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NAS CECIL FIELD
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LETTER AND U S NAVY RESPONSE TO U S EPA REGION IV COMMENTS TO DRAFT
REMEDIAL INVESTIGATION REPORT OPERABLE UNIT 6 (OU6) SITES 11 NAS CECIL
FIELD FL
4/18/1997
ABB ENVIRONMENTAL

April 18, 1997

Ms. Debbie Vaughn-Wright
Remedial Project Manager
Federal Facilities Branch
Waste Management Division, 10th Floor
USEPA Region IV
61 Forsyth Street.
Atlanta, Georgia 30303

**Subject: Responses to USEPA Review Comments
for the Draft Remedial Investigation Report
Operable Unit 6 (Site 11)
NAS Cecil Field, Jacksonville, Florida
Contract No. N62467-89-D-0317/090**

Dear Ms. Vaughn-Wright:

On behalf of Southern Division, Naval Facilities Engineering Command, ABB Environmental Services, Inc. is pleased to forward three copies of the subject document for your review and approval. Responses to the Florida Department of Environmental Protection will be submitted under separate cover.

If you have any comments or questions please call me at (904) 656-1293 or Mr. Mark Davidson at (803) 820-5526.

Sincerely,

ABB ENVIRONMENTAL SERVICES, INC.


Rao Angara
Task Order Manager

cc: Mr. Mark Davidson, SDIV
Mr. David Porter, SDIV
Mr. Dave Kruzicki, NASCF
Mr. Eric Nuzie, FDEP
Mr. Hermann Bauer, BECHTEL
Mr. Lisa Routhier, ABB-ES
Mr. Lewis Shields, City of Jacksonville
File

ABB Environmental Services, Inc.

PROJECT REVIEW COMMENTS

Naval Air Station Cecil Field
Jacksonville, Florida
Remedial Investigation
Operable Unit 6, Site 11

GENERAL COMMENTS, Remedial Investigation (U.S. Environmental Protection Agency)

1. According to a technical memorandum dated April 5, 1996, the sampling program was revised. Table 1, located in this memorandum, shows the number of surface soil samples to be 31; 21 of which were to be analyzed solely for 1,2-dibromo-3-chloropropane (DBCP). The Draft RI Report indicates that 21 surface soil samples (CF11SS11 through CF11SS31) were collected and analyzed for DBCP. However, information in the RIDD indicates that there are no analytical results for sample designations CF11SS14 and CF11SS28. It appears that either sampling results are missing in the Draft RI Report or that only 19 surface soil samples were analyzed instead of 21. This inconsistency should be corrected.

The analytical results for samples CF11SS14 and CF11SS28 were missing from the RIDD. The results will be forwarded for inclusion in Chapter 1.0 of the RIDD.

2. As referenced by the technical memorandum dated April 5, 1996, the sampling program was revised. This memorandum states that 10 subsurface soil samples will be collected and analyzed for all constituents on the Target Compound List (TCL) and Target Analyte List (TAL), DBCP, organophosphorus pesticides, and chlorinated herbicides. The Draft RI Report text references 10 subsurface soil samples; however, Table 4-2 shows that only 9 subsurface soil samples were collected and analyzed for the above mentioned constituents. Either the memorandum or the table should be revised to provide the correct number of samples that were collected and analyzed during the RI.

Table 4-2 in the RI Report is correct. The text will be revised to indicate that nine subsurface soil samples were collected.

3. Two different nomenclatures were used for the same monitoring well, when specifying either monitoring well location or designation. In the Draft RI Report text, the nomenclature that is primarily used is "CEF-11-#S." However, on page 4-12 both nomenclatures are used in the following excerpt "...detected in the water table well CEF-11-5S and well CF11MW2I..." Also, in Figure 4-3 and in the RIDD, the nomenclature used is "CF11MW#S." In order to minimize confusion and prevent the misinterpretation of data, one nomenclature system should be used when referring to the same monitoring well. This inconsistency should be corrected.

The text will be revised to present consistent monitoring well designations.

PROJECT REVIEW COMMENTS

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SPECIFIC COMMENTS, Remedial Investigation (U.S. Environmental Protection Agency)

1. **Page iii, Executive Summary (and Section 8.1):** The text states that arsenic was detected in ground water at concentrations greater than US EPA or Florida (FDEP) drinking water criteria. That statement is not supported by the summary of observed ground-water concentrations shown on Table 4-3 and Figure 4-3 of the report.

Arsenic was not detected in groundwater at concentrations greater than drinking water criteria. This reference to arsenic in groundwater will be deleted.

2. **Page 1-4, Section 1.2.1, second sentence:** add the number of alternatives evaluated.

The number of alternatives will be added.

3. **Page 1-4, Section 1.2.1, last sentence:** Suggested rewording "The results of the focused RI/FS are summarized below:"

The last sentence will be reworded.

4. **Page 1-5, paragraph 1:** Nothing was found in anomalies 2, 3, 9, 10, 14, and 17. Why were these anomalies? Should anomaly 6 have been listed with these?

The anomalies were identified based on the results of a geophysical survey. The anomalies where nothing was found were identified by a magnetometer and/or an EM-31 (which can be used to identify areas of contrasting soil conductivity). Anomalies where no debris was found may have been identified because the soil at that location was disturbed and the soil conductivity varied from the surrounding soil.

Anomaly 6 was not listed with the anomalies where nothing was found because an 18-foot-long, 4-inch-diameter iron pipe was found at that location.

5. **Page 1-7, Section 1.2.2:** It would be beneficial to an understanding of the reduction in magnitude of the environmental contamination achieved by The interim remedial action if the range and magnitude of the pre-IRA concentrations of the contaminants observed in the various environmental media during the RI could be presented in a table similar to the tables included in Section 4. This table could be included at the end of Chapter 1.

A table showing the pre-IRA concentrations of contaminants in soil will be included in Chapter 1.0.

PROJECT REVIEW COMMENTS (Continued)

Naval Air Station Cecil Field
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**SPECIFIC COMMENTS, Remedial Investigation
(U.S. Environmental Protection Agency)**

6. **Page 1-7, Section 1.2.2., paragraph 2: The manifest from the overpack drums disposal should be included in the Data Document.**

Manifests from the IRA will be included in the Data Document.

7. **Page 1-7, Section 1.2.2: Please clarify. It is not clear what anomalies 5, 7, and 16 contain and what if anything was done at those anomalies.**

Pesticide containers were found in Anomalies 5, 7, and 16 and were removed. Through chemical analysis, the soil excavated from Anomalies 5, 7, and 16 was not found to be a listed or characteristic hazardous waste and the soil was returned to the pits. The text will be revised to clarify this point.

8. **Page 1-8, Section 1.2.2: Add the date which the BCT decided to cease any further excavation.**

The date will be added.

9. **Page 1-8, Section 1.3: Since this is a conceptual understanding, why not discuss how the supposed single 40 x 40 foot pit was never found but several smaller pits were located?**

Text will be added as suggested.

10. **Page 2-1, Section 2.0, paragraph 1: Appendix A is exposure assumptions, not the listed memorandum. Memorandum is actually in data document.**

The reference to Appendix A will be changed to reference Chapter 2.0 of the RIDD.

11. **Page 2-1, Section 2.0, paragraph 2: Anomaly 6 was not listed earlier. Anomaly 8 which was listed earlier is now not listed. Please verify anomalies where pesticide containers were found.**

Pesticide containers were found in Anomaly 8, not Anomaly 6. The text will be revised.

PROJECT REVIEW COMMENTS (Continued)

**Naval Air Station Cecil Field
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**SPECIFIC COMMENTS, Remedial Investigation
(U.S. Environmental Protection Agency)**

12. **Page 2-1, Section 2.0, 8th bullet: Were the two monitoring wells abandoned according to State/Federal requirements?**

Yes.

13. **Page 2-4, Section 2.2.1: Include where data from the water levels and flow measurements can be found. Should be in the data document.**

The piezometers were installed and water-level elevations were measured to obtain an initial groundwater flow direction for placement of permanent monitoring wells from which the groundwater flow direction was confirmed. Monitoring well groundwater elevation data are presented in Table 2-1, and groundwater flow direction is presented in Subsection 3.4.2, so the piezometer information was not included to prevent redundant data from being presented in the RI.

14. **Section 2.2.2, Page 2-5, Table 2-1: The screened interval for all monitoring wells, except CEF-11-2I, should be "4-14" feet below land surface (bls) as indicated in the monitoring well logs located in the RIDD, instead of "5-15", as indicated in Table 2-1. This inconsistency should be corrected.**

The screened interval inconsistency will be corrected.

15. **Section 2.2.2, Page 2-5, Table 2-1: The table states that the total depth of well CEF-11-21 is 30 feet. According to the monitoring well logs in RIDD CH5, the total depth of well CEF-11-2I should be "31" feet bls instead of "30" feet bls. This inconsistency should be corrected.**

The screened interval of monitoring well CEF-11-2I is actually 25 to 30 feet bls as shown in the well construction log in the RIDD. The total depth of the monitoring well boring was 31 feet bls.

16. **Page 2-4, Section 2.2.2, paragraph 3: Explain the difference between the 'S' and 'I' wells.**

The difference will be explained in the text.

17. **Page 2-6, Section 2.2.2: List the slug test wells.**

The slug test wells will be listed.

PROJECT REVIEW COMMENTS (Continued)

Naval Air Station Cecil Field
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18. **Page 2-7, paragraph 1:** Only background wells screened in the upper part of the aquifer were selected, because that was The only part of the aquifer investigated. Expand discussion to include why only the upper aquifer was the only part investigated.

The text will be expanded.

19. **Figure 2-2: Locate OU-6 on map**

OU 6 will be added to Figure 2-2.

20. **Page 3-1, Section 3.1, paragraph 1:** The site description is misleading. The first sentence states that the historical OU-6 is surrounded by undeveloped woodlands. However, the site is in the middle of a golf course. Is this really considered as undeveloped woodlands?

The word "undeveloped" will be deleted to clarify the site description.

21. **Page 3-3, Section 3.4.3, paragraph 1:** The text states "Slug tests were conducted in all monitoring wells at OU 6 except monitoring well CEF-11-1S, which contains DBCP." However, when reviewing Table 3-1 and the hydraulic conductivity test results located in the RIDD, no information was found for monitoring wells CEF-11-4S and CEF-11-5S. Slug test data for monitoring wells CEF-11-4S and CEF-11-5S should be provided in Table 3-1 and in the RIDD. If no slug tests were performed for the above mentioned wells, a rationale should be provided. This inconsistency should be corrected.

Slug tests were not performed in monitoring wells CEF-11-4S and CEF-11-5S because the wells were in close proximity to the other wells and the lithology was similar. The text will be revised to include this clarification.

22. **Section 3.4.3, Page 3-4, Figure 3-1:** On Figure 3-1, well CEF-11-1S is not shown with the symbol which signifies "No water level recorded. Monitoring well contains DBCP." The associated text, on page 3-3, states "Groundwater levels were measured on September 4, 1996, in all existing monitoring wells except monitoring well CEF-11-1S which contained DBCP." Well CEF-11-1S should have been shown with this symbol. This error should be corrected.

Figure 3-1 will be corrected.

PROJECT REVIEW COMMENTS (Continued)

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(U.S. Environmental Protection Agency)**

23. **Section 3.4.4, Page 3-6, Table 3-2:** In Table 3-2, the groundwater seepage velocity is shown as 26 feet per year. However, on page 3-5, it is shown as 27 feet per year. This inconsistency should be corrected.

The inconsistency will be corrected.

24. **Section 4.1.1, Page 4-3, Paragraph 4:** The text includes 4,4'-dichlorodiphenyl dichloroethane (DDD) as one of the most frequently detected pesticides in surface soil. However, according to Table 4-1, the frequency of detection for 4,4'-DDD was "4/10" whereas the frequency of detection for 4,4'-dichlorodiphenyl dichloroethylene (DDE), which was not included as one of the most frequently detected pesticides, was "7/10". Therefore, 4,4'-DDD should not be included as one of the most frequently detected pesticides and 4,4'-DDE should be included as one of the most frequently detected pesticides.

The text will be revised as suggested.

25. **Page 4-3, Section 4.1.1:** Provide rationale for selection of which samples received TCL/TAL and which samples received DBC only.

Rationale will be included in the text.

26. **Page 4-3, Section 4.1.1:** Some soil descriptions provide sample number and some do not. For consistency, suggest adding number to all descriptions.

Sample numbers will be added to all descriptions.

27. **Page 4-7, Figure 4-1:** Figure 4-1 omits all of the organic contaminants which were found in surface soil, and which are listed in Table 4-1. While this omission may be based on the absence of organic contaminants in surface soils at concentrations above levels of concern, Figure 4-1 indicates that detections of contaminants above background concentrations are shown on the figure. This above-background category apparently includes all of the organic contaminants listed on Table 4-1. If The omission of the organic contaminants detected in surface soil is intended on figure 4-1, then the text on the figure needs revision.

The text on the figure will be revised to omit the reference to background concentrations.

PROJECT REVIEW COMMENTS (Continued)

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28. **Section 4.1.2, Page 4-8, Paragraph 6:** According to Florida Department of Environmental Protection (FDEP) memorandum dated September 29, 1995 included in Appendix B-1 of the Draft GIR, any organic analyte in subsurface soil that was also detected in groundwater (above a standard or guidance) is compared to the Florida Leaching Value for that analyte. Since the concentration of phenol detected in groundwater presented in Table 4-3, page 4-13 exceeded the Florida standards and guidance concentration, the detected concentration of phenol in subsurface soil, 2mg/kg, should be compared to the leaching value, 20 mg/kg, instead of the industrial value, 440,000 mg/kg. This discrepancy should be corrected.

The discrepancy will be revised as suggested.

29. **Section 4.1.2, Page 4-9, Table 4-2:** Table 4-2 shows the Florida soil cleanup goal for subsurface soil. However, in this table the Florida soil cleanup goal for phenol is shown as 34,000 ug/kg. This value is incorrect since it is the Florida soil cleanup goal residential value (used for surface soil sample concentration) and not the industrial value (used for subsurface soil sample concentration) that applies. In addition, since the concentration of phenol detected in groundwater, presented in Table 4-3, page 4-13, exceeded the Florida standards and guidance concentration, the detected concentration of phenol in subsurface soil should be compared to the Florida soil cleanup goal leaching value, 20 mg/kg. A footnote should be added stating that this value is based on the leaching-based cleanup goal as is shown in footnote 8 for Table 6-2 in the Draft RI Report. This discrepancy should be corrected.

The discrepancy will be revised as suggested.

30. **Section 4.1.2, Page 4-9, Table 4-2:** In Table 4-2 the heptachlor epoxide and chromium entries reference footnotes for the Florida soil cleanup goals. However, there are no corresponding footnotes at the end of the table. This discrepancy should be corrected.

The discrepancy will be revised as suggested.

31. **Section 4.1.2, Page 4-9, Table 4-2:** The table shows phenol without highlights. Phenol should be highlighted since it is a chemical of potential concern (COPC) for the human health risk assessment as is shown in Table 6-2 of the Draft RI Report. This discrepancy should be corrected.

The discrepancy will be revised as suggested.

PROJECT REVIEW COMMENTS (Continued)

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32. **Section 4.1.2, Page 4-12, Paragraph 1:** The text states that nine pesticides were detected in subsurface soil samples. However, according to Table 4-2, there were 10 pesticides detected in subsurface soil samples. This discrepancy should be corrected.

The discrepancy will be revised as suggested.

33. **Section 4.1.2, Page 4-15, Figure 4-2:** The note in Figure 4-2 shows the Florida Department of Environmental Protection (FDEP) soil cleanup goals for phenol to be "20 (Leading)." It appears that the word should be "Leaching" instead of "Leading" since 20 ug/kg is the FDEP Leaching Value. In addition, figures 4-1 and 4-3 put concentration values in bold when values are equal to or greater than the FDEP soil cleanup goals. For consistency purposes, Figure 4-2 should show this information in the same manner. These inconsistencies should be corrected.

The inconsistencies will be corrected as suggested.

34. **Section 4.1.3, Page 4-12, Paragraph 5:** The text states "Phenol was detected in the duplicate sample from well CEF-11-S..." It appears that the monitoring well designation should be CEF-11-1S. This discrepancy should be corrected.

The discrepancy will be corrected as suggested.

35. **Section 4.1.3, Page 4-13, Table 4-3:** The range of detected concentrations for heptachlor epoxide is shown as 0.013 ug/L in Table 4-3. Footnote 4 in Table 4-3 states that this value is the average of the sample and its duplicate. However, according to chapter 1 of the RIDD, one groundwater sample had a heptachlor epoxide concentration of 0.0016 ug/L(J), and the duplicate sample showed a heptachlor epoxide concentration of .05 ug/L, the detection limit. The average of these two samples is .026 ug/L, therefore Footnote 4 in table 4-3 cannot be correct. This discrepancy should be corrected.

The average was calculated using one half of the detection limit for the duplicate sample, which gives a concentration of 0.013 $\mu\text{g}/\ell$. This method for calculating the average of the sample and its duplicate is discussed in the fourth paragraph on page 4-1.

36. **Section 4.1.3, Page 4-13, Table 4-3:** The table shows that the FDEP standard for heptachlor epoxide is .002 ug/L. However the USEPA Region III RBC for heptachlor epoxide in drinking water is 0.0012 ug/L. The lower of the two standards should apply to heptachlor epoxide. This discrepancy should be resolved.

PROJECT REVIEW COMMENTS (Continued)

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(U.S. Environmental Protection Agency)**

The discrepancy will be revised as suggested.

37. **Page 4-17, Section 4.1.3, paragraph 1: 4,4-DDT was detected. Please add whether or not the DDT was above drinking water standards.**

Discussion will be added as suggested.

38. **Section 4.1.3, Page 4-17, Paragraph 4: The text states "Aluminum was detected...from monitoring well CEF-11-SD." The monitoring well designation should be "CEF-11-1SD" not "CEF-11-SD." The text should be corrected.**

The text will be corrected as suggested.

39. **Section 5.0, Page 5-1, Paragraph 2. The text lists compounds within specific media that exceeded USEPA and FDEP risk assessment criteria. Upon review of tables 6-1, 6-2, and 6-3, aluminum for surface soil and phenol for subsurface soil and groundwater exceeded USEPA and FDEP risk assessment criteria; however, they were not included in the list of compounds exceeding risk assessment criteria on page 5-1. These compounds need to be added to the list; they should also be discussed within Sections 5.1 through 5.3. These discrepancies should be corrected.**

Although aluminum and phenol were identified as exceeding USEPA and FDEP risk assessment criteria, they had an insignificant contribution to the overall risk and were therefore eliminated from discussion in Chapter 5.0. This rationale will be included in this chapter for clarification.

40. **Page 5-3, Section 5.2.2, paragraph 2: It is indicated that arsenic can be very mobile depending on chemical speciation, pH, Eh, etc. What do the conditions at this site indicate.**

Since arsenic was detected in only one of the six monitoring wells but also detected in eight of nine subsurface soil samples, the physical conditions at OU 6 do not favor high mobility of arsenic. Only 3 of 10 surface soil samples contained arsenic, indicating that arsenic may have been washed from the surface soil and adsorbed to the subsurface soil. The text will be revised to include this discussion.

PROJECT REVIEW COMMENTS (Continued)

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**SPECIFIC COMMENTS, Remedial Investigation
(U.S. Environmental Protection Agency)**

- 41. Page 5-3, Section 5.3: Report states that 1 of 40 samples contained DBCP. Is this correct?**

No. The correct number is 47, 31 surface soil and 16 subsurface soil samples. The text will be changed accordingly.

- 42. Page 8-1, Section 8.1: Pesticide containers were reportedly buried in a pit approximately 40 x 40 feet. It is important to mention that a single large pit was never found. Add a statement of what was found.**

A statement indicating that a single pit with dimensions of 40 x 40 feet was not found will be included in the text.

- 43. Section 8.1, Page 8-1, Paragraph 1, Bullet 6: The text states "Phenol, DBCP, aluminum, arsenic, and iron were detected in groundwater at concentrations greater than USEPA or FDEP drinking water criteria." Thallium was also detected in groundwater at concentrations greater than USEPA or FDEP drinking water criteria; therefore, it should be included in this sentence. This discrepancy should be corrected.**

Thallium will be included in the referenced sentence.

- 44. Page 8-2 & 8-3: Concerns with the data gaps and recommendations were discussed at the February 18, 1997, BCT meeting. Details of that discussion will not be reiterated here. However, it is strongly suggested that the data and data gaps from a Remedial Investigation or Feasibility Study should be brought before the BCT before submittal of the respective reports. March 3, 1997**

Comment noted.

PROJECT REVIEW COMMENTS

**Naval Air Station Cecil Field
Jacksonville, Florida
Remedial Investigation
Operable Unit 6, Site 11**

GENERAL COMMENTS, Risk Assessment (U.S. Environmental Protection Agency)

- 1. The entire report appears to have an interchangeable use of the acronyms COC, COPC, HHPC. For example, Section 4 uses COC in the context of COPC, and Section 6 uses the term HHPC in the context of COPC. However, according to EPA guidance, the term Contaminants of Potential Concern (COPC) is reserved for the contaminants which are selected by the risk assessment screening process to be further considered for risk analysis. The term Contaminants of Concern (COC) is reserved for those contaminants which have risk estimates greater than 10^{-6} or a Hazard Index greater than 1.0. The document should be revised to use correct terms.**

This word editing will be revised in Chapters 4.0, 6.0, and 7.0.

In Sections 6.3, 6.4, 6.5, and 6.6, the phrase "HHPC" will be changed to "COPC."

In Tables 6-1 through 6-3, 6-8, and 6-9, the phrase "HHPC" will be changed to "COPC".

Likewise, the phrase "ECPC" in all text and tables of Chapter 7.0 will be changed to "ecological COPC."

- 2. Section 4, Page 4-1, Paragraph 3 indicates that detected constituents are discussed in the Nature and Extent of Contamination section. However, according to this paragraph, only those contaminants which are selected by the screening process are discussed. This discussion and screening is out of sequence, and MCLs are hardly ever used in risk assessment screening. The Nature and Extent of Contamination section is supposed to present and discuss all potential contaminants whether or not a risk concern. Consideration should be given to revising this section.**

The presentation of data in Chapter 4.0 of the RI is the preferred method of the NAS Cecil Field Partnering Team. This method of data presentation was selected to reduce the volume of the RI by focusing on contaminants selected by the risk screening process. However, all detected contaminants are presented in tables in Chapter 4.0 and in Chapter 1.0 of the OU 6 RI Data Document. Comparison to MCLs in Chapter 4.0 is a preference of FDEP.

- 3. Section 7.0, Page 7-1, Paragraph 1 states that the ERA was completed in accordance with guidance from EPA references. The completion date of this ERA is September 1996. However, the guidance cited in this document does not include either the EPA Process Document (EPA, 1994) or the Region 4 Ecological Risk Assessment Bulletins (EPA, 1995). The text should be revised to address this issue.**

Region IV ERA Bulletins 1 through 4 were used throughout the assessment, and also risk assessors relied on the principles presented in the process in designing and conducting the overall study. The Process Document itself is a review draft (USEPA, 1996a); therefore, it was not cited in the

PROJECT REVIEW COMMENTS (Continued)

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ERA. Although the ERAs were completed before more recent guidance was issued (*Proposed Guidelines for Ecological Risk Assessment* [USEPA, 1996b]), the ERAs are generally consistent with the methodologies described within that document. The proposed guidelines (USEPA, 1996b), the Region IV ecological risk bulletins, and the *Tri-Service Procedural Guidelines for Ecological Risk Assessment* (Wentsel et al., 1996) will be cited in the final remedial investigation report.

- 4. Section 7.2.3, Page 7-6, Paragraph 4 states that the assessment endpoint selected for the Site 11 ERA is the survival and maintenance of receptor populations at Site 11. However, this endpoint is difficult to measure. For example, it is unclear what percentage change must occur in the survival and/or maintenance of the receptor populations before an adverse effect has been determined to have taken place. There must be a quantitative measurement associated with the assessment endpoint in order for the potential effect of contaminants present at a site to be determined. Moreover, the EPA guidance can be referenced for the development of more appropriate assessment. Therefore, the text should be revised to provide more appropriate assessment endpoints.**

This comment also applies to the same issue in Table 7-1.

As stated in the comment, the assessment endpoints selected for the OU 6 ERA are general, and ABB-ES is aware of population models (such as RAMAS) that provide quantitative estimates of receptor population-level impacts. Unfortunately, given the number of COPCs to be analyzed and the significant effort involved in evaluating population-level effects on ecological receptors, synoptic field and/or modeling studies are not feasible. Consequently, statements about population-level effects can be made based on professional judgment, and these effects can be measured by using literature-derived data that are ecologically relevant (i.e., such as for survival, growth, and reproduction). Guidance will be reviewed to determine whether or not a more appropriate assessment endpoint can be chosen.

- 5. Figure 7-2 outlines the selection process for ecological chemicals of potential concern. One of the decision criteria used in the selection process is detected in <5 percent of samples, not present in other media, and not an ecologically toxic analyte. However, it is unclear if the criteria to include or exclude a chemical is based on all of the criteria listed in this box, one of the criteria, or a combination of the criteria. The text should be revised to clearly indicate how the criteria listed in this decision point was applied to chemicals of potential concern.**

The COPC selection criteria will be clarified in future ERAs. There are actually too few samples in the data set to use the <5% detection frequency criterion (n=10); therefore, this oversight will be corrected by removing this step from Figure 7-2.

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SPECIFIC COMMENTS, Risk Assessment (U.S. Environmental Protection Agency)

1. **Section 4.0, Page 4-1, Paragraph 1, Sentence 3 and 4:** These two sentences discuss the reasons for restriction of this RI to the most recent data set. However, the text does not address the removal action that has occurred and previous sampling results which are not representative. The text should consider these issues in the discussion.

Details of the removal action are presented in Subsection 1.2.2 of the OU 6 RI report. As suggested by RI specific comment number 5 and agreed to, sampling results from the focused RI and the removal action will be included in the RI.

2. **Section 4.0, Page 4-2, Paragraph 1, Sentence 2:** This sentence states that the background criteria are twice the mean of the concentrations detected in background samples. However, averaging only the detected concentrations has no statistical validity and is not a conservative approach. The appropriate procedure is to average over all samples with substituting one-half the detection limit for the non-detected samples. The background screening should be revised accordingly.

The background criterion of twice the mean of the concentration detected in background samples is consistent with the background screening criterion in the risk assessment, which was developed following the USEPA risk assessment guidance. See response to Comment 6

3. **Section 4.1.1, Page 4-3, Paragraph 2, Sentence 3:** This sentence states that the presence of acetone and methylene chloride in the samples is due to laboratory contamination. However, the correction for field and laboratory contamination should be carried out during the data validation process. Any remaining hits of acetone and methylene chloride may be site related and not laboratory contamination. The text should be revised accordingly.

The text will be revised as recommended.

4. **Section 6.3, Page 6-2:** This section discusses the exposure pathways and receptors for this risk assessment. However, the description of the site is incomplete. Specifically, there is no mention that the site is in the middle of a golf course and there is no description of the surrounding areas. A brief description of the site and the surrounding locations should be added to this section. In addition, the current and future exposure scenarios should be separated in discussions in Sections 6.3.1, 6.3.2, and 6.3.3, in order to avoid confusion.

Section 6.3, page 6-2, will have the following paragraph added:

The pesticide disposal area is located in the northwestern part of the main base of NAS Cecil Field. It is a small wooded area in the center of the golf course (between Fairways 11 and 17) where several pesticide containers containing 1,2-dibromo-3-chloropropane (a nematocide) were buried.

PROJECT REVIEW COMMENTS (Continued)

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Subsections 6.3.1, 6.3.2, and 6.3.3 will be revised to include separate discussions (i.e., separate paragraphs within the same subsection) of current and future exposure scenarios.

5. **Section 6.3.1, Page 6-12, Paragraph 1:** This section discusses the potential exposures to surface soils. However, the text does not discuss a likely receptor (golfer). For the golfer, the rate of exposure or dose rate may be very similar to that of the trespasser. Since many golfers play on a weekly basis, their frequency of exposure is likely to be high. In addition, the golf maintenance worker is likely to have a high rate of exposure from working with the soils. Therefore, the golfer should be added as a receptor and the exposure parameters for the maintenance worker should be reviewed.

Subsection 6.3.1 will be revised to include a golfer as a potential receptor; the golfer will not be quantitatively evaluated, however. If it is assumed that golfers play on weekly basis and they hit their golf balls into the site every week, the exposure duration at the site would be only for a matter of minutes. The exposure parameters for other receptors (e.g., site maintenance worker, trespasser) are more conservative both in duration and intensity. The site maintenance worker parameters have been reviewed. The site maintenance worker mows the grass on a weekly basis during the growing season. The exposure duration of 30 days per year, as presented in the report, is appropriate.

6. **Table 6-1, Page 6-6:** The table footnote states that the Mean of Detected Concentrations was derived using only the detected concentrations and that results qualified with a "U" or "UJ" were not included. However, this procedure for calculating the mean concentration does not have a statistical basis and should not be used. These mean values should be re-computed using one-half the detection limit for the non-detected results.

This comment also applies to Tables 6-2 and 6-3.

In Table 6-1, page 6-6, the mean of detected concentrations is presented in the table per USEPA Region IV guidance. NAS Cecil Field background concentrations have been calculated using detections only. This practice is based on written guidance from Dr. Elmer Akin for U.S. Naval Station Mayport, Jacksonville, Florida, and is included in the approved GIR for NAS Cecil Field. Revisions to the table will be made.

This response also applies to Tables 6-2 and 6-3.

PROJECT REVIEW COMMENTS (Continued)

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Operable Unit 6, Site 11**

**SPECIFIC COMMENTS, Risk Assessment
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7. **Table 6-2, Page 6-7:** This table presents the RBCs for the subsurface soils. However, Table 6-2 does not include the soil to groundwater RBC. This table should be revised to use the minimum of the industrial RBC or the Soil to Groundwater RBC.

Table 6-2, page 6-7 shows industrial soil RBCs as screening values for subsurface soil analytes. According to Supplemental Guidance to RAGS, Region IV Bulletins: Data Collection and Evaluation (USEPA, 1995), "Industrial screening values should be used for comparison to the subsurface soils data only for construction worker scenarios." The only receptor identified for subsurface soil at this site is a construction worker. In addition, for subsurface soil analytes selected as COPCs in groundwater, the Florida Soil Cleanup Goals based on the soil leaching to groundwater pathway were used to screen COPCs. Therefore, the soil to groundwater pathway has been considered in COPC selection. No table revisions will be made.

8. **Table 6-3, Page 6-7:** In Table 6-3, phenol is selected as a COPC on the basis of the FDEP leachate value. However, this value is based on an organoleptic endpoint for phenol of 10 ug/L. Organoleptic criteria are not appropriate to use in Risk Assessments because they are not based on human health affects. For consideration of leaching, the RBC for soil to groundwater of 49 ug/kg for phenol should be used.

According to the General Information Report (ABB-ES, 1996), human health COPC selections are based on Region III RBCs, and Federal and State guidance. State guidance includes the use of Florida Guidance Concentrations, which include the standards based on organoleptic endpoints. Retaining phenol as a COPC is a conservative approach; phenol is not a risk driver at this site.

9. **Table 6-3, Page 6-7:** The table presents a summary of potential exposure pathways. However, since this report does not include a conceptual site model (CSM) which is required by EPA guidance, this table can be developed in a CSM.

The comment should refer to Table 6-4. Table 6-4 will be revised to present a Conceptual Site Model for Site 11. The table will be revised to include sources for chemical release and migration pathways.

10. **Table 6-5, Page 6-15:** This column presents the 95% UCL for the surface soil samples. However, it does not state whether or not the normal distribution or the log-normal distribution was assumed. According to the Region 4 guidance (EPA, 1995), the log-normal distribution is usually assumed for soil samples. This point should be clarified and the table should be revised accordingly.

This comment also applies to Table 6-6.

PROJECT REVIEW COMMENTS (Continued)

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SPECIFIC COMMENTS, Risk Assessment (U.S. Environmental Protection Agency)

Tables 6-5 and 6-6 will be revised to indicate that a log-normal distribution was assumed.

- 11. Table 6-7, Page 6-17: The table displays a mean of 0.023 ug/L vs. a maximum of 0.013 ug/L for heptachlor epoxide and a mean of 20.8 ug/L vs. a maximum of 2.6 ug/L for antimony. However, it is rare for the mean to be higher than the maximum unless there are elevated detection limits for some of the samples. If this is the case, consideration should be given to dropping these elevated detection limits from the analysis. The text should describe the reason for these elevated detection limits. These numbers should be reviewed, and corrections should be made accordingly.**

In Table 6-7, footnote 3, the second sentence will be replaced with the following: "Due to elevated SQLs, the arithmetic mean concentrations may exceed the maximum detected concentration. In such cases, the maximum concentration is used as the EPC." In addition, samples with evaluated SQLs will be identified and discussed in the uncertainty section of the risk assessment.

- 12. Section 6.6, Page 6-30: This section is incomplete and does not fully describe the uncertainty of the risk assessment relating to exposure parameters, the toxicity factors, the spatial representativeness of the surface soils and the likelihood of the groundwater being used as a potable water source. In addition, the uncertainty section does not include a central tendency analysis which is required by EPA guidance. Although some of these topics may be covered in the GIR, a separate discussion on the likelihood of antimony and thallium being a part of site wastes should be presented. This section should be revised accordingly.**

The General Information Report (ABB ES, 1996) was developed to streamline the risk assessment process. The general uncertainties will not be presented in the RI. Central tendency risk will be evaluated for reasonable maximum exposure scenarios associated with risks that exceed USEPA risk management criteria. This evaluation will be limited to residential exposure to groundwater. The results will be incorporated into Section 6.6. A separate discussion on the likelihood of antimony and thallium being part of site wastes will be included. Also, a separate discussion on samples with elevated detection limits will be incorporated into Section 6.6.

- 13. Section 7.4.2, Page 7-15, Bullet 2: The text states that the Red Fox was selected to represent predatory animals at Site 11. Additionally, this paragraph states that the home range for the Red Fox is approximately 1,727 acres. The Red Fox was included in this ERA to examine potential impacts to receptors higher up the food web. However, due to the small size of the unit (0.1 acre) versus the home range of the Red Fox, its inclusion in the ERA provides little toxicological effects information to higher trophic receptors. Therefore, the Red Fox should be removed from the ERA as a potential receptor.**

PROJECT REVIEW COMMENTS (Continued)

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**SPECIFIC COMMENTS, Risk Assessment
(U.S. Environmental Protection Agency)**

As stated in the comment, the size of the unit is insignificant relative to the red fox's home range. Therefore, the red fox will be deleted as an indicator species. It is also recognized that essentially all higher trophic-level receptors will have ranges that greatly exceed the Site 11 acreage. The reasons for eliminating predatory mammal exposures will be clarified in Subsection 7.4.2.

14. **Section 7.5.1, Page 7-21, Paragraph 2, Sentence 1:** The text states that because no long-term wildlife population data are available at NAS Cecil Field, a direct measurement of this assessment endpoint is not possible. However, it is unclear if 1) this sentence implies that the selected assessment endpoint could not be measured because sufficient preliminary data was not available, or 2) a measurement of this assessment endpoint was performed but using indirect methods. The text should provide a detailed explanation regarding the measurement of the assessment endpoint.

The referenced sentence was included because sufficient preliminary data were not available and the assessment endpoint was measured using indirect methods. As stated in the response to general comment 4, impacts to populations were measured on the basis of professional judgment by using the results of literature-derived toxicity data. The text will be clarified accordingly.

15. **Section 7.6.1, Page 7-23, Paragraph 1, Sentence 5:** The text states that "because the maximum concentrations did cause the HIs to exceed the threshold of 1, no evaluation of risk from average EPCs was completed." Based on the HIs calculated for this ERA, it appears that the word "did not" should replace the word "did" in this sentence. The text should be corrected accordingly.

The text will be revised as suggested.

16. **Section 8.3, Page 8-3, Paragraph 1, Sentence 3:** This sentence states that antimony and thallium are not related to site wastes. However, there is no discussion of why they are not related to site wastes. In Appendix A (Page A-9, Paragraph 3, Sentence 3) the text states that thallium is used as a rodenticide and insecticide. If these two metals are present above background concentrations, then they are not natural constituents and may have been placed there through site activities. Therefore, further discussion of this issue should be presented.

The text will be revised to expand the discussion of the relation of antimony and thallium to site wastes.

Response to Review Comments from USEPA on NAS Cecil Field OU6.

General Comments

- 1) This word editing will be revised in Sections 4, 6, and 7.

Subsection 6.3, 6.4, 6.5, and 6.6, the phrase “HHPC” will be changed to “COPC”.

Tables 6-1 through 6-3, 6-8 and 6-9, the phrase “HHPC” will be changed to “COPC”.

Likewise, the phrase “ECPC” in all text and tables of Section 7 will be changed to “ecological COPC”.

- 3) The Navy made use of Region IV ERA Bulletins 1 through 4 throughout the assessment, and also relied on the principles presented in the process in designing and conducting the overall. The Process Document itself is a review draft (USEPA, 1996a); therefore, it was not cited in the ERA. Although the ERAs were completed before more recent guidance was issued (*Proposed Guidelines for Ecological Risk Assessment* [USEPA, 1996b]), the ERAs are generally consistent with the methodologies described within that document. The proposed guidelines (USEPA, 1996b), the Region IV ecological risk bulletins, and the *Tri-Service Procedural Guidelines for Ecological Risk Assessment* (Wentsel et al., 1996) will be cited in the final remedial investigation.
- 4) The Navy recognizes that the assessment endpoints selected for the OU 6 ERA are general. Furthermore, the Navy is aware of population models (such as RAMAS) that provide quantitative estimates of receptor population-level impacts. Unfortunately, given the number of COPCs to be analyzed and the significant effort involved in evaluating population-level effects on ecological receptors, synoptic field and/or modeling studies are not feasible. Consequently, the Navy believes that it can make statements about population-level effects based on professional judgment, and can measure these effects by using literature-derived data that are ecologically relevant (i.e., such as for survival, growth, and reproduction).. Nevertheless, the Navy will re-consult guidance to determine whether a more appropriate assessment endpoint can be chosen.
- 5) The Navy appreciates the reviewer’s comment, and will clarify the COPC selection criteria in future ERAs. However, there are actually too few samples in the data set to use the <5% detection frequency criterion (n=10); therefore, this oversight will be corrected by removing this step from Figure 7-2.

Risk Assessment Specific Comments

- 4) Section 6.3, page 6-2, will have the following paragraph added:

The pesticide disposal area is located in the northwestern corner of the main base of NAS Cecil Field. It is a small wooded area in the center of the golf course (in between Fairways 11 and 17) where several paint cans containing 1,2-Dibromo-3-chloropropane (a nematocide) were buried.

Section 6.3.1, 6.3.2, and 6.3.3 will be revised to include separate discussions (i.e., separate paragraphs within the same subsection) of current and future exposure scenarios.

- 5) Section 6.3.1 will be revised to include a golfer as a potential receptor; the golfer will not be quantitatively evaluated, however. If it is assumed that a golfer plays on weekly basis and they hit their golf ball into the sight every week, given that the exposure duration at the site would be only for a matter of minutes. The exposure parameters for other receptors (e.g. site maintenance worker, trespasser) are more conservative both in duration and intensity. The site maintenance worker have been reviewed. The site maintenance worker mows the grass on a weekly basis during the growing season. The exposure duration of 30 days/year as presented in the report, is appropriate.
- 6) Table 6-1, page 6-6, The mean of detected concentrations is presented in the table per USEPA Region IV guidance. According to Supplemental Guidance to RAGS: Region 4 Bulletins: Data Collection and Evaluation (USEPA, 1995), only requires that the arithmetic average of detected concentrations be presented in the COPC table. The mean of detected concentrations was not used in calculating exposure point concentrations or in COPC selection. No revisions to the table will be made.

This response also applies to Tables 6-2 and 6-3.

- 7) Table 6-2, page 6-7 shows industrial soil RBCs as screening values for subsurface soil analytes. According to Supplemental Guidance to RAGS: Region 4 Bulletins: Data Collection and Evaluation (USEPA, 1995), "Industrial screening values should be used for comparison to the subsurface soils data only for construction worker scenarios." The only receptor identified for subsurface soil at this site is a construction worker. In addition, for subsurface soil analytes selected as COPCs in groundwater, the Florida Soil Cleanup Goals based on the soil leaching to groundwater pathway were used to screen COPCs. Therefore, the soil to groundwater pathway has been considered in COPC selection. No table revisions will be made.

- 8) Table 6-3, page 6-7, The Florida Guidance Concentration of “10 ug/L” for phenol will be not removed from the table and phenol will remain a COPC. According to the GIR (ABB-ES, 1996), human health COPC selections are based on Region III RBCs, federal, and state guidance. State guidance includes the use of Florida Guidance Concentrations, which include the standards based on organoleptic endpoints. Retaining phenol as a COPC is conservative approach, phenol is not a risk driver at this site.
- 9) The comment refers to the wrong table (it should refer to Table 6-4). Table 6-4 will be revised to present a Conceptual Site Model for Site 11. The table will be revised to include sources for chemical release and migration pathways.
- 10) Table 6-5, footnote 2 will be revised to indicate that a log-normal distribution was assumed.
- 11) Table 6-7, footnote 3, the second sentence will be replaced with the following: “Due to elevated SQLs, the arithmetic mean concentrations may exceed the maximum detected concentration. In such cases, the maximum concentration is used as the EPC.” In addition, samples with evaluated SQLs will be identified and discussed in the uncertainty section of the risk assessment.
- 12) The General Information Report (ABB ES, 1996) was developed to streamline the risk assessment process. The general uncertainties will not be presented in the RI. Central tendency risk will be evaluated for reasonable maximum exposure scenarios associated with risks that exceed USEPA risk management criteria. This evaluation will be limited to residential exposure to groundwater. The results will be incorporated in Section 6.6. A separate discussion on the likelihood of antimony and thallium being part of site wastes will be included. Also a separate discussion on samples with elevated detection limits will be discussed in section 6.6.
- 13) The Navy agrees that the size of the unit is insignificant relative to the red fox’s home range, and will remove that receptor as an indicator species. The Navy also recognizes that essentially all higher trophic level receptors will have ranges that greatly exceed the Site 11 acreage. The reasons for eliminating predatory mammal exposures will be clarified in Section 7.4.2.
- 14) The referenced sentence was included both because sufficient preliminary data were not available, and because the assessment endpoint was measured using indirect methods. As stated in the response to general comment 4, impacts to populations were measured on the basis of professional judgment by using the results of literature-derived toxicity data. The text will be clarified accordingly.

- 15) The word “did” was inadvertently used in this section; the text will be revised as suggested.

References:

- ABB-ES, 1996, NAS Cecil Field Remedial Investigation General Information Report, ABB-ES, 1996.
- United States Environmental Protection Agency, (USEPA), 1992, Supplemental Guidance to RAGS: Calculating the Concentration Term, Office of Solid Waste and Emergency Response, 9285.7-081, Vol 1 NO 1, May.
- USEPA, 1995; Supplemental Guidance to RAGS: Region 4 Bulletins Human Health Risk Assessment, Waste Management Division No 1, November.
- USEPA, 1996a. Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments; Internal U.S. EPA Review Draft; USEPA Environmental Response Team; Edison, NJ; June 3, 1996.
- USEPA, 1996b. Proposed Guidelines for Ecological Risk Assessment: Notice; Federal Register: Vol. 61, No. 175, pp. 47552-47631; Monday, September 9, 1996.
- Wentzel, R.S., T.W. La Point, M. Simini, R.T. Checkai, D. Ludwig, and L.W. Brewer, 1996. Tri-Service Procedural Guidelines for Ecological Risk Assessments, Volumes I and II; written for the Air Force Center for Environmental Excellence (AFCEE), the Army Environmental Center (AEC), and the Naval Facilities Engineering Service Center (NFESC); June, 1996.

OU 6 RI RESPONSE TO COMMENTS
RISK ASSESSMENT GENERAL COMMENTS

2. The presentation of data in chapter 4 of the RI is the preferred method of the NAS Cecil Field Partnering Team. This method of data presentaiton was selected to reduce the volume of the RI by focussing on contaminants selected by the risk screening process. However, all detected contaminants are presented in tables in Chapter 4 and in Chapter 1 of the OU 6 RI data document. Comparison to MCLs in Chapter 4 is a preference of FDEP.

RISK ASSESSMENT SPECIFIC COMMENTS

1. Details of the removal action are presented in Section 1.2.2 of the OU 6 RI report. As suggested by RI specific comment number 5 and agreed to, sampling results from the focussed RI and the removal action will be included in the RI.
2. The background criteria of twice the mean of the concentration detected in background samples is consistent with the background screening criteria in the risk assessment which was developed following the USEPA risk assessment guidance.
3. The text will be revised as recommended.