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Mr. Paul E. Herman, P.E.
VDEQ
629 E. Main Street
Richmond, Virginia 23219

Subject: Responses to Comments - Draft Remedial Investigation/Human Health Risk Assessment for Site 7
Naval Amphibious Base (NAB) Little Creek, Virginia Beach, Virginia
Navy CLEAN II Program, N62470-95-D-6007, Contract Task Order 0159

Dear Mr. Herman:

CH2M HILL has prepared the following responses to VDEQ comments of May 9, 2003 on the Draft Remedial Investigation/Human Health Risk Assessment for Site 7, NAB Little Creek, Virginia Beach, Virginia. Responses to comments are addressed herein.

1. **Section 2.1, page 2-2, last paragraph, Comment:** The remedial action discussed in this paragraph was performed as directed by the Decision Document developed for this site prior to its placement on the NPL. Please provide this clarification and explain why parts of the landfill were covered with 6 inches of topsoil in 1994.

   Response: The text will be revised to clarify these comments.

2. **Section 2.1.2, General Comment:** The assertion that groundwater flows north to Little Creek Cove may not be entirely correct. The presence of the perennial canal along the western edge of site 7 provides a conduit for groundwater, as does the small pond in the northeast portion of the site. In the vicinity of the canal and the pond, groundwater would be expected to flow toward these water bodies unless there is an impermeable barrier along the canal and pond's side slope and bottom. Absent such a barrier, there is an interface between the groundwater and the surface water in the vicinity these water bodies. In fact, a tidal wedge (that may project from the canal) has been observed at other coastal NPL facilities where tidal fluctuations were documented in water table wells as far as 200 feet inland. Tidal fluctuations in the pond are acknowledged elsewhere in this report. Please amend the report, and Figure 2-2 in particular, to address this concern or provide additional data showing that this type of groundwater movement is not happening at site 7.

Response: Groundwater in the Columbia Aquifer beneath Site 7 flows predominantly north towards the low-lying marsh and Little Creek Cove as indicated in Figure 2-2. A tidal study was conducted as part of the 1994 RI by FWES (Appendix A) and the results indicated that groundwater may flow toward the tidally influenced western canal in localized areas and that the rate of groundwater to surface water discharge increases in response to a low tide. The text will be revised to better explain the tidal nature of the western canal and pond and the likelihood of groundwater flow toward these water bodies.

3. **Section 3.2, General Comment:** All monitoring data should be compared to the background 95% upper tolerance level (UTL). Those parameters whose concentrations exceed the background 95% UTL should have their cell outlined in the table (Tables 3-1 through 3-5). Please amend the tables and the summary of the analytical results accordingly.

Response: Background 95% UTLs for soil and groundwater have been established for NAB Little Creek and the applicable tables and text will be amended to reflect the UTL exceedances.

4. **Section 4.2.2, page 4-6, first bullet, Comment:** Please explain why surface water data were not compared to the applicable Virginia Water Quality Standard for Human Health (Standard). Please include this explanation in this bullet or include the appropriate Standard in the selection of COPC process.

Response: Following USEPA Region III risk assessment practice, the surface water data were screened against the tap water risk-based concentration (RBC) criteria multiplied by ten. The surface water in the water body features at Site 7 will not be used as a drinking water supply and the only water body likely to be used for fishing is Little Creek Cove. The Virginia Water Quality Standards for Human Health are based on water and/or fish ingestion. The pathways evaluated for the surface water bodies at Site 7 were incidental ingestion and dermal contact, which are not the same as those included in the Virginia Water Quality Standards for Human Health. Therefore, the most realistic and applicable screening values to apply were the tap water RBCs multiplied by ten.

5. **Appendix E, Table 1, pages 2 and 3 of 7, Comment:** Please delete the phrase "(only by boat)" from the "Rationale for Selection or Exclusion of Exposure Pathway" column for the portions of the Table addressing surface water and sediment. If the trespasser/visitor can gain access to the site and be exposed to surface soils they could also enter the pond or either canal without using a boat. On page 3 of 7, the word wading is misspelled in the "Rationale" column.

Response: Appendix E, Table 1 will be amended to reflect this comment. Site 7 is fenced off, but may be accessed via swimming from a different access point.

6. **Section 4.2.1.1, Comment:** The text references Figures 3-4 and 3-5 as containing the sample locations for surface and sub-surface soil; however, these figures show exceedances only. Figure 2-3 shows all soil sample locations.

   Response: The figure references will be corrected in the text.

7. **General Comment:** Locating the data for each subsection was difficult. In the future, a summary table for each area (i.e. weigh station area, perimeter of the site) would be helpful in reviewing the risk assessment portion of the report.

   Response: Comment noted, please see Table 4-1 for the samples associated with each area.

8. **Section 4.5.7, Future Resident Adult, Comment:** Note the HQ for the target organs CNS and GI tract were greater than one for this receptor. Future Resident Child: The target organs CNS, skin, vascular and GI tract had HQs greater than one. The text should be amended to include a discussion of the exceedances rather than stating that there are no unacceptable health risks to this receptor. Locating the data for each subsection was difficult. In the future, a summary table for each area (i.e. weigh station area, perimeter of the site) would be helpful in reviewing the risk assessment portion of the report.

   Response: The text will be amended to reflect that the target organs CNS and GI tract had HQs greater than one for the adult resident based on combined exposure to all media. The text will also be revised to state that the target organs CNS, skin, vascular, and GI tract had HQs greater than one for the child resident based on combined exposure to all media.

9. **In addition, General Comment:** Explain why groundwater data were not collected from underneath the landfill cap.

   Response: Typically, monitoring wells are not installed within the identified limits of a landfill. In accordance with Virginia Solid Waste Management Regulations (VSWMR) 9VAC20-80-250-14d, a groundwater monitoring system for a sanitary landfill must consist of at least one-upgradient and three down-gradient monitoring wells. It is not common practice to monitor groundwater quality from underneath a landfill. Groundwater characteristics for a landfill are based (per VSWMR) upon the upgradient monitoring well data being statistically compared to downgradient monitoring well data of groundwater that has presumably passed through the

landfill. Site 7 was used as the sanitary landfill for NAB Little Creek from approximately 1962 to 1979.

If you have any questions concerning these comments, please do not hesitate to contact me at (757)460-3734, extension 12.

Sincerely,

CH2M HILL

Paul Landin, P.E.
Activity Manager

cc: Mr. Durwood Willis/VDEQ
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