Section : 12.01
Site 20903-5640 (White Oak)
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NSWC WHITE OAK
5090.3a

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

October 13, 1999

Mr. Walter Legg
Engineering Field Activity Chesapeake
Washington Navy Yard, Building 212
901 M Street, S.E.
Washington, DC 20374-5018

Re: Review of Draft RCRA Facility Investigation for Site 11 for the Former Naval Surface Warfare Center

Dear Mr. Legg:

The United States Environmental Protection Agency Region III has reviewed the above report and has the following comments:

GENERAL COMMENTS

1. The RFI for Site 11 contains a summary and conclusion specific to the human health risk assessment (HHRA). An overall RFI summary and conclusion should be provided as an additional section of the report. This section should contain information summarizing the nature and extent of contamination within the subsurface soil, groundwater, surface water, and sediment. A summary should also be provided for the contaminant fate and transport at Site 11. The conclusion should incorporate this information, as well as the HHRA conclusion. Additionally, a discussion on the data limitations encountered at Site 11 is needed.

   Following the summary and conclusion, recommended actions or preliminary remedial action objectives for Site 11 is needed.

2. The extent of groundwater contamination at Site 11 is not known at this time. The horizontal and vertical extents of the plume need to be quantified. To define the horizontal extent of the contaminant plume, additional wells should be installed near the suspected leading edge of the plume. It is recommended that additional wells be installed northeast of 11GW70D, 11GW104, and 11PZ64, and north of 11GW29 and 11GW109.

   To characterize the vertical extent of contamination, the depths of the present monitoring wells need to be analyzed in further detail. Various levels of contamination are detected in both the saprolite and bedrock geologic layers. The analysis of present well depths will help determine the vertical extent of the plume, as well as determine the requirements for new well installations.

The extent of contaminant migration between the saprolite and bedrock layers should also be investigated. The possible migration of contaminants between the saprolite and bedrock aquifers is an important part of contaminant fate and transport at Site 11. The installation of well clusters would help delineate the groundwater contaminant plume.

3. As the BCT is looking at OU-1 in a watershed paradigm, perhaps the BCT consider to view the western portion of White Oak in this manner. It would seem with the likelihood of potential multiple small source areas that this approach would expedite efforts.

4. The extent of surface water and sediment contamination is unknown. It is recommended that additional samples be collected downstream of the existing sample locations. It is suggested that additional samples be collected northeast of 11SW/SD101 to determine the extent of PCB contamination along this intermittent stream. Additional samples should be collected downstream (southeast) of 11SW/SD102 to determine the extent of arsenic contamination.

5. The background screen in the human health risk assessment employs the use of the Wilcoxon Rank Sum Test at the 80 percent confidence level. An 80 percent confidence level is not appropriate for use at the screening level. The text avers that the 80 percent level of confidence (alpha level of 0.2) is more stringent than the 95 percent level of confidence (alpha level of 0.05). This is incorrect. If, as stated in the text, that the hypotheses are switched, the alpha level would remain the same but the calculation would be performed at the 1-alpha level. The alpha level itself should not change. A more stringent confidence level to reduce the level of uncertainty, such as the 95 percent or 99 percent (alpha level of 0.05 or 0.01) confidence level, should be used.

   Also, it is unclear what the null hypothesis is. Sections 7.1.2.4 and 7.5.2 do not agree with each other. Please clarify this discrepancy.

6. The RFI did not focus on surface soil; surface soil samples were not taken due to the assumption that disposal occurred in wells and not via the ground. This assumes that spills or leaks of contaminated material did not occur. It is likely that contamination of the surface soil occurred through site activities, such as spills or leaks, associated with the industrial wastewater disposal area. Also, because subsurface soil samples indicated the presence of contaminants that were not in groundwater, it seems that surface and subsurface soils are contaminated through site activities other than disposal through wells. Therefore, surface soil should be characterized through sampling or provide more detailed justification why surface soil samples were not taken.

7. The report does not contain an ecological risk assessment. Provide a narrative explaining the rationale why an ecological risk assessment will not be included in this report, i.e., refer to the basewide ecological risk assessment currently being developed for White Oak.

8. This report states that metals, acids, chlorinated and non-chlorinated solvents, alcohols, lead, and organic explosive compounds were disposed at Site 11. Thus, the source of the PCB contamination found in the sediment is not the leaching wells. The report suggests

that the PCB contamination is due to nearby storage of transformers, but further investigation is warranted. To locate the PCB source, surface soil samples are justified. Surface soil samples should be collected upgradient of the intermittent stream, within possible runoff pathways, and within the transformer storage area.

9. Groundwater samples were collected from piezometers at four locations. It should be noted that EPA Region III does not recognize piezometer samples as appropriate data for use in risk assessment. The text should be revised to state how these groundwater samples were used in the RFI investigation. Note that Table 7-3, it appears that piezometer results were used for screening of PCOCs. This should removed.

10. Frequent reference is made within the report to the Removal Action conducted in 1996. The leaching wells that were removed should be cited in the text and identified on the appropriate figure.

11. It is unclear if leaching wells 8, 9, and 10 were properly located. Section 2.2.1 states that the wells were not located during excavation based on site maps, but that they were successfully located as the result of geophysical surveys. However, Section 2.2.8 states that leaching well 10, and the associated piping, could not be located during test pit operations. The discrepancy in the text should be clarified to state if these wells were properly located.

12. Frequency of detection is used as a screening tool for the human health risk assessment. While eliminating chemicals with less than five percent frequency of detection is accepted, this methodology should include an analysis and discussion of the chemicals that are eliminated to ensure that hot spots are not disregarded. The document does not include a discussion of this nature. The document should include a discussion of the chemicals that were eliminated on the basis of frequency of detection to ensure that potential hot spots were not inadvertently dismissed.

13. Although the table formats follow the Risk Assessment Guidance for Superfund Volume 1, Part D (RAGS D) (EPA, 1998) format, the RAGS D table 3s, which includes the selection of the exposure point concentration (EPCs), are not provided. Tables that correspond to the RAGS D Table 3s should be included to show the selection of the EPCs for each medium.

14. The parameters and equations used in the Foster & Chrostowski Model should be included in the report. All results must be reproduced. The EPA suggests including the model and parameters used to calculate risk in an Appendix.

15. The report should include the model and/or conversions used to derive the Chemical Concentration in Air (C_{air}) for groundwater for the following receptors: maintenance/utility workers, full time workers, adult and child resident, and day care children. All results must be reproduced. In addition, all air models must be reviewed by EPA's Air Models Specialist, Patricia Flores-Brown. The EPA suggests including the model, conversions, and parameters in an Appendix.

16. Appendix J includes copies (with some additional information) of the exact tables included in the report. The EPA suggests not reproducing these tables in the Appendix. The Human Health Risk Assessment Appendix (or Supplemental Tables) should only include the information that cannot be included in the standardized tables.

17. A better examination of the history, use and location of the 13 leaching wells would facilitate a better understanding and direction to the investigation. Unfortunately from the way in which the investigation was done it looks like there are at least 13 sites requiring investigation. While I disagree with breaking it up into 13 separate site, the approach used in the investigation in regards to the nature and extent of contamination took this path. A broader look at the impacts of the leaching wells needs to be made.

18. An inventory of the leaching wells should be undertaken so that their condition and operational capacity is understood. The text refers to several of the wells be filled with concrete. Are there any of the leaching wells which remain operational. Has the bottom of any of the leaching wells ever had its soil or bottoms sampled?

19. As there appears to be a lot of ground covered by the investigation it behooves the investigation to conduct a thorough assessment of background, specifically this should be done in regards to inorganic constituents as manganese appears to be a problems as does arsenic. Additionally without a sufficient view of background conditions its difficult to determine if the leaching wells are a source of the contamination or if there is some other potential source. This falls back to the lack of determination of the extent of the contamination in a areal perspective. Additionally, there is insufficient determination of the vertical extent of contamination.

SPECIFIC COMMENTS

1. *Section 2.2.2, page 2-2, paragraph 3.* This section discusses the monitoring well installation, but no reference is made to the depth of the monitoring wells. Based on the unknown extent of contamination, a discussion should be added to the text about the depth of well installation.

2. *Section 3.7, page 3-4, paragraph 2.* This paragraph discusses the utilization of slug tests to determine hydraulic conductivity. The last two sentences reference a hydraulic conductivity value from a previous RI for the saprolite, but the value stated is inconsistent. This discrepancy should be corrected in the text.

3. *Section 4.1, page 4-1.* The sections referenced within this section appear to be misnumbered. The text should be revised accordingly.

4. *Section 4.2.5, page 4-4, paragraph 6.* This paragraph addresses the collection of field duplicates. It states that the 10 percent frequency criterion was not maintained for the aqueous samples. An explanation should be added to the text detailing why the criterion could not be met.

5. *Section 5.2, page 5-2, paragraph 3.* This paragraph names the 16 VOCs detected in the groundwater samples. However, 1,1,1-trichloroethane is not listed, but it is stated that it was detected in one sample. The text should be modified to correct this discrepancy.

6. *Section 5.2, page 5-3, paragraph 5.* This paragraph states "the maximum concentration of ammonium percholorate exceeded its action level." It is unclear if only the maximum concentration of ammonium perchlorate exceeded the action level, or if numerous samples exceeded the action level. The number of samples exceeding the action level should be clarified in the text.

7. *Section 5.3, page 5-3, paragraph 2.* The paragraph states that 1 PCB sample was detected in the 1999 surface water samples. However, Section 5.3, page 5-4, paragraph 3, states that Aroclor-1260 was detected in 2 surface water samples. The text should be modified to correct this discrepancy.

8. *Section 5.4, page 5-5, paragraphs 2 and 4.* These paragraphs discusses the PCB contamination in the sediments. It should be specified that both detections of Aroclor-1254 were above the residential direct contact benchmarks, and only two of the detections of Aroclor-1260 were in exceedence. It should also be discussed that no PCB contamination was found in the soil samples because only subsurface soil samples were collected. An additional discussion on the possible surface soil contamination should be added to the text.

9. *Figure 5-1.* The legend for 11PZ64 in the figure is mislabeled. The figure, which shows that 11PZ64 is a monitoring well, needs to be revised.

10. *Section 7.1.2.4*, Identification of PCOCs in Groundwater. MCLs should be used for screening purposes. Therefore, if the MCL is more conservative than the EPA Region III RBC or if there is no RBC value available, the most conservative value or the only value available (of the two) should be used for screening purposes.

11. *Section 7.2.1.2, Page 7-8.* This section discusses potential exposure pathways and receptors. The construction worker is assumed to not contact groundwater. It is possible that, through construction activities, a worker could contact shallow groundwater. Adequate justification for the exclusion of this pathway for the construction worker should be provided, or dermal and inhalation exposure to groundwater should be evaluated.

    In addition, the day care child is assumed to not contact sediment and surface water because it is assumed that they will be supervised. However, the possibility of field trips to nearby streams has not been considered. The text should justify the dismissal of exposure during field trips to sediment and surface water at local streams.

12. *Section 7.2.3*, Exposure Point Concentration (EPCs). When estimating the 95% UCL for data sets with undefined distribution (both the normal and lognormal distributions fail the

normality test), additional statistical analysis should be conducted in order to provide a better estimation of the exposure point concentration. (E.g., H-statistics, Jackknife procedures, Bootstrap procedures, Central Limit Theorem, Chebychev Theorem, etc.) However, the EPA will accept the proposed exposure point concentration assumption included in this report. Although it should be noted that this method of statistical analysis will no longer be accepted by EPA.

13. *Section 7.3.3, Page 7-24.* This section discusses the toxicity criteria for chromium. The text states that, based on speciation analyses for chromium (it was determined that hexavalent chromium was only present in low levels), chromium was treated as trivalent. More information should be provided in this discussion regarding the analyses that were performed, the number of samples on which speciation was performed, and quantitative information regarding speciation results.

    Further, the presence of hexavalent chromium in some samples indicates that the assumption of 100 percent trivalent chromium is invalid. A conservative estimate of the percentage of trivalent versus hexavalent chromium should be calculated and employed in the treatment of chromium analytical results in the risk assessment; hexavalent chromium should be included in the risk assessment at the percentage determined by the speciation.

14. *Section 7.4.1, Page 7-35.* This section discusses the non-carcinogenic risks concerning groundwater. Elevated hazard indices calculated for several receptors for the groundwater pathways are dismissed because, "the area around the NSWC-White Oak uses a public water supply." The presence of residents in the vicinity of the installation who use well water is known; the potential use of groundwater for residential purposes should not be dismissed unless deed restrictions are imposed to prohibit such use. This sentence should be removed from the text.

15. *Table 7-9.* This table provides the values used for daily intake calculations for Site 11 potential future construction workers for subsurface soil and sediment. The exposure frequency (EF) is estimated by professional judgement to be 180 days of the year. It is likely that a construction project will last much longer than 180 days per year. Given that the construction worker is assumed to only work onsite for a year, a more conservative value, such 250 days/year, should be employed.

16. *Table 7-39.* This table presents the human health calculation results for the child resident receptor. The child resident is not assessed for surface water risks but is assessed for sediment risks. This is inappropriate. Section 7.2.1.2, Potential Exposure Pathways/Receptors, indicates that residents will be assessed for surface water and sediment risks. Surface water risks for the child resident should be calculated and added to the risk assessment.

17. *Section 7.2.4.4, Incidental/Direct Ingestion of Groundwater/Surface Water.* The paragraph states "Direct contact with surface water while swimming . . ." however, the

exposure parameters are those for wading. Please make the text and exposure parameters agree.

18. *Table 7-7.* Subsurface soil for cadmium and mercury should be noted with the footnote (5) because the maximum detected concentration was used.

RAGS D FORMAT COMMENTS

1. The report should not include Table 1.1. Only standardized tables should be included in the report. Any additional tables should be included in the Human Health Risk Assessment section of the Appendix or an additional section entitled "Supplemental Tables." According to the report Table 7-6 should be identified as Table 1.1, Selection of Exposure Pathways.

2. The report should make all attempts to follow the standardized numbering format (e.g., Section 2.1, 2.2, 2.3, 2.4, etc. or 7.2.1, 7.2.2, 7.2.3, 7.2.4, etc.).

3. Table 7.2 should be identified as Table 2.1 or Table 7.2.1. In addition, the 13th column should be named "Screening Toxicity Value" which should provide the screening value and the reference of the screening value.

4. Table 7-7 should not be included in the standardized tables however, this table can be included in the Appendix or an additional section entitled "Supplemental Tables."

5. Table 7-8 should be Table 4.1, 4.2, 4.3, etc. or 7.4.1, 7.4.2, 7.4.3, etc.

6. The report does not include Table 3.1, Medium-Specific Exposure Point Concentration Summary. This table should be included in the report.

7. Table 7-29 should come before 7-30. (E.g., Table 5.1, 5.2 or 7.5.1, 7.5.2 and then Table 6.1, 6.2 or 7.6.1, 7.6.2).

8. The report does not include Tables 7.1, Calculation of Non-Cancer Hazards and 8.1, Calculation of Cancer Risk. These tables should be included in the report.

9. Table 7-31 and Table 7-40 should not be included with the standardized tables. These tables can be included in the Appendix or an additional section entitled "Supplemental Tables."

10. Tables 7-32 and Tables 7-33 should be identified as Tables 9.1, 9.2, 9.3, etc. or 7.9.1, 7.9.2, 7.9.3, etc.

11. The report does not include Table 10.1, Risk Assessment Summary. This table should be included in the report.

12. EPA Headquarters is requiring a final copy of the standardized tables to be submitted to the assigned EPA Toxicologist via a diskette.

If you have any questions regarding the above comments, please call me at (215) 814-3369.

Sincerely,

Yazmine J. Yap-Deffler
Remedial Project Manager
Federal Facilities Section

cc: Paul Leonard, EPA Region III
Jeff Thornburg, MDE
Steven Richard, GSA