, Section 1.4.2, para. 1: Fresh water extends to 300 feet bls. (Page 1-8, Sect. 1.4.1, para. 2). Are monitoring wells to a depth of only 150 ft. bls adequate to fully determine the nature and extent of the contamination? Also, some attempt should be made to correlate these units to the regional stratigraphy?**

Response: The Navy will evaluate if the existing deep monitoring wells, installed to a depth of 150 feet, are adequate to fully determine the nature and extent of the contamination in the Castle Hayne aquifer. Also, an attemp will be made to correlate these units to the regional stratigraphy. These issues will be addressed in the draft Sampling Plan (for further investigation of the Castle Hayne aquifer) which will be provided to EPA Region IV in March 1992.

**3. Page 1-10, Section 1.5: The unconfined aquifer should not be referred to as both the shallow aquifer and the surficial aquifer. Using only one term will avoid any unnecessary confusion as to whether the unconfined aquifer or the shallowest confined aquifer is being referenced. "Surficial" is the preferred term to use for the unconfined aquifer.**

Response: The shallow aquifer will be referred to as the surficial aquifer.

**4. Page 1-10, 1.5.2 HPIA Hydrology, third paragraph: "Groundwater flow in the lower water-bearing zones trends...", it is clear from other reports that groundwater flow direction has not been determined. This sentence should be changed to reflect groundwater flow in the intermediate and deep aquifers as "not conclusive, but estimated to flow toward the southwest", until conclusive evidence can accurately determine the groundwater flow direction. The determination of groundwater flow from the intermediate and deep aquifers will continue to be a "best guess" proposition, as long as wells continue to draw water from them.**

Response: It is agreed that all groundwater flow determinations are "best guess." However, using accepted measurements and procedures, these guesses are routinely reported during such investigations. No wells are producing from downgradient of the HPIA which would influence the flow, as the reviewer has implied.

**5. Page 1-11, 1.5.2 HPIA Hydrology, first and second paragraphs: Potentiometric maps should be included in this section to graphically display what the test is describing. The hydraulic gradients proposed in these paragraphs reflect a discrete point in time (February 1991) from which these values were obtained. This should be reflected in the report as "seasonal" values which are subject to change based upon the time of year and precipitation events.**

Response: The maps will be provided.

**6. Page 1-11, 1.5.2 HPIA Hydrology, third paragraph: What depth is the "Limestone portion of the deep aquifer"? A generalized stratigraphic section should be included in this section. At what depth were the pump tests performed, and for how long were the tests run?**

The cross-section from the RI will be provided. Additional data will be incorporated as requested. The pump test was conducted for approximately 43 hours at a pumping rate of 85 gpm. The pump was set at the bottom of the well (approximately 200 feet).

**7. Page 1-11, para. 2: Well number 4 is identified as a well cluster, however, the symbol for a well cluster is not used on Figure 1-5.**

Response: The map will be revised to show the correct symbol.

**8. Page 1-11, para. 3: What was the duration of the "short-term pump tests"?**

Response: eight hours

**9. Page 1-12, para. 1.2, para. 3: MCL is defined by EPA as "maximum contaminant level" pertaining to drinking water standards. The use of this acronym by ESE to designate other terms will create confusion and must be avoided.**

Response: The acronym as used in the referenced text will be deleted.

**10. Page 1-13, para. 4: Please identify the "floating product" referenced in this section.**

Response: The product observed in the wells was gasoline from the Hadnot Point Fuel Farm.

**11. Page 1-13, 1.7 PREVIOUS FIELD INVESTIGATIONS, second paragraph: The statement is made that certain water supply wells were closed and other supply wells were sampled (back in 1985). Is there any sampling program on-going at any of the remaining drinking water wells in and around the HPIA?**

Response: No sampling program is currently in place at the installation, but one is in the planning stages.

**12. Page 1-15, para. 2: Reference should be made here to Figure 1-4 when discussing areas 900-902. EPA questions the adequacy of the 4 deep (150 ft.) wells in determining the nature and extent of the contamination. What is the radius used in the "nearby water supply well"?**

Response: Reference will be added. The issue of the adequacy of the 4 deep (150 foot) wells will be addressed in the draft Sampling Plan (for further investigation of the Castle Hayne aquifer) which will be provided to EPA Region IV late March 1992. The drawdown radius of the producing potable wells is limited (<50 ft).

**13. Page 1-16, para. 2: Since VOCs are involved, inhalation should be considered a legitimate exposure pathway.**

Response: Inhalation was considered to be an insignificant pathway since groundwater to air could not be established as an exposure pathway.

**14. Page 1-17, 1.8 SUMMARY OF RA STUDY, second paragraph: EPA does not accept the Navy's proposal of no remedial action on either the shallow or deep aquifer until the free product recovery has been completed from the Hadnot Point Fuel Farm. Also EPA does not accept the Navy's proposal for removing the deep aquifer from selected sites. The deep aquifer is contiguous under the entire HPIA facility, any remedial efforts on the deep aquifer will encompass all "sites" above that aquifer.**

Response: Shallow remedial activities are expected to be in conjunction with the product recovery. The need for deep aquifer remediation will be evaluated following further investigations.

**15. Page 1-17, 1.8 SUMMARY OF RA STUDY, fourth paragraph: What about the "Deep aquifer"? This feasibility study is incomplete as far as the deep aquifer is concerned.**

Response: A Feasibility Study will not be required for this effort, since the risks evaluated with respect to the shallow soils are below acceptable EPA levels, and the deep aquifer will be evaluated in further investigations.

**16. Page 3-7, para. 1: The need for more sampling and analysis is clearly stated, but when is the sampling and analysis going to be conducted?**

Response: This comment is no longer valid. Soil cleanup is no longer required at the site under the revised EPA risk criteria of $10^{-4}$.

**17. Page 4-3, 4.0 DEVELOPMENT AND SCREENING OF ALTERNATIVES: The statement is made that additional sampling will be required to define the extent of contamination at areas 900 and 1200. Once again this FS was for all shallow soils and the deep aquifer**

**underlying HPIA. What information will be required to complete the FS for the shallow soils and deep aquifer?**

Response: Same response as that for Question #16.

**18. Page 5-2, Table 5-1: Since the level of contamination is within the EPA level of acceptance ($10^{-5}$), but is still significant, monitoring should be added to the no-action alternative.**

Response: Continued monitoring will be added to this alternative.

**19. Page 6-8, Section 6.2.1.3: Provide an explanation for why the reduction in mobility can't be quantified.**

This explanation will be provided.

**RISK ASSESSMENT (RA) REPORT**

**GENERAL COMMENTS**

**1. The Ecological Baseline Risk Assessment should address the entire Marine Base/Naval Air Station Complex. The ecological effects of hazardous waste sites are exerted on the immediate terrestrial environment, the adjacent aquatic system through stormwater runoff and possibly by groundwater impaction, and the New River Estuary. Piece-mealing the ecological risk assessment by individual sites, or groups, regardless of their connection in the ecosystems will result in an inadequate description of possible cumulative impacts. Therefore it is the recommendation of the Environmental Technical Assistance Group (ETAG) that a work plan be drafted, possibly by a work group including a representative with expertise in statistical methods, to address the environmental effects of the cumulative impacts of all the hazardous waste sites contained in the Camp Lejeune Military Reservation. This work group may choose to break the entire military reservation into units consisting of the New River Estuary, and the watersheds of the various tributaries of the New River contained on the military reservation. This work plan should address the environmental impact within the watersheds, and the combined impact on the New River Estuary, through the development of an Interim Ecological Risk Assessment document which would be periodically updated as additional information becomes available. Sampling plans designed to determine area of impacts and conducted during the appropriate seasons should be drafted and submitted for review. The end result, after the identification and adequate description of all sources, would be the Final Baseline Risk Assessment. This work plan should be submitted to the ETAG for review.**

Response: A single manageable study, with an areal extent of Camp Lejeune, could be designed but could never be given the required depth of study required to address all aspects. EPA's methodology on other large sites has been to "piece meal" the investigations in manageable portions and then pull it all together in the end. This approach will be utilized for MCB Camp Lejeune.

**2. Exact locations, relating to the four areas of contamination, of the water supply wells and residential housing in the Hadnot Point Industrial Area (HPIA) should be provided. Also, the discussion on the future development plans of the HPIA should be enhanced with formalized plans if they are available.**

Response: This information will be presented as requested.

**3. There is no discussion about the present or future uses of the surficial aquifer. This aquifer is a Class II-B, potential drinking water source, and is very heavily contaminated. This potential pathway should be evaluated in the BRA.**

Response: This information will be presented in the Draft Final report.

**SPECIFIC COMMENTS**

**1. Executive Summary, x, 1-1: Cleanup goals may be based on human health or to be protective of the environment.**

Response: We agree.

**2. Executive Summary, xi: The Baseline Risk Assessment should address exposure pathways which would result from the implementation of the no action alternative, in this case, the long-term effect of contaminated groundwater on aquatic and terrestrial systems.**

Response: We agree.

**3. Introduction, 1-1: The Baseline Risk Assessment must address the impacts of the hazardous waste site whether the effects occur on or offsite. Therefore the potential offsite effects must also be addressed.**

Response: No offsite effects are projected from the HPIA. Contaminant mapping to date shows that contamination is within the boundary of the operable unit. Contaminant migration is minimal with the removal of potable water pumping.

**4. The Baseline Risk Assessment cannot omit adjacent locations from the evaluation unless information exists to justify their exemption based on the lack of contamination or an existing estimate of their environmental effect. See General Comment 1.**

Response: See response to General Comment 1 and Specific Comment 3.

**5. Page 1-4: Figure 1-2 should reflect the entire HPIA area.**

Response: Figure 1-2 does reflect the entire HPIA operable unit.

**6. Page 1-6, Table 1-1, VERIFICATION STEP DESCRIPTION: Change "maximum contaminant level" to "maximum contaminant concentration" since the EPA-established MCL is not being referred to here.**

Response: The Draft Final shall reflect this change.

**7. Page 1-7: References are made to water supply wells which were taken offline due to groundwater contamination. The location of these wells should be plotted on a base map and presented in this report. Also, all wells used as groundwater point sources should be shown on this base map.**

Response: The Draft Final report will provide this information.

**8. Page 1-7, fifth paragraph: "Inorganics, including mercury, were detected...but were generally within EPA maximum...". What values represent "generally"?**

Response: This text will be provided.

**9. Pages 1-8, 1-9, Tables 1-2 and 1-3: A column should be added to these tables reflecting exactly which wells had these concentrations of contamination.**

Response: The Draft Final report will reflect this information.

**10. Page 1-9, Table 1-3: Maximum concentration of zinc is omitted from this table.**

Response: It will be added.

**11. Page 2-2, second paragraph: If only groundwater samples were obtained from Site 22, then the baseline risk assessment for this area is incomplete. It should be stated and shown (by the operable unit boundary) exactly what area Site 22 comprises.**

Response: The delineation of Site 22 is presented in Figure 1-3 of the RI report.

**12. Page 2-2, 2.1.1.1 Soil, second paragraph, last sentence: There is not data presented within Table 2-1 for any of the deeper soil samples (2 to 10 feet deep). However, as is referenced in this paragraph, there is a possibility of leaching**

**of contaminants into the groundwater. Data should be presented reflecting the potential for contaminant leaching.**

Response: From the series of investigations we've concluded that soil contamination is minimal and does not present an unacceptable risk, as calculated in the Risk Assessment. Therefore, the potential for leaching of soil contamination is not a factor.

**13. Page 2-2, 2.1.1.1: What is the justification for using only 10% of the soil samples for analysis using the Target Compound List and Target Analyte List? 10% equates to only one sample per area. Is this enough sampling data to characterize the area?**

Response: These contaminants were not the contaminants of concern at the time of scoping. The investigation was geared towards TCE and other VOCs which were detected in the soil gas and groundwater.

**14. Page 2-2, 2.1.1.2 Intermediate and Deep Groundwater: A map showing the location of the intermediate and deep monitor wells should be referenced or presented in this section.**

Response: This information will be provided.

**15. Page 2-2, 2.1.1.2: It is stated that the deep and intermediate well data was combined for determination of exposure concentrations because they tap the same aquifer. This is acceptable only if the maximum detected concentrations were used for these exposure concentrations. An average concentration of these two well types will not be acceptable.**

Response: Risks for the Castle Hayne aquifer will be calculated as requested in the comment.

**16. Page 2-7, Table 2-1: A column should be added which reflects maximum contamination levels or proposed corrective action levels (FR Friday July 27, 1990) for the contaminants listed. This would better reflect the magnitude of contamination. This information should be included, where appropriate, on every table found within this report.**

Response: This information will be included in the Draft Final report.

**17. Pages 2-7 through 2-13, Table 2-1 through 2-4: These tables should also provide the detection limits from each constituent in each media.**

Response: The tables will be revised to indicate the detection limits of each constituent.

**18. Page 2-11, 2.1.1.3 Water Supply Wells: A base map should be included within this report which shows the exact location of all wells used for this report. Where is the "zone of deep water contamination" and how has the Navy determined it?**

Response: The map will be provided as requested. With respect to the "zone of deep water contamination," the Navy plans to identify this zone during an the upcoming periodic sampling effort of the Castle Hayne aquifer.

**19. Page 2-11, 2.1.1.3: Water supply well #642 was considered background because it was the closest active well and not within the zone of deep water contamination. There is no mention as to whether or not this well is upgradient or downgradient of potential sources or if it is in the same aquifer.**

Response: This well is upgradient and draws from the Castle Hayne aquifer.

**20. Page 2-11, Section 2.1.1.3: This section refers to 9 water supply wells, but only 7 are listed. Only 4 are located in Figure 2-5 (#601, 602, 608, 634). All figures and listings should include all wells used as references.**

Response: This information will be provided.

**21. Pages 2-14 through 2-18, Table 2-5:**

**A. Units for the oral slope factors should be $(\mu g/l)^{-1}$ not $(\mu g/m^3)^{-1}$.**

**B. The toxicity values should be referenced as IRIS (Integrated Risk Information System) or HEAST (Health Effects Assessment Summary Table).**

**C. It should be indicated in this table that the carcinogenic slope factor (CSF) for benzo(a)pyrene (BeP) will be sued for all carcinogenic PAHs (polynuclear aromatic hydrocarbons). Also, the reference dose (RfD) for pyrene should be used for all non-carcinogenic PAHs without a RfD.**

**D. It should also be mentioned that even though sub-chronic RfDs are provided in the table that only the chronic Rfds will be used in the BRA.**

Response: The information requested will be included in the Draft Final report.

**22. Pages 2-20 and 2-21, Table 2-7: There should be a column on this table for MCLGs (Maximum Contaminant Level Goals).**

Response: The information requested will be included in the Draft Final report.

**23. Page 2-22, Table 2-8: Local background samples should be taken for comparison with sampling data.**

Response: No background information currently exists.

**24. Page 2-23, Section 2.2, para. 1: "or contribution of a large percentage of the total risk factors." What constitutes a large percentage?**

Response: This text will be revised for clarity.

**25. Page 2-28, Section 2.2.2: At what levels are PCB's present?**

Response: The text will state this.

**26. Page 2-28, Section 2.2.2, para. 2: Does this mean pesticides are not considered a threat?**

Response: Yes

**27. Page 2-29 and 30, last line on 2-29: Methylene chloride is not a laboratory solvent, methyl chloride is.**

Response: Methylene chloride is a laboratory solvent used in the preparation of glassware.

**28. Page 2-29, Section 2.2.24, para. 2: The phrase "...and it is not unexpected to detect..." does not address the actual concentration present. Are concentrations expected to be higher than background?**

Response: No

**29. Page 3-4, 3.1.1.4 Geohydrology: The second paragraph states that a potentiometric surface map cold not be generated for the deep aquifer, why not? Has the Navy given thought as to why water levels for the intermediate and deep aquifer are at the same levels as the shallow water levels?**

Response: This map, generated for the RI, will be incorporated. Water levels are not the same in the two aquifers.

**30. Page 3-8, 3.1.1.7 Water Supply Source, second paragraph: Were any of the original contaminated water supply wells sampled for this baseline risk assessment? Is there any current or on-going sampling schedule at MCE Camp Lejeune for drinking water wells that potentially could become contaminated with VOC's?**

Response: All previously contaminated water supply wells were resampled. No ongoing program exists, but one is in the planning stages.

**31. Page 3-8, 3.1.1.7: It is mentioned that the treatment process for the water supply system is sand filtration and lime softening. Several times throughout the BRA it is mentioned that the contaminated water supply wells are not a problem because it is treated before going into the distribution system. It should be explained how this treatment process will remove the various types of contaminants (i.e. volatile organics, semi-volatile organics, pesticides, and metals) which are in the groundwater.**

Response: The text does not assume that contaminated wells are not a problem due to treatment. Contaminated wells have been removed from the potable system. If additional contaminated wells are discovered, they will too be removed. The Marine Corps is preparing a testing program to monitor potable wells. The text is stating that contamination developing between sampling, prior to a well's removal from the system, can be treated in the existing treatment system.

**32. Page 3-12, 3.1.3 Potentially Exposed Wildlife and Aquatic Populations: What species is red gum? What is type 1 gum? The source of the water from the pipe should be described.**

Response: This information will be provided in the Draft Final report.

**33. Page 3-12, 3.1.3.1 Threatened/Endangered species and State Special Animals: The United States Fish and Wildlife Service and the appropriate state agency should be contacted for information concerning threatened or endangered species.**

Response: Appropriate agencies, including those referenced in the text, are routinely contacted during a wildlife investigation. These agencies were contacted during this investigation as is standard.

**34. Page 3-17, 3.2.3.1 Soil-to-Groundwater, second paragraph: The Navy cannot make this statement. The potential for contamination migration always exists and based on previous information an "impermeable layer" has not been shown to exist.**

Response: The text will be revised.

**35. Page 3-18, 3.2.2.4 Other Routes: All possible groundwater migration routes should be investigated before the Navy writes off this section (the Navy currently uses a groundwater irrigation system believed to be supplied from the deep aquifer to provide irrigation for the golf course). All points of water withdrawal from the deep aquifer should be identified to determine their impact on that aquifer.**

Response: All groundwater usages within the HPIA have been considered. The golf course referenced is approximately 3 miles away. Irrigation at that distance is not a factor in this investigation.

**36. Page 3-21, 3.3.1 Completed Human Exposure Pathways: The results of the water supply wells should be included as part of this section. This information would represent a "worst case" exposure pathway.**

Response: We disagree with the EPA on the development of the worst case exposure pathway scenario. The water samples collected were not representative of the water to which receptors would be exposed and would not realistically represent

conditions. In addition, it would be difficult to determine the actual source of the contamination.

**37. Page 3-23, Table 3-5: Groundwater wells used to generate this table could not be located in the report. Need to include a base map showing all wells used for this report. Reference is made to soils data collected from "HBSB" should this be HPSB"?**

Response: A map showing monitor well locations will be presented. HBSB should be HPSB.

**38. Page 3-25, 3.3.3.5 Estimation of Nonhuman Pathway-Specific Chemical Intakes: Reference is made to "earthworms or voles", is "voles" correct?**

Response: The text will be corrected.

**39. Page 6-1, second paragraph: Both short and long term exposure should be calculated and extrapolated for this report. Military personnel exposed for whatever time frames should be considered. Drinking water and/or surface (irrigation) water exposure should be calculated as worst case exposure values.**

Response: The calculations will be evaluated as requested.

## SITE ASSESSMENT REPORT FOR SITES 6, 48, AND 69

### GENERAL COMMENTS

**1. The EPA Environmental Technical Assistance Group (ETAG) members feel that a site such as the Marine Corps Base Camp LeJeune, with numerous hazardous waste sites, and a possibility of additional sites to be discovered, distributed throughout the military reservation, must be addressed in an systematic study which will adequately locate areas of contamination, describe the extent of the contamination, and evaluate the ecological effects of the contamination. If you have any questions, or wish to contact the ETAG members for further consultation, please do not hesitate to call Mr. Lynn H. Wellman at (404) 347-1586.**

Response: A single manageable study, with an areal extent of Camp Lejeune, could be designed but could never be given the required depth of study required to address all aspects. EPA's methodology on other large sites has been to "piece meal" the investigations in manageable portions and then pull it all together in the end. This approach will be utilized for MCB Camp Lejeune.

**2. The toxicity values (Table 6-5, 6-10), some of which are incorrect, serve no purpose since no risks are calculated. A more useful approach for a qualitative assessment would be to list the effect and target organ for each contaminant of concern in a table.**

Response: Tables 6-6 and 6-10 have been revised.

**3. Initial sampling in all media should be analyzed for the complete TCL/TAL.**

Response: These samples were collected and analyzed according to an EPA approved work plan.

**SPECIFIC COMMENTS**

**1. Page 1-5, 1.3 APPROACH AND SCOPE: Site 48 is not referenced in this section and needs to be added.**

Response: Site 48 will be added as necessary.

**2. Page 2-4, Site 6 - Lots 201 and 203, first paragraph: The acronym TCL is used and not stated in the "List of Acronyms and Abbreviations", also what compounds makeup this TCL list of chemicals?**

Response: This acronym will be added to the text. The compounds that make up this list will be included in the text.

**3. Page 2-5, Site 48 - MCAs New River Mercury Dump, second paragraph: EPA will not accept this one time attempt during the middle of winter (January 14 and 17, 1991) as representative of conditions at this site. The site should be reevaluated/resampled when it is anticipated that fish, crabs and other benthic organisms would be present.**

Response: See the draft Work Plan for RI/FS at Sites 6, 48, and 69 submitted to EPA Region IV on 1 December 1991.

**4. Page 2-6, Site 69 - Rifle Range Chemical Dump, third paragraph: EPA will not accept this one time attempt during the middle of winter (January 14 and 17, 1991) as representative of conditions at this site. The site should be reevaluated/resampled when it is anticipated that fish, crabs and other benthic organisms would be present.**

Response: This investigation will be completed at a later date if surface water and sediment sampling at the foot of the New River (downgradient of Site 69) indicate the presence of contaminants. Refer to the Work Plan for RI/FS at Sites 6, 48, and 69 submitted to EPA on 1 December 1991.

**5. Page 2-6, Supplemental Characterization Investigation: The species name for the oysters collected should be Crassostrea virginica, not Clostridius virginica. Please verify the species name of the mussel collected, Geukensia demissa.**

Response: The name of the species of mussel collected is correct. This species is typical from New England to northern Florida. The oyster species will be corrected.

**6. Page 5-1, 5.0 RESULTS OF INVESTIGATION: Could contamination have been masked or not detected by the presence of suspected laboratory cleaning chemicals and/or reagents?**

Response: The laboratory contaminants observed were generally below the reportable limit by the instrument and were therefore too small to mask other contaminants. These lab contaminants were generally not those of concern during the investigation.

**7. Page 5-1, 5.0 RESULTS OF INVESTIGATION, third paragraph: The abbreviation UICs is stated at this point and used henceforth throughout this report, but never again explained as to what the abbreviation stands for. Recommend that all abbreviations/acronyms be included in the list in the front of the report.**

Response: The acronym will be added and defined as requested.

**8. Page 6-2, 6-17, 6-22, 6-34, 6-46: Statements are made regarding the lack of information obtained in this round of sampling/reporting to make a qualified decision in both various parts of this section 6.0 and in the "Conclusions" sections. How is the Navy going to address the data gaps inferred in this report?**

Response: The Navy is currently preparing work plans for these areas to address the noted data gaps. The Draft Work Plan was submitted to EPA Region IV on 1 December 1991.

**9. Page 6-7, para. 1: Exposure scenarios should be considered for both current and future land uses in order to assess the reasonable maximum exposure (RME) for humans. Dermal and ingestion exposure to soil should be considered in the risk assessment since site areas are unpaved. This would apply to all exposure scenarios.**

Response: Dermal contact and ingestion of soils will be evaluated in the full risk assessment as data is available following the proposed RI.

**10. Page 5-18, para. 2, 6: Justification for precluding possible residential development in the future is inadequate. Many residences are found along railroads and along major roads. Also it is unclear as to whether this assumption for future land use is meant to apply to sites 45 and 69 as well as site 6.**

Response: The MCB Camp Lejeune Master Plan does not show these as being areas slated for development.

**11. Page 6-42, 6.3 RECOMMENDATIONS: Statements are made regarding the lack of information obtained in this round of sampling/reporting to make a qualified decision in both various parts of this Section 6.0 and in the "Conclusions" sections.**

**How is the Navy going to address the data gaps inferred in this report?**

Response: The Navy will address the data gaps in the upcoming RI/FS for sites 6, 48 and 69.

(804) 445-9777

6280
1812:DJC

From: Commander, Atlantic Division, Naval Facilities Engineering Command

Subj: UPDATE ON EPA STORM WATER DISCHARGE REGULATIONS AND NAVY GROUP APPLICATIONS

Ref: (a) NPDES Permit Application Regulations for Storm Water Discharges, Final Rule, Federal Register, 16 Nov 90
(b) NPDES Permit Application Regulations for Storm Water Discharges; Application Deadline for Group Applications - Final Rule and Application Deadlines - Proposed Rule, Federal Register, 21 Mar 91
(c) NPDES Permit Application Regulations for Storm Water Discharges; Application Deadline for Individual Applications - Final Rule and Application Deadlines - Proposed Rule, Federal Register, 05 Nov 91

1. EPA has revised portions of the storm water discharge regulations published in reference (a) and amended in reference (b). Specifically, in reference (c), EPA has extended the deadline for submission of individual applications from 18 November 91 to 1 October 1992. Activities that already have storm water discharges addressed in NPDES permits that expire on or after 18 May 92 must prepare individual storm water discharge applications 180 days before reissuance of their permit. After 1 October 92, all construction sites greater than 5 acres will require an individual storm water discharge permit. The regulatory agencies are in the process of developing general permits for these construction sites. Additional guidance on application procedures will be issued by LANTNAVFACENGCOM Code 1812 when the regulatory agencies finalize procedures.

2. In reference (c), EPA has also proposed to extend the deadline for submission of Part II of group applications from 18 May 1992 to 1 October 1992. The proposed rule change would also establish 1 October 1992 as the deadline for submission of individual applications for facilities that applied under a group application that was rejected. This change would mean that rejected group applicants would not have one year to file an individual application as was stipulated in the original regulation. The Navy/Marine Corps group application is still under review by EPA. It is anticipated that the groups will be approved but EPA will probably require additional information. Also, some of the groupings will be reorganized because some activities have elected to receive coverage under a general permits and some reserve centers are being added to the group.

3. Any questions concerning this matter should be addressed to Dave Cotnoir, AV 565-9777, commercial (804)445-9777.

J. R. BAILEY
By direction

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NAVAVNDEPOT CHERRY PT NC - Part II, List F.1
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NAVORDSTA LOUISVILLE KY - Part II, List H.5
NAVSHIPYD NORFOLK VA - Part II, List H.6
NAVHOSP PORTSMOUTH VA - Part II, List J.7
NAVSECGRUACT NORTHWEST VA - Part II, List K.1
NAVRADSTA R SUGAR GROVE WV - Part II, List L.2
MCAS NEW RIVER NC - Part II, List T.2
MCAS CHERRY POINT NC - Part II, List T.3
CG MCB CAMP LEJEUNE NC - Part II, List T.6
MCRS LOUISVILLE KY - Part II, List T.9
MCRS RICHMOND VA - Part II, List T.10
MCRS CHARLESTON WV - Part II, List T.11
MCRTC BALTIMORE MD - Part II, List T.12
MCRTC LYNCHBURG VA - Part II, List T.13
MCRTC RICHMOND VA - Part II, List T.14
MCRTC ROANOKE VA - Part II, List T.15
LANTFLTWPNTRAFAC ROOSEVELT ROADS RQ - Part III, List A.9
NAVSTA ROOSEVELT ROADS RQ - Part III, List A.10
NAVSECGRUACT SABANA SECA RQ - Part III, List G.8