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LETTER REGARDING REMEDIAL INVESTIGATION REPORT FOR SITE 14 NAS WHITING FIELD FL
1/20/1999
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UNITED STATES ENVIRONMENTAL PROTECTI(
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

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January 20, 1999

4WD-FFB

Ms. Linda Martin
Southern Division
Naval Facilities Engineering Command
P.O. Box 190010
2155 Eagle Drive
North Charleston, South Carolina 29419-9010

SUBJ: RI Report for Site 14

Dear Ms. Martin:

The United States Environmental Protection Agency (EPA) has received and reviewed the Remedial Investigation (RI) Report for Site 14, Short Term Sanitary Landfill, at NAS Whiting Field, dated April 1998 . Enclosed are EPA's comments based on this review.

If you should have any questions or comments, please contact me at (404) 562-8555.

Sincerely,

Craig A. Benedikt

Craig A. Benedikt
Remedial Project Manager
Federal Facilities Branch

Enclosure

cc: Jim Cason, FDEP

EPA Review Comments Report for
Remedial Investigation Report for Site 14
Short Term Sanitary Landfill
April 1998

General Comments

1. The hydrogeologic characterization is very detailed and provides some understanding of conditions across the site. However, a data gap exits concerning the horizontal extent of contamination in a downgradient (SE) direction from the site. This deficiency should be addressed.

Specific Comments

2. **Page 1-1, Section 1.2 Paragraph 5**. Although the site description is adequate for describing current conditions, it provides only a minimal description from an historic site description perspective. Site description information from the 1985 Initial Assessment Study should be incorporated into the Draft RI Report.

3. **Page 5-1, Section 5.1 Paragraph 6**. The Draft RI Report states, "Site 14 monitoring well boring logs are presented in Appendix E of this report." However, this is not an accurate description of what appears in Appendix E. According to the Table of Contents, Appendix E contains Human Health Risk Data. An Appendix should be assembled to present monitoring well and soil boring logs, and the Table of Contents should be modified accordingly.

4. **Page 5-10, Section 5.2 Figure 5-2**. Review of Figure 5-2 indicates that two additional deep monitoring wells should be installed in a downgradient (SE) direction from Site 14. Well location WHF-14-1 is of no value in assessing possible groundwater contamination in a downgradient direction offsite from Site 14. Well location WHF-14-2 is only of marginal value when determining extent of contamination in a crossgradient direction to Site 14. The addition of a third and fourth monitoring well would narrow the data gap which presently exists.

5. **Page 5-22, Section 5.5 Table 5-7 and Table 5-8**. The justification for averaging the values of the samples and their duplicates for the initial screening should be explained.

Review Comments on the
Human Health and Ecological Risk Assessments for the Remedial Investigation Report,
Site 14, Short-Term Sanitary Landfill

General Comments

6. Discussion in the Human Health Risk Assessment section refers consistently to the risk calculations, exposure variables, and toxicity profiles that are presented in Appendix C. This information is actually presented in Appendix E. All references to Appendix C for exposure parameters, information on the toxicity of human health contaminants of potential concern (HHCPC), and risk calculation data should be changed accordingly.

7. It is discussed in chapter 7 that risks are calculated for terrestrial wildlife using Hazard Quotients (HQs) and Hazard Indices (HIs). The text explains that HQs less than one would result in no adverse ecological effects and HIs greater than one would result in possible adverse ecological effects and warrant further discussion. However, it is not discussed how an HI or HQ equal to one would be addressed. This scenario should be addressed in the risk characterization section of the text.

8. An editorial review of the document is necessary. Throughout Chapter 7, tables in Appendix F are referred to as Appendix E tables. Appendix E contains human health data while Appendix F contains ecological data. The Appendix E references in chapter 7 should be changed to reference Appendix F.

   Many of the tables in Appendix F cite documents that do not appear in the reference section of this document. In order to check these references, a full citation is needed. Full citations should be included in the reference section or a separate reference section for each appendix should be provided.

Specific Comments

9. Table 5-7. The table presents a summary of the analytical results of the surface soil investigation at Site 14. However, a comparison of the information presented in Table 5-7 with Table 6-1 indicate that Table 5-7 does not contain the concentrations for zinc, which were detected during sampling activities. The table should be corrected accordingly.

10. Table 5-11. The table presents a summary of the analytical results of the groundwater investigation at Site 14. The table does not contain the units for the concentrations of inorganic constituents detected in the samples. In order to clearly present the data, the table should include the appropriate units.

11. **Figure 6-1**. The text of Section Six indicates that the conceptual site model for Site 14 is presented in Figure 6-1. However, the document does not contain this information. A conceptual site model should be developed which evaluates the potential exposure pathways for each of the receptors at Site 14.

12. **Section 6.8, Page 6-27**. The text of the section states that it has been determined that the HHCPC detected in surface soil, subsurface soil, and groundwater are not likely to pose unacceptable risks to the receptors evaluated. However, no HHCPC were identified in the subsurface soil at Site 14, therefore, no evaluation was performed. The text should be corrected to avoid unnecessary confusion.

13. **Figure 7-2, Page 7-6**. Figure 7-2 shows the contaminant pathway model for Site 14 ecological receptors. Shading of the boxes indicates exposure pathways that are quantitatively evaluated for receptors in Site 14. Nonshaded boxes indicate insignificant exposure pathways. The soil-to-food-to-ingestion pathway for terrestrial invertebrates is not shaded meaning it is not considered to be a significant exposure pathway. The possibility of exposure of terrestrial invertebrates to contaminants via ingestion of contaminated food is highly likely since terrestrial invertebrates ingest food which is in direct contact with potentially contaminated soil. Page 7-7 discusses ingestion of food items by terrestrial invertebrates as a complete exposure pathway. It would be appropriate to shade the box in Figure 7-2 to indicate that ingestion of food items by terrestrial invertebrates is a complete exposure pathway.

14. **Section 7.2.3, Identification of Endpoints, Page 7-7**. Three hypotheses were developed to gauge potential risks associated with exposure to Site 14 surface soil. The hypotheses, however, are phrased in the form of questions which does not fit the definition of a hypothesis. Hypotheses are predictions or estimations of possible results of a study or experiment. Either the term "hypotheses" should not be used in this section or they should be changed from questions to statements that fit the definition of the term hypothesis.

15. **Table 7-1, Page 7-8**. Table 7-1 shows the endpoints selected for the ecological risk assessment. In Section 7.2.3, the assessment endpoints are defined as representing the ecological component to be protected. However, in Table 7-1 the assessment endpoints for terrestrial plants and terrestrial invertebrates are stated as being a reduction in the biomass of terrestrial plants used as forage material and a reduction in the abundance of earthworms used as forage material, respectively. Reductions in forage material are not ecological components to be protected. The assessment endpoints in Table 7-1 are not consistent with the definition of an assessment endpoint provided in section 7.2.3. This inconsistency should be corrected.

    Also, the terrestrial invertebrate assessment endpoint presented in Table 7-1 is more specific than the measurement endpoint and the decision point. The assessment endpoint specifies "earthworms" while the measurement endpoint and the decision point specify "terrestrial invertebrates". This inconsistency should be corrected.

16. **Section 7.3, Hazard Assessment and Selection of ECPCs, Page 7-10**. The third paragraph on Page 7-10 states that the site-specific background investigation used to establish background screening values for Site 11 consists of nine surface soil samples (BKG-SL-02, BKG-SL-06, BKG-SL-07, BKG-SL-08, BKS00101, BKS00201, BKS00301, BKS00401, and BKS00501) and one duplicate sample (BKS00201D). However, the analytical data for these background samples is not included with the rest of the soil sample analytical data in Appendix C. These data should be provided.

17. **Section 7.4.2, Terrestrial Wildlife, Page 7-14**. The second paragraph in Section 7.4.2 refers the reader to in the General Information Report (GIR) prepared by ABB-ES in 1998 for the potential dietary exposure (PDE) calculations methodology. It would be helpful for pertinent excerpts of these methodologies to be provided in an appendix to this report.

18. **Table 7-3, Page 7-15**. This table provides the equations used to calculate the potential dietary exposures for wildlife receptors. The variable "TN" is given three different definitions in Table 7-3. They are as follows, 1) the tissue concentration in food item N, 2) the secondary prey item concentration, and 3) the primary prey item concentration. Clarification (e.g., Tp for primary prey item tissue concentration and Ts for secondary prey item tissue concentration) in Table 7-3 would be beneficial.

    The rationale provided in the ERA for not calculating bird tissue concentrations is the lack of avian bioaccumulation factors (BAFs). Since contaminant concentrations in birds as a secondary prey items were not calculated, it should be stated in section 7.4 how PDEs for the red fox and red-tailed hawk were calculated without the avian BAFs.

19. **Section 7.4.2, Terrestrial Wildlife, Page 7-16**. The first bullet at the top of page 7-16 provides a discussion of the short-tailed shrew as a wildlife receptor. The home range of the short-tailed shrew is not provided in this discussion although the home ranges for other ecological receptors are provided in this section. The home range of the short-tailed shrew should be provided in the first bullet.

    The fourth bullet at the bottom of page 7-16 provides a discussion of the red-tailed hawk as a wildlife receptor. The home range of the red-tailed hawk is not provided in this discussion although the home ranges for other ecological receptors are provided in this section. The home range of the red-tailed hawk should be provided in the fourth bullet.

20. **Table 7-2**. Chrysene was selected as one of the ECPCs in Table 7-2. However, detected concentrations of chrysene are not presented in the sampling data within Appendix C. Data for chrysene should be provided in Appendix C.

21. **Table 7-5, Page 7-18**. This table describes the exposure parameters for representative wildlife species used as receptors in this remedial investigation. Many of the parameters are cited from the Wildlife Exposure Factors Handbook (USEPA, 1993); however, it is not consistently stated whether an average of the exposure parameter is calculated or if a certain study was selected. For example, it is not explained in Table 7-5 how the values in the column titled, "Assumed Diet for Terrestrial Exposure Assessment (% of diet)," were derived. The dietary composition data for the deer mouse (surrogate for the cotton mouse) provided in the handbook are seasonal percentages with invertebrates comprising as much as 63% of the deer mouse's diet, but Table 7-5 states that invertebrates make up 10% of the deer mouse's diet. It should be clarified in Table 7-5 how the values in the dietary composition column were derived from the data provided in the handbook.

    The food ingestion rate (FIR) for the red-tailed hawk was calculated using the bird equation based on body weight from the Wildlife Exposure Factors Handbook (USEPA, 1993). An FIR of 0.133 kg/day for the red-tailed hawk is presented in table 7-5; however, when calculated using the EPA bird equation and the body weight provided in Table 7-5, an FIR of 0.059 kg/day results. This calculation should be reevaluated and checked for accuracy.

22. **Section 7.6.2, Terrestrial Plants**. This section asserts that the sparse vegetation in the landfill area is "likely the result of physical disturbance to the surface caused by landfill-related activities, rather than direct contact with ECPCs in surface soil." This explanation for the sparse vegetation does not seem valid since landfill operations ceased in early 1979. The explanation of physical stress to vegetation should include clay content and soil compaction data.

23. **Appendix C**. Soil sample analytical data for Site 14 are provided in Appendix C. Data for soil samples 14SS0101 and 14SS0202 are shown in Appendix C but these sample locations are not clearly mentioned in the sampling discussion in Section 7.3 of the text. The purpose and relevance of these sampling locations needs to be addressed in the text.

24. **Table F-1**. This table presents bioaccumulation factors (BAFs) for terrestrial invertebrates, terrestrial plants, mammals, and birds.

- The terrestrial invertebrate BAFs for polynuclear aromatic hydrocarbons (PAHs) are referenced as being the average of values presented in Beyer 1990. It would be preferable to use the individual PAH BAFs presented in Beyer 1990 instead of an average. In cases where an individual value is not presented, then use of an average PAH BAF as a surrogate is appropriate. An average value would be appropriate as a surrogate for bis(2-ethylhexyl)phthalate, since a value is not provided in Beyer, 1990. However, the individual value for chrysene presented in Beyer would be preferable. The footnote reference should be revised as appropriate.

- It is not possible to confirm the mammal BAFs for semivolatiles using the cited Travis and Arms equation for biotransfer factors with conversion to BAFs. The average ingestion rate used for this calculation in the ERA was not provided. Provide more information on the calculation of the mammal BAFs and re-confirm the calculated mammal BAFs.

- Table F-1 provides a plant BAF of 6.7E-03 for bis(2-ethylhexyl)phthalate. However, when recalculated using the equation in footnote [d], a plant BAF of 8.7E-03 was obtained. Please review this calculation and address this discrepancy.

- Table F-1 provides an invertebrate BAF of 7.6E-02 and a plant BAF of 7.6E-02 for chrysene. However, when recalculated using the calculations and conversions in footnotes [b] and [c], an invertebrate BAF of 3.5E-02 and a plant BAF of 3.9E-03 were obtained. Please review this calculation and address this discrepancy.

25. **Table F-2**. Table F-2 presents ingestion toxicity information. The Lowest Observed Adverse Effect Level (LOAEL) column heading should not be under the lethal reference toxicity value (RTV) heading. The LOAEL should be presented with sublethal RTVs. The column headings need to be verified to ensure that they reflect the data in the column and be revised as necessary.

26. **Table F-3**. Table F-3 presents the RTVs selected for the ERA. Table F-2 presents ingestion toxicity data for wildlife.
    - Methylene chloride has a No Observed Adverse Effect Level (NOAEL) of 12.5 mg/kg/BW/day but the LOAEL value was used as the sublethal RTV in Table F-3. Chrysene has a LOAEL of 99 mg/kg/BW/day but surrogate lethal and sublethal RTVs of 12 and 10 mg/kg/BW/day, respectively, were used in Table F-3. The data hierarchy discussion in section 7.5.1 states that NOAEL values should be used as RTVs before LOAELs and that LOAEL should be used before surrogates. The methylene chloride NOAEL and the chrysene LOAEL should be used in this assessment.

    - A LOAEL of 2300 mg/kg/BW/day for manganese/small mammal was used as the RTV in Table F-3. The data hierarchy discussion in section 7.5.1 states that LOAEL values should be multiplied by 0.1 to obtain appropriate RTV values. Please review this calculation and address this discrepancy.

    - LOAELs of 96 mg/kg/BW/day for vanadium/small bird, and 6.2 mg/kg/BW/day for vanadium/small mammal were multiplied by 0.2 to obtain RTVs of 19.2 mg/kg/BW/day and 6.2 mg/kg/BW/day, respectively. The data hierarchy discussion in section 7.5.1 states that LOAEL values should be multiplied by 0.1 to obtain appropriate RTV values. Please review this calculation and address this discrepancy.