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March 19, 2004

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**Subject: Responses to Comments – Field Site Screening Explanation of Results Technical Memorandum  
Appendix B Sites –AOCs H, I, J, and Site 14  
Naval Amphibious Base Little Creek, Virginia Beach, Virginia**

Dear Mr. Herman:

CH2M HILL has prepared the following responses to VDEQ comments dated December 23, 2003 on the Field Site Screening Explanation of Results Technical Memorandum for Appendix B Sites – AOCs, H, I, J, and Site 14 at the Naval Amphibious Base (NAB) Little Creek, Virginia Beach, Virginia. Responses to comments are addressed below and have been reflected in the Final Close Out Report for Appendix B Sites – AOCs H, I, J, and Site 14.

1. **General Comment:** AOC J, Page 7, Subsurface Soil: The 2<sup>nd</sup> and 3<sup>rd</sup> sentences in the 1<sup>st</sup> paragraph refer to "surface" soil. Should this read "subsurface" soil.

**Response:** Comment noted. The 2<sup>nd</sup> and 3<sup>rd</sup> sentences in the first paragraph have been revised to read: "Table 8 list all detected constituents in subsurface soil and compares the results to screening criteria. Figure 11 shows the subsurface soil sample locations and results exceeding screening criteria".

2. **General Comment:** AOC H, Page 9: This section indicates one surface and seven subsurface soil samples were collected. However, the "Field Activities" and "Data Evaluation" sections indicate four surface soil samples and four subsurface soil samples were collected at AOC H. Which is correct? Attachment A, Table A-1 includes data from all four samples and shows that at least one compound was detected in each sample. Please explain why Table 12 for AOC H (COPC selection table) only includes detections from SS-103 when Figure 8 and Table A-1 show four samples were collected.

**Response:** The work plan indicated that where concrete or asphalt ground cover is present, the bottom of the ground cover layer would be considered "ground surface". Therefore, in the data evaluation portion of the Draft Technical Memorandum, four surface soil samples (three below the asphalt layer and one in a grassy median), and four subsurface soil samples were collected at AOC H. However, the human health screening process classifies all samples collected where exposure pathways are not directly at the true ground surface as a subsurface sample. With the exception of SS103, collected in a grassy median, the soil samples collected at AOC H were from beneath asphalt ground cover. Therefore, only SS103 was evaluated as a true surface soil in the human health risk screening. The remaining three surface soil samples and all four subsurface soil samples were evaluated as subsurface soil in the human health risk screening.

3. **General Comment:** AOC H, Page 12: The absence of comparable data for acetophenone prevented assessment of that chemical leading to uncertainty in the overall assessment of the site. What chemical and physical characteristics of this SVOC justify recommending "no further action" in the last paragraph? Please include this justification in this section.

**Response:** While no ecological soil screening values were available for acetophenone, limited available data for fish (water exposures) and mammals (ingestion exposures) suggest that this chemical has low toxicity to ecological receptors. For example, fish LC50 values exceed 100 mg/L and no adverse effects to rats were observed in chronic ingestion studies (30 days) at doses exceeding 100 mg/kg/day (Verschueren 1983). Also, based upon this uncertainty, additional research on acetophenone was conducted. The findings of the research indicated acetophenone in a variety of products such as soaps used to wash golf carts, cleansers used in the adjacent buildings, soap from nearby bathrooms, tear gas used by SEALS, and solvents to clean parts. The compound is classified in Group D; not classifiable as to human carcinogenicity based on no human and no animal data (UESPA, December 1999).

*Verschueren, K. 1983. Handbook of environmental data on organic chemicals, second edition. Van Nostrand Reinhold Co, New York.*

*(Environmental Protection Agency. Integrated Risk Information System (IRIS) on Acetophenone. National Center for Environmental Assessment, Office of Research and Development, Washington, D.C. 1999.)*

4. **General Comment:** Table 2 through 11: Please add a footnote to each to explain that "bolding" indicates a detection that exceeded the background UTL.

**Response:** Values bolded in the detection tables (Table 2 through Table 11) indicate an exceedance of the NAB Little Creek basewide background UTL. The shaded

values indicate the result exceeded regulatory screening criteria. If the value is shaded and bolded, the result exceeded both the background UTL and the regulatory screening value for the specified constituent. A footnote explaining the bolded detected constituents has been added to Tables 2 through 11.

5. **General Comment:** Tables 2, 3, 7, 8, 10 and 11: The industrial and residential soil RBCs for vanadium were changed on the October 2003 Region III RBC Table but were not updated in the exceedance tables. The new values are: industrial soil- 310 mg/kg and residential soil- 23 mg/kg.

**Response:** Comment noted. All RBCs have been updated for the final close-out report for the Appendix B sites.

6. **General Comment:** Table 12: Please change the screening toxicity value for vanadium to 2.3 mg/kg. The other COPC tables have the correct value. Also, to be conservative, VDEQ uses the cadmium (water) RBC for screening all media.

**Response:** Comment noted. The toxicity value for vanadium will be changed to 2.3 mg/kg in surface soil occurrence, distribution, and selection for AOC H.

7. **General Comment:** Table 13, Footnote 4: VDEQ uses pyrene as the surrogate for acenaphthylene.

**Response:** Comment Noted. The RBC value for pyrene (235 mg/kg) will be used as a surrogate for phenanthrene, acenaphthylene, and benzo(g,h,i)perylene (Table 4-2 of the Final Close-Out Report).

8. **General Comment:** Table 19: Inorganics are not included in the table. Table A-6 clearly shows that inorganics were detected in Site 14 surface soil samples.

**Response:** Table 19 discussion reflects constituents detected during previous investigations (RRRS) at Site 14, and were treated as true surface soil samples in the human health risk screening. The data collected during the 2003 Appendix B investigations is shown on Table 20 including both surface and subsurface soil since these locations were collected beneath the asphalt cover. Inorganics are included in Table 20.

9. **General Comment:** Table 20: Benzo(a)pyrene should be shaded since it was retained as a COPC.

**Response:** Comment noted. Benzo (a) pyrene has been shaded in the Final Close Out Report produced for the Appendix B Sites: AOC H, AOC I, AOC J, and Site 14.

10. **General Comment:** Figure 11: Antimony also had exceedances at AOC J but is not shown in the figure. Please explain which exceedances the figures are supposed to be showing because arsenic was not retained as a COPC in AOC J subsurface soils due to background comparison. Antimony was retained and is not shown on the figure at all. Also, there is no mention of antimony in the text on page 7 for AOC J. Page 10 states that antimony is not associated with a CERCLA release and therefore not evaluated. In this case, antimony exceeded the maximum background and should be discussed further.

**Response:** Soil data were compared to the October 2003 USEPA Region III RBCs for residential soil in both the field evaluation screening and the human health risk screening. However, the RBCs that are based on noncarcinogenic effects were divided by 10 to account for exposure to multiple constituents in the human health risk screening. The data evaluation portion of the Draft Technical Memorandum did not incorporate adjusted RBC values for identification of potential contaminants of concern. Data on Figure 11 was compared to screening values to evaluate nature and extent only. The data evaluation section of the Final Close-Out report for Appendix B Sites AOC H, AOC I, AOC J, and Site 14 has been revised discuss results compared to adjusted RBC values based on noncarcinogenic effects for consistency. All figures and tables associated with the data evaluation section have also been updated to reflect adjusted RBC values.

11. **General Comment:** Figure 12: Benzo(a)pyrene should be shown on Figure 13 with the subsurface soil exceedances.

**Response:** Several "surface soil" samples at Site 14 were actually collected beneath the asphalt ground surface cover. Benzo(a)pyrene in SS106 exceeded the RBC soil residential screening criteria. However, for human health exposure screening, this location is considered to be subsurface because the actual sample was collected beneath the asphalt and not at ground surface and an exposure pathway is not present. Sample SS106 was considered a surface soil sample in the data evaluation portion of the Draft Technical Memorandum and is shown on Figure 12.

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If you have any questions concerning these comments, please do not hesitate to contact me at (757)460-3734, extension 17.

Sincerely,

CH2M HILL



Paul Landin  
Activity Manager

cc: Ms. Dawn Hayes, P.E./LANTDIV  
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