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NAS WHITING FIELD
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LETTER REGARDING FINAL RESPONSE TO COMMENTS FOR THE REMEDIAL
INVESTIGATION REPORT FOR SITE 12 NAS WHITING FIELD FL
5/16/1999
HARDING LAWSON ASSOCIATES

Harding Lawson Associates

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May 16, 1999

Mr. Craig Benedikt, Remedial Project Manager
Federal Facilities Branch
USEPA Region IV
61 Forsyth Street
Atlanta, Georgia 30303

**Subject: Final Response to Comments for the Remedial Investigation Report
Site 12, Tetraethyl Lead Disposal Area
Naval Air Station Whiting Field, Milton, Florida
Contract No. N62467-89D-0317/116**

Dear Craig:

On behalf of Southern Division Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), Harding Lawson Associates is pleased to submit the revised response to comments for your review and comments. Copies of the revised response to comments have also been forwarded to the Naval Air Station Whiting Field Partnering team.

If you have any questions please call me at (850) 656-1293.

Sincerely,

HARDING LAWSON ASSOCIATES



Rao Angara
Principal Project Manager

enclosure

cc: Ms. L. Martin, SDIV (1 copy)
Ms. A. Twitty, CH2M Hill (1 copy)
Mr. J. Cason, FDEP (1 copy)
Mr. T. Conrad, BEI (1 copy)
Mr. T. Hansen, TtNUS (1 copy)
Mr. G. Walker, TtNUS (1 copy)
Mr. P. Ottinger, TtNUS (1 copy)
Mr. J. Holland, NASWF (1 copy)
Mr. E. Blomberg, HLA (1 copy)
File



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**Final Response to Review Comments
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Florida Department of Environmental Protection

1. As we have previously discussed for other sites at NAS Whiting Field, please compare all soil and ground water data to the TCLs in Chapter 62-785, F.A.C. If you choose, this can be presented and discussed in an appendix.

Response: All data will be compared against the criteria specified in Chapter 62-785, F.A.C.

2. Please note that monitoring well WHF-12-1 is a cross-gradient well with respect to Site 12 and furnishes little site-specific data.

Response: Groundwater at Site 12 is being addressed in a basewide groundwater investigation under Site 40. Data gaps will be addressed in the Site 40 investigation.

3. Please prepare a surface soil contaminant map (figure), similar to Figure 2-1, which depicts the surface soil contaminant levels areally.

Response: As recommended, a surface soil contaminant map depicting surface soil contaminant levels will be added to the RI report.

4. On page 5-38, aluminum is discussed as being less than background, yet it is higher than both the state and federal MCLs. A similar problem is illustrated in Table 6-2 (page 6-7). Please present information and discuss the situation with the background sampling sites, both soil and ground water. Please justify how (why) the value given for arsenic (and other analytes) is representative of "background."

Response: Background groundwater issues are currently being addressed under the basewide groundwater investigation of Site 40 and will not be addressed in this RI. Background information for soil will be presented in the Site 12 RI as appropriate.

5. Table 6-8: what does the abbreviation of the ELCR, "NE," mean?

Response: NE indicates that there is no carcinogenic risk because HHCPs were not identified. A note describing NE will be added to the notes section at the end of the table.

6. Figure 6-2 (page 6-21) and Figure 6-4 (page 6-23): please correctly indicate the Florida Target Risk level of 1E-06 and remove or explain the arrow which presently (incorrectly) refers to that risk.

Response: Figures 6-2 and 6-3 will be revised as recommended.

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7. Section 6.6 (page 6-20): it has not been shown nor necessarily accepted that the amount of arsenic in the surface soil is "naturally occurring." I suggest replacing the "is" in the paragraph of bullet #4 with "may," which makes the statement acceptable.

Response: Section 6.6 will be revised as recommended.

8. Section 9.2, Recommendations: does the discussion in the paragraph of bullet #3 refer to surface soil? This should be stated if that is the case. Finally, this section should include and properly account for the risks that are attributed to future residents from arsenic in surface soil. Contrary to the recommendation in this section, a feasibility study should be conducted which evaluates the options based on the findings of this study and recommends adequate remediation practices, land use restrictions, or other methods by which the Navy addresses the site contamination.

Response: Section 9.2 does refer to surface soils. Appropriate clarification will be included in the final RI report.

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U.S. ENVIRONMENTAL PROTECTION AGENCY

SPECIFIC COMMENTS

1. Page 1-1, Section 1.2 Paragraph 5. The site description is weak in that it provides only minimal description from a historic perspective. Information from the 1985 Initial Assessment Study should be incorporated into the Draft RI Report.

Response: Additional site information is provided in the NAS Whiting Field GIR. The GIR was prepared to reduce redundancy and the volume of the reports.

2. Page 3-2, Section 3.3 Paragraph 7. The Draft RI Report states, "During the Phase IIB investigation an additional monitoring well, WHF-12-2, was installed south of Site 12 (Figure 3-1)." However, this is not an accurate description of what appears on Figure 3-1. Figure 3-1 clearly shows that monitoring well WHF-12-2 is installed on the approximate site boundary, not south of the site. The text should be modified.

Response: The text will be revised to indicate that monitoring well WHF-12-2 was installed on the south side of the approximate site boundary.

3. Page 5-10, Section 5.2 Figure 5-2. Review of Figure 5-2 indicates that one additional deep monitoring well should be installed in a downgradient (SE) direction from Site 12. Well location WHF-12-2 is of no value in assessing possible groundwater contamination in a downgradient direction offsite from Site 12 and is only of marginal value when determining extent of contamination in a cross gradient direction to Site 12. The addition of the third monitoring well would narrow the data gap which presently exists.

Response: Groundwater at Site 12 is being addressed in a basewide groundwater investigation under Site 40. Data gaps will be addressed in the Site 40 investigation.

4. Page 5-10, Section 5.2, Figure 5-2. Review of Figure 5-2 indicates that well location WHF-12-1 is of no value in assessing possible groundwater contamination with respect to Site 12. If the represented location is accurate with respect to groundwater flow, the data obtained is not representative of Site 12 and should be removed from the report.

Response: Due to the potential for the groundwater flow direction to change in the future it is recommended that the data remain in the report.

5. Page 5-27, Section 5.3, Table 5-7. The source of the screening values for EPA Region III risk based concentrations (RBCs) is dated May 30, 1996. The screening values should reflect the more recent version which is dated October 22, 1997. All screening values should be checked against the most recent criteria and adjustments made where necessary.

Response: The EPA Region III RBCs will be updated with the most current version

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available.

GENERAL RISK REVIEW COMMENTS

6. Because Site 12 consists of mounds of sludge deposited on the soil surface and possibly covered with a thin layer of soil, it is probable that the root zone of trees and other large plants will consist primarily of the subsurface soil. The subsurface soil at this site contains a much greater number of contaminants than the surface soil. Risk to plants from subsurface contaminants was not addressed in the ERA. If risks to plants from subsurface contaminants are not evaluated quantitatively, a qualitative discussion of these risks to plants should be included in the Uncertainty Analysis (Section 7.7).

Response: Agree. An uncertainty will be added to the ERA to address this issue.

7. The conclusion that no risks to terrestrial plants exist at Site 12 was not adequately supported by the data presented in the ERA. Risks to plants were assessed using data from lettuce seed germination tests with surface soil from three sampling sites within Site 12. Reduced germination (statistically significant, $p < 0.05$) was observed in two of the three samples. There was no statistical correlation between the concentration of contaminants in the soil and the reduction in germination, and the reduced germination was attributed to synergistic effects of multiple contaminants and/or variables unrelated to contamination. However, statistical correlation (or lack of correlation) based on only three samples is of uncertain value. Also, the assay was for germination only; testing for growth and biomass production was not conducted. The canopy is reported to be 10 to 15 feet in height. It was not reported if this area was artificially or naturally revegetated after the sludge was deposited, or if the vegetation has been disturbed since the sludge deposition. The canopy height appears to be low for an area that has not been disturbed in 30 years, which suggests that a growth depression may be occurring. It is recommended that additional investigation be done to more clearly identify the risks to plants at this site. This should include additional documentation of the history of the site (specifically, the approximate age of the tallest trees), assaying the site to determine if sensitive plant species are present, comparison of the growth of specific tree species between Site 12 and an adjacent control area, doing a literature search to determine if there is any documented information on the effect of the identified contaminants on plants, and confirming that seed production at the site appears normal.

Response: The tree species listed in the Site Characterization typically do not grow much higher than 10 to 15 feet, therefore it is unlikely that the constituents present in soil are causing growth to be stunted in trees. As stated in Section 7.2.1, "No state or federally listed rare, threatened, or endangered species or species of concern are known or likely to inhabit Site 12". It is unlikely that additional investigation into risks to plants at the Site 12 would alter the results of this ERA.

8. The risks to herbivorous birds are not addressed in the ERA. A representative herbivorous bird species should be included as a receptor in the ERA.

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Response: A representative herbivorous bird species will be included as a receptor in the ERA.

9. In Tables 6-1, 6-2, and 6-3 it is stated that the values in the Mean of Detected Concentrations column are the arithmetic mean of all samples in which the analyte was detected. An asterisk in this column notes that the value is the average of a sample and its duplicate. However, it is not stated that when averaging a sample and its duplicate and the duplicate value is non-detect (data qualifier of "U" or "UJ"), half of the non-detect value is averaged with the sample value. This averaging method needs to be stated in the footnotes.

Response: Per discussions at the April 1999 partnering meeting, the averaging method will be stated in the footnotes.

10. Several tables in Appendix E state chronic and sub-chronic RfD values for thallium. However, it is not specified which species of thallium is being evaluated. A footnote should be added in each of these tables stating which species of thallium was used in the HHRA.

Response: As recommended, a footnote specifying the species of thallium will be added to the tables in Appendix E.

SPECIFIC RISK ASSESSMENT COMMENTS

11. Section 6.2, Paragraph 4, Page 6-2. This section discusses the background screening concentrations used in the selection of COPCs. The data referenced is presented in the GIR (ABB-ES, 1998) developed for Whiting Field. To verify that screening was done appropriately, these data, including a figure showing background sampling locations, should be included in an appendix in this document. Inclusion of the referenced tables and figure from the GIR, specifically, Tables 3-8, 3-9, 3-10, 3-11, 3-15, 3-17, 3-18, 3-12, and 3-21 through 3-24, and Figure 3-10 would be sufficient.

Response: The information requested to be included in the RI report was specifically put in the GIR to reduce redundancy in the RI report and streamline report production. A reference to the tables and figures identified in the comment will be included in the report.

12. Section 6.2, Page 6-3. The text in paragraph two discusses that industrial soil RBCs were used to screen for COPCs in subsurface soil. Although only non-residential receptors are evaluated using subsurface soil data, subsurface soils should still be screened using residential RBCs, as per regional guidance. Because industrial RBCs do not include risks from dermal exposure in the RBC calculation, they are not considered by EPA Region IV

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sufficiently protective to use for COPC identification at the screening stage. Subsurface soil data should be re-screened using the residential RBCs and risks from exposure to this medium should be re-evaluated.

Response: The NAS Whiting Field partnering team has established screening criteria for subsurface soil and agreed to screen only against industrial RBCs. This practice is consistent with the other RI reports prepared to date.

13. Section 6.2, Paragraph 6, Page 6-3. The first sentence of this paragraph which begins with "If the analyte meets any of the above criteria, is not a member of the same chemical class as other HHCPs in the medium . . ." is unclear, and appears to imply that chemicals may be eliminated as COPCs if they are the only chemical of their "class." This statement requires clarification. The meaning of the term "chemical class" is not easily deduced from this sentence. Revisions to this sentence are needed to ensure that chemicals are not being eliminated as COPCs for reasons not typically accepted by EPA Region IV.

Response: The phrase "is not a member of the same chemical class as other HHCPs in the medium . . ." is unclear and will be removed from the sentence.

14. Table 6-2, p. 6-7. Table 6-2 shows the selection of human health chemicals of potential concern for subsurface soil. The value presented for diethylphthalate in the Range of Detected Concentrations column is stated as being 570 µg/kg. When the half of the duplicate (370 µg/kg / 2) is averaged with the sample value (830 µg/kg) the result is 508 µg/kg. This calculation should be reviewed and corrected as appropriate.

Response: The value of 570 µg/kg for Range of Detected Concentrations is incorrect and will be changed to 508 µg/kg.

15. Table 6-8, p. 6-18. This table summarizes the risks associated with future land use. It is stated that the excess lifetime cancer risk to a child resident from the inhalation of particles is 4×10^{-9} . However, Table E-17 in Appendix E states that the risks to a child resident from the inhalation of particulates is 3×10^{-9} . This discrepancy should be addressed.

Response: The risk of 4×10^{-9} is incorrect and will be replaced by 3×10^{-9} .

16. Figure 6-1. This figure presents the conceptual site model for this risk assessment. The groundwater ingestion pathway was also evaluated for the future residential receptor. However, this pathway has not been marked as complete in Figure 6-1. Figure 6-1 should be corrected to note that this pathway is evaluated as a complete pathway in this risk assessment.

Response: Figure 6-1 will be revised to include the groundwater pathway.

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17. Table 6-8. This table summarizes the risks for future receptors. Risks from exposure to both surface soil and groundwater COPCs were evaluated for the future residential adult and child receptors. However, these risks have not been summed. As specified by the NCP, cumulative risks from exposure to all relevant media should be calculated for each receptor. Therefore, to complete this risk evaluation, risks from exposure to surface soil and groundwater should be summed for the adult and child future resident, and presented in this risk assessment.

Response: Per discussions with Dr. Simon, cumulative risks from exposure to all relevant media will be calculated for each receptor. As appropriate, risks from exposure to surface soil and groundwater will be summed for the adult and the child resident. This will be presented in the risk assessment.

18. Section 7.1, Page 7-3, Line 13. The text states that concentrations of contaminants in groundwater at Site 12 are low enough that they are not a concern for discharges to surface water. The phrase "low enough" is too general and must be defined. The text must include either a brief discussion of the contaminant concentrations in groundwater and the reason these are believed to not impact surface water or a reference to any discussion provided elsewhere in this document.

Response: The text will be expanded to include more details pertaining to the elimination of groundwater from this ERA. Although, the later half of this paragraph does identify what was detected, and at what concentration, and how those concentrations compare to background.

19. Section 7.4.2, Pages 7-9 through 7-18. No herbivorous bird species was included as a receptor in the Site 12 model. It is probable that herbivorous avian species are found at Site 12 and that the calculated risks to these species are different than those to the Eastern Meadowlark, which consumes approximately 20% of its diet as plant materials. An herbivorous bird species should be included as a receptor in the ERA.

Response: Please refer to response to comment #8.

20. Table 7-6, Page 7-20. Footnote one states that the bioaccumulation factors (BAFs) for plant material are based on the assumption that plants are 80% water. This assumption applies to berries and leafy vegetables, but does not apply to grains, which have a moisture content of only 10%. Since the diet of the cotton mouse may consist primarily of grains, the risks to the cotton mouse may be underestimated. This source of uncertainty should be discussed in the Uncertainty Analysis (Section 7.7).

Response: An uncertainty will be added to the ERA to address this issue.

21. Section 7.7, Page 7-25, Paragraph 4. The text states that risks to adult amphibians and

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reptiles species were not estimated because bioaccumulation and toxicity data are lacking. Since quantitative exposure data are not available, a brief qualitative discussion of the anticipated risks to these groups should be included in the Uncertainty Analysis in addition to the current statement that quantitative risks were not estimated.

Response: A brief qualitative discussion of anticipated risks to amphibians and reptiles will be added to the uncertainty analysis.

22. Table E-8. Table E-8 shows the dermal dose-response data for noncarcinogenic effects. The chronic oral RfD for thallium is stated as being "80.e-05." It is believed that the decimal is in the wrong place for this value. The value should be changed to "8.0e-05."

Response: The decimal point will be changed to reflect the correct RfD

SPECIFIC COMMENTS REQUIRING ONLY ACTION TO CORRECT THE DOCUMENT

23. Table of Contents. The Table of Contents does not list an Appendix G. However, tables identified as Appendix G are included in the document. Appendix G should be added to the Table of Contents.

Response: The TOC will be updated after the revisions have been incorporated.

24. Executive Summary, Page iii, Paragraph 8, and Section 9.1, Page 9-1, Paragraph 4. It is never stated in these paragraphs that the medium under discussion is surface soil. The text should be modified so that it is clear that the topic is contaminants in surface soil.

Response: The text will be revised to indicate that surface soil is the medium of discussion.

25. Section 6.2, Paragraph 6, Page 6-3. Sentence three of this paragraph states that RBCs, regulatory guidance values and ARARs are presented in Appendix C. This information is actually presented in Appendix E. This text reference should be corrected.

Response: The text will be revised to indicate that the information is in Appendix E

26. Section 6.5.2, Page 6-20, and Section 6.6, Bullet 2, Page 6-26. These sections refer to material relating to the risk assessment as being presented in Appendix F or Appendix C. All materials referenced are actually presented in Appendix E. The text references should be corrected to correspond with the Appendices included in this risk assessment.

Response: The text references will be revised to indicate Appendix E.

27. Figure 7-1, Page 7-4. The bullets that appear in various receptor/exposure route boxes are not defined in either the Figure or the text. A definition should be added to the Figure.

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Response: The bullets indicate potential exposure pathways that are qualitatively evaluated for a receptor group. The footnote on Figure 7-1 will be revised to clarify the exposure pathways that are quantitatively evaluated and qualitatively evaluated. The following footnote will be added to Figure 7-1: • *Indicates the potential exposure pathways that are qualitatively evaluated for receptors in the Site 12 ERA.*

28. Table 7-2, Page 7-10. For aluminum, the average of detected concentrations is reported to be 11,605 ug/kg. In Table 5-7, this value is reported to be 11,600 ug/kg. The values reported in Tables 5-7 and 7-2 should be in agreement.

Response: The Tables will be revised to report an aluminum concentration of 11,600 ug/kg.

29. Table 7-7, Page 7-22. Each body weight change value should be identified as a positive or a negative change from Time 0.

Response: A plus or minus will be added to indicate whether the percent change was a weight gain or a weight loss.

30. Section 7.6.1, Page 7-23, Paragraph 4. The text states that Tables F-4 through F-7 of Appendix F present the HQ and HI calculations for surface soil. There is no reference to higher numbered Tables in Appendix F. However, Appendix F also includes Tables F-10, F-11, and F-12, which are HQ and HI values calculated using the Central Tendency concentrations. (Tables F-4 through F-7 are HQ and HI values calculated using the Reasonable Maximum Exposure concentrations.) In addition, no Tables F-8 or F-9 were included in Appendix F. The text in Section 7 and the Tables included Appendix F should be modified to be in agreement.

Response: The text in Section 7 and the Tables in Appendix F will be modified to be in agreement.

31. Section 7.6.2, Page 7-24, Paragraph 1. The text states that Table F-1 in Appendix F contains linear regressions analyses of the results of the surface soil bioassays. The linear regression analyses are presented in tables identified as Appendix G-1. The text should be corrected.

Response: The text will be changed to reference Appendix G.

32. Appendix F, Tables F-2, F-5 and F-10. "NA" is not defined in these tables. A definition should be included in the footnotes.

Response: A definition of NA will be included in the footnotes.

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33. Table E-1. This table provides the screening concentrations for surface soil and shows which values were selected as screening values. It is stated that the risk based screening concentration (RBC) for mercury is 2.3 mg/kg. According to the RBC table, this value corresponds with the RBC for mercuric chloride, not elemental mercury. It should be stated in the table that this value represents the RBC for mercuric chloride.

The acronym NSC is shown in the RBC column for total petroleum hydrocarbons (TPH). However, this acronym is not defined in the footnotes of Table E-1. This acronym should be defined in the footnotes.

Response: A note will be added indicating that the RBC is for mercuric chloride. The acronym NSC will be defined in the footnotes.

34. Table E-10. The equation for the dose absorbed per event (DA_{event}) is stated as:

$$DA_{event} = AF \times ABS_d \times CF$$

This equation is missing the variable for contaminant concentration in soil (CS). The equation should read:

$$DA_{event} = CS \times AF \times ABS_d \times CF$$

The equation for DA_{event} should be appropriately changed.

Response: The equation will be revised as noted.

35. Table E-12. The equation for dermal intake is stated as:

$$INTAKE_{dermal} = (AT \times 365 \text{ days/year}) \times SA_{soil/adj}$$

This equation is incomplete. It should read:

$$INTAKE_{dermal} = (DA_{event} \times EF / AT \times 365 \text{ days/year}) \times SA_{soil/adj}$$

The equation for dermal intake should be appropriately changed.

Response: The equation will be revised as noted.