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COMMONWEALTH of VIRGINIA

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Secretary of Natural Resources

Mrs. Dawn Hayes, P.E.
Naval Facilities Engineering Command
Atlantic Division Headquarters, Code EV22
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Subject: Naval Amphibious Base Little Creek
*Remedial Investigation/Human Health and Ecological Risk Assessment
SWMU 7, Small Boats Sandblasting Yard*

Dear Mrs. Hayes:

The Virginia Department of Environmental Quality (VDEQ), Office of Federal Facilities Restoration has reviewed the *Draft Remedial Investigation/Human Health and Ecological Risk Assessment for SWMU 7, Small Boats Sandblasting Yard* dated November 2003. Based on the VDEQ review we offer the following comments:

1. Executive Summary, Page V: The first three paragraphs refer to SWMU 8 hydrogeologic characteristics. Amend this text to address the hydrogeologic characteristics for SWMU 7.
2. Section 2.3, Page 2-2: Did the EP Toxicity testing conducted on the ABM material show any toxicity? If so, what were the results? While the ABM that was tested has been removed from the site, information concerning the toxicity of that material may be of use during the evaluation of sediment, groundwater, and subsurface soils at the site.
3. Section 2.4.1, Page 2-4: Change "Source" to "State" in the last sentence of this Section.
4. Section 2.4.5, Page 2-5: Appendix A contains analytical data of samples collected in 2002 and does not present any SI data in support of the "detected analytes" summarized in Tables 2-4 through 2-7.
5. Figure 4-7: The water level elevation for LW07-MW01 is -0.46 yet the water table surface line at that point does not drop below the 0.0 mean sea level line. Either the water table line or the water table level at this point is in error. Correct accordingly.
6. Figure 4-8 and 4-9: Figure 4-8 shows LW07-MW03 to be -0.72 while Figure 4-9 shows the level for the same point to be 0.72. Which is correct?
7. Section 5.1.5, Page 5-4: The first paragraph references data gathered at SWMU 8, soil sample locations at SWMU 7, and established screening criteria exceedances at SWMU 8. Should they all be referring to SWMU 7 and if not, what is the basis for this comparison?
8. Section 5.2.1.1, Table 5-3, and Figure 5-1: Why aren't the PAHs that exceed ecological and background screening levels, as shown in Table 5-3, included in the tables provided in Figure 5-1?

9. Tables 5-3: The iron concentration for LW07-SO20 (23,900) should be highlighted as it exceeds the RBC residential soil value of 23,000.
10. Section 5.2.3: The last statement in this Section is not accurate. According to Table 5-5, dissolved cobalt in LW07-MW02 (32.7J) is greater than the value reported for LW07-MW01 (28.2J). Both values exceed the Background 95% UTL for cobalt of 1.9. Either modify the statement to address the cobalt exceedance or delete the sentence.
11. Section 5.2.4.6: The first paragraph discusses subsurface sediment data that exceeds the ecological screening criteria. However, Section 5.2.4.4 states that subsurface sediment is "not being evaluated as a potential pathway for impacts to ecological receptors". Amend one Section such that it doesn't contradict the other.
12. Figure 5-4: Several of the tables within the figure do not contain the complete list of analytes that exceed the screening criteria. For example, benzo(a)pyrene and arsenic are absent in listings for B5, D5 (iron, too), F3, and F5. Review all sub-tables in all Figures to ensure they list all exceedances of screening criteria.
13. Section 6.1.3.2: The fifth paragraph mentions trimethylarsine gas. Please include additional information about this compounds toxicity and it's ability or inability to migrate indoors via foundations.
14. Section 6.1.4: SWMU 8 and its Outfalls 16 and 17 are mentioned. Is the content of this Section correct?
15. Section 6.2.3: Suggest deleting the last sentence of the last paragraph as the tidal influence on coastal groundwater may be evident several hundred feet inland. The tidal surge, while short in duration, occurs twice daily and may have the effect of washing the coastal soils and impacting coastal groundwater contaminant levels.
16. Table 6.1: Why aren't chromium, lead, vanadium and zinc included in the list of groundwater COIs? Like aluminum, a groundwater COI, these analytes exceeded their respective background 95% UTL screening criteria. Also, why isn't nickel included as a COI for surface sediment considering its exceedances of the ecological screening criteria at K5 and M3?
17. Section 9.6.2, last two sentences of the first paragraph: How does: a.) The presence of manganese in groundwater in excess of the 95% background UTL and, b.) The absence of arsenic in soil at concentrations in excess of the 95% background UTL, justify the conclusion that "arsenic in groundwater does not appear to be the result of a site release"? Include additional justification for this conclusion.
18. Appendix D, Table 3: Is there a figure available that shows the locations of the sample stations listed in the table? If so, please include it in this appendix.

The VDEQ toxicologist offers the comments below.

19. The October 2003 Region RBC Table was released before this report was submitted. The updated RBCs and toxicity factors should be incorporated into the report.
20. Section 7.2.2.1. Please include a reference to Figure 3-1 for the RI soil sample locations. Figure 2-4 shows the outfalls at SWMU 7, not sampling locations. The text states that surface soil samples were collected from 6 locations, which contradicts Section 5.2.1 which states that eleven soil samples were collected in the RI. Table A-3 shows data for 11 samples.
21. Table 7-1 lists SI samples as being used in the risk assessment; however, I was unable to locate any 2000 SI analytical data. Appendix A appears to contain only 2002 RI data.
22. Section 7.2.4. USEPA guidance states that the average lead concentration should be used in the IEUBK model but that the maximum concentration should be used for screening. VDEQ policy is to use the maximum lead concentration for screening.

23. Table 4.5 RME. VDEQ default value for construction workers' skin surface area is 3,300 cm² based on head, hands and forearms (EPA 1997), which results in an HQ<1 for construction workers with dermal exposure to groundwater (Table 7.13 RME). Also, note that the June 2003 Region III Technical Guidance Manual (Updated Dermal Exposure Assessment Guidance) recommends that the median showering and bathing times be used as defaults until RAGS E is final. Therefore, the shower time for adults=0.20 hr/event and children=0.33 hr/event. This will result in an HQ<1 for resident adults and an HQ=1 for resident children from dermal exposure to groundwater (Tables 7.9 and 7.10 RME).
24. Table 4.7 RME. Please use RAGS E guidance when applicable. Exhibit 3-3 lists 0.3 as the 95th percentile adherence factor for construction workers; however, for conservatism, VDEQ prefers the use of the utility worker value (0.9) since future construction activities may include excavation. VDEQ prefers the use of 0.2 as the SSAF for children playing in wet soil (Exhibit 3-3). RAGS E lists a default value of 2,800 cm² for skin surface area for children exposed to soil (Exhibit 3-5).
25. Tables 2.1, 2.3, 2.4, 2.5 and 2.7. Note the RBCs for vanadium were reduced resulting in exceedances of vanadium in surface soil, total soil, surface sediment, total sediment and groundwater (upper aquifer-tap water and excavation pit). Vanadium should be added to the COPC list for these media and carried through the quantitative risk assessment.
26. Table 2.6. Groundwater concentrations should not be screened against ambient air RBCs. Air concentrations are screened against air RBCs and groundwater concentrations are screened against tap water RBCs.
27. Table 3.1 RME. Table A-3 shows higher maximum concentrations of aluminum, chromium, iron and manganese were detected in SS17 that were not used as the maximum concentration for screening or UCL calculations. Please explain why this data was not included.
28. Tables 6.1 and 6.2 were duplicated in Appendix A.
29. Table 7.13 RME. Construction workers are not assumed to shower on-site. Please remove "water vapors at showerhead" under exposure point. A 2-film volatilization model was used, not the shower model. See comment 5. VDEQ calculated an HQ=0.5 for dermal exposure to groundwater which results in a total HQ<1 for construction workers. VDEQ also evaluated incidental ingestion and inhalation risks to construction workers in a trench and found that risks were within or below the target range.

If you have any questions concerning these comments, please give me a call at (804) 698-4464.

Sincerely,



Paul E. Herman, P.E.

Remediation Project Manager

cc: NABLC Tier 1 (electronic copy)
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