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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
SAM N U " ATLANTA FEDERAL CENTER
61 FORSYTH STREET, S.W.
ATLANTA, GEORGIA 30303

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NAS PENSACOLA
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February 15,2001

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CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Commanding Officer,
Southern Division, NAVFACENGCOM
Attn: **Mi.** Bill Hill (code 1851)
P.O. Box 190010
North Charleston, South Carolina 29419-9010

SUBJ: Final Remedial Investigation
Operable Unit 16, Site 41
Naval Air Station Pensacola
EPA Site ID No.: FL9170024567

Dear **Mr.** Hill:

The U. **S.** Environmental Protection Agency (EPA), has completed its review of the above subject document. Although this document is titled "final," the review was conducted, (because of the restructuring/rewriting), as a draft submittal.

Comments are enclosed. **If** you have any questions or comments, **I** can be reached at **(404)** 562-8538.

Sincerely,

Gena D. Townsend

Senior Project Manager
Federal Facilities Branch

Enclosure

cc: Ron Joyner, NAS Pensacola
Allison Harris, Ensafe, Memphis
Joe Fugitt, FDEP

OUTSTANDING ISSUE

Elevated HQs for surface water contaminants do not appear to have been adequately addressed. The response to comments states that the Tier 1 Partnering Team decided that sediment was most appropriate for ranking wetlands. By using the technique presented in the report; several wetlands with elevated surface water HQs have not been adequately addressed and remain a large data gap for this risk assessment.

Wetland Overview

Below are the wetlands that require additional information:

1. Wetland 64 - The area that includes samples 02 - 06 appear to be the area of concern for this wetland. The text states that a petroleum odor was detected during sample collection and this wetland should be managed under the State Petroleum Program. Other contaminants were also detected in this area (i.e.. cadmium, chromium, mercury .....), that may not be related to the UST program.

Suggestions:

1. Groundwater and surface water samples should be collected from the area surrounding sampling points 02- 06. This information could evaluate the gw/sw interface and overland flow.

2. The petroleum program should be contacted and their acceptance of this site should be verified. **All** contaminants identified may not be fuel related or by products.

3. The source of the Petroleum odor should be identified.

2. Wetland 3 - Ecological samples were taken from sample location *0307* which had a maximum detection of 49 ppb of **4,4** DDD. The location, (0303), with the highest detection of 400 ppb of **4,4**DDD was not evaluated. Although, It does not appear that the contaminants are migrating this could be an area of concern.

Suggestion:

Samples should be taken in a tighter grid around sample location *0303*. The additional data will identify if this is an isolated hot spot or a wider area of contamination. The concern would be the maintenance of the wetland. Dredging could occur resulting in human exposure and contaminated sediment being redeposited in another location.

3. Wetland 18 - The text states that W18 is being fed by seeps from Site 1 (landfill). Presently, contaminants at low levels have

been detected in the wetland. They consist of Napthelene, Lead, Chromium, Benzene, Chlorobenzene and 1,4, Dichlorobenzene.

Suggestions:

1. Add/verify that the seep locations are included in the Site 1 Long Term Monitoring Plan.

2. Add the additional contaminants that are not presently included in the monitoring plan for Site 1.

4. Wetland 1 - This wetland is located close to Sites 1 and 16. Sample locations **03 & 04** contain high levels of benzo(a)anthracene, benzo(a)pyrene, BEHP, chrysene, phenanthrene and pyrene. The sample points are approximately 60 ft. apart and are located in the toe of the wetland.

Suggestion:

An attempt should be made to determine the source of the contaminants. Soil and groundwater samples should be taken from the land surface near the impacted sampling points.

5. Wetland 48 - The text states that this wetland was fed by surface water and groundwater. Only one sample was taken from this wetland. This sample contained high levels of pesticides. This sample point appears to be near the roadway.

Suggestion:

Additional sampling should be conducted around this sample location to determine if this could be an isolated area.

6. Wetland 13 - The text states that this wetland is located near the Bilge Water plant and is seasonally saturated. Only one sample was taken from this area. The surface water sample contained high levels of chromium(225 ppb), copper(142 ppb), lead(1220 ppb) and mercury(1.3 ppb). The text also states that the sample was turbid., however, sediment sample concentrations were below the SSVs. If the wetland is seasonal and the sediment levels are below SSVs, what is the source of the contamination?

Suggestions:

1. An attempt should be made to identify the source of the contamination.
2. Additional sediment, surface water and groundwater samples should be collected

7. Wetland 52 - The text states that UST **18** site could be potentially impacting this wetland. The remedial action selected for this **UST** is "Natural Attenuation". Contaminants were determined not to be migrating offsite. Sample **E3** contained concentration of anthracene, fluoranthene, fluorene, naphthalene and phenanthrene above sediment benchmark values.

Suggestions:

Need to identify if sample location E3 is included in the UST **18** remediation area. If this area is not included, the UST program should be notified of the contamination identified in W52 and request that this area be included in their program.

8. Wetland 58 - The text states that this is a fresh water wetland and is seasonally saturated during the rainy season. High levels of 2 methylnapthelene, acenaphthene, napthalene and phenathrene were detected in the sediment sample.

Suggestions:

1. **An** attempt should be made to identify the source of the contaminants.
2. Additional samples should be collected to verify if this is an isolated area or a part of a larger problem.

Comments

1. Potential risks from elevated levels of mercury remain a large data gap in this risk assessment. Based on the results of the desktop foodchain model and the lack of site specific tissue concentrations it is recommended that further work needs to be done to address this data gap.

2. A large data gap identified during the review is the lack of correlation of contaminant levels between sampling events. The levels of contaminants (especially pesticides) found during the initial investigations were much higher than those identified during the later investigations. Therefore, risk from high levels of pesticides (and other contaminants) **was** not adequately addressed in this report. Until the site specific data is gathered at locations that contain similar levels of contaminants, the potential risk at these wetlands has not been adequately addressed.

3. There were several assumptions built into the food chain models used in the **risk** assessment that may not be technically defensible. EPA guidance requires that the most conservative scenario should include the lowest reported body weight and the highest reported ingestion rate to evaluate the maximum exposure scenario. Also, I do not think it is appropriate to use the size of individual wetlands to adjust site foraging factors for contaminants that are very wide ranging like pesticides at this facility. The food chain model should also include the

exposure from incidental ingestion of sediment for each receptor.

4. There appears to be some confusion about how risk from pesticides is going to be addressed. **An** assessment endpoint was identified to address bioconcentration within the wetland systems; however, during Risk Characterization, the risk management statement is added that the levels were not above the site-wide pesticide levels and therefore were not recommended for further evaluation. If this risk management decision is made, it is unclear as to why the assessment endpoints addressing risk from bioaccumulation were included. **If** this is a potential risk that was to be addressed by the risk assessment the results should be presented as they relate to the assessment endpoint and related measurement endpoints. The risk management statements should be taken out of the risk assessment.

1.0 GENERAL COMMENTS

1. **Section: General**
There are some flaws in the procedures used to screen contaminants for inclusion in the risk assessments. There may be errors in the setting of benchmark values and the sediment screening values. The specifics are detailed in the below comments.

2. **Section: General**
There are flaws in the logic used to calculate the fish exposure values. As such, the conclusions reached concerning the risk estimates for the fishing receptors may not be correct. The fish risk estimates need to be recalculated. In general, the comments on the previous RI still stand for the fish risk assessment. A sampling of the fish used in human consumption is still needed before it can be stated that there was no risk due to fish consumption.

3. **Section: General**
Not all wetlands were reviewed in detail since it was apparent that a similar procedure was followed for all wetlands. The principal issues are global in nature and would apply to all wetlands.

4. **Section: 6.3, Page: 6-6, Paragraph: 0, Sentence: 1**
This sentence states that the resulting basewide concentrations should be considered the maximum concentration at which concentrations may be detected on widespread use. However, it is not clear how this "basewide concentration" will be used. **Is** it a form of background concentration?

5. **Section: 6.3, Page: 6.6, Paragraph: 2, 3 & 4**
In each of these paragraphs, a statement is made that a basewide concentration is established. However, no reference is made as to how these values are established. Since this is an important number, the basis (statistical or otherwise) of these numbers should be established.

In addition, it is not clear how bay sediment samples can be used as a reference sample for wetlands.

6. **Table: 6-2, Page: 6-9, Column: all.**
The subject **of** this table is sediment, but the units specify ug/L. This should be corrected.

7. **Table: 6-2, Page: 6-10, Row: Mean, Column: Cyanide.**
This column shows a mean adjusted value for cyanide of. 1.72ug/L for cyanide. However, there were no detections for cyanide. Averaging all the non-detects for a reference value is not appropriate. Since there were no detections of cyanide in the reference wetlands, any detection of cyanide in a wetland is an exceedance. This comment also applies to any other chemical that was non-detected in a wetland such as silver and selenium and for both sediment and surface water. Correcting this comment may affect the selection of COPCs.

8. **Section: 8.1.1, Page: 8-2, Paragraph: 2, Sentence: 6**
This sentence states that cumulative **risk** will be estimated for NAS Pensacola Wetlands. However, it may be inappropriate to sum the **risk** over all wetlands **as** the exposure units may be quite different.

9. **Table: 8.3-5, Pace: 8-17, Row: Footnote - KP.**
This footnote states that the Kp values were obtained from the ONRL **Risk** Assessment System. However, it is Region **4's** policy to use the dermal guidance for calculating dermal exposure. In addition, as per a phone conversation with Dr. Ted Simon of Region **4,** it is Region **4's** policy not to consider chlorinated pesticides and PAHs with a molecular weight greater than 250 in surface water exposures. It is their opinion that the equation in the dermal guidance over predicts the exposure and greatly adds to the uncertainty of the **risk** estimates. It is suggested that the risks due to dermal water exposure be re-calculated using the new dermal guidance and Region **4's** policy.

10. **Section: 8.3.5.5, Page: 8-23, Paragraph: 3**
This paragraph discusses the use of a site-specific foraging factor for the calculation of intakes of compounds in fish tissue. This factor assumes that the ratio of the area of a wetland to the entire Bayou Grande. This assumption is not conservative enough as it assumes the effect of one wetland will be independent of all wetlands. In fact this foraging factor is the minimum foraging factor. It is suggested that an ecologist from **EPA** be consulted as to the appropriate foraging factor.

11. **Section: 8.3.5.5.2, Page: 8-24, Paragraph: 1, Sentence: 4**
This sentence states that the daily consumption rates were multiplied by 50% to compensate for the edible portion of the fish. However, many of the contaminants (such as the pesticides) will partition to the flesh and fat and will have small concentrations in the bones. In addition, the basis of the trophic transfer coefficient may assume transfer to edible portions. Given the overall uncertainty of the assessment of consumption of fish, it is

suggested that this factor not be used.

Section: 9.5.1, Page: 9-13, Paragraph: 2
This paragraph discusses the use of the leachate equation from the Soil Screening Guidance to model the partitioning of contaminants from the sediment to the surface water. Use of this equation could provide insight into the exchange of contaminants from sediment to surface water and vice-versa. However, the logic of the development of the factor of 100 is flawed. This assumes a surface water flow, because in a low flow situation, the movement of contaminants would continue and eventually reach a steady state. It would be more conservative to divide the Soil Screening Leachate level by 20. This would model a low flow or stagnant situation. Alternatively, some form of dilution due to surface water flow could be estimated. This would also be wetland specific. In addition, the assumption of a standard TOC level for each wetland is not appropriate and the assumption of a 20% water porosity for sediment may not also be correct. This is also likely to vary from wetland to wetland. Therefore the sediment screening levels should be re-calculated and probably be wetland specific.

13. **Section: G 3, Page: G 5, Paragraph: 1, Sentence: 1**
This sentence states that mercury was detected in 1 out of 13 sediment samples collected at Site **41.** However, the number of sediment samples and the number of detections were much larger. This discrepancy needs some explanation. In addition, averaging across the site (over all wetlands) ignores the possibility of a "hot spot". This analysis should be re-considered.

2.0 SPECIFIC COMMENTS

1. Section: 5.4, Page: 5-4, Paramaph: 3, Sentence: 1.
This sentence states that the **MSNSD** results appeared to be satisfactory. However, the purpose of data validation is to determine if the QC parameters are satisfactory. This sentence should be rewritten to state whether or not the MS/MSD results are satisfactory not just appear.

2. Table: 6-1, Page: 6-3, Column: Hardness Result.
This column should be reformatted to show the correct number of significant figures

3. Section: 8.1.1, Page: 8-2, Paragraph: all.
This section keeps referring to the ERA not the HHRA. This should be corrected.

4. Section: 8.1.1, Pace: 8-2, Paragraph: 2, Sentence: 3.
This sentence states that whole baitfish samples will be used to support the ERA. If the sentence meant to support the "RA, then baitfish samples may not be appropriate to estimate human health **risk.**

5. Table: 8-2, Page: 8-1, Row: Surface Water/Inhalation, Column: Reason.
Thereason for not including surface water/inhalation of volatile contaminant's pathway was stated that this pathway was considered to be insignificant. However, it was not stated why it was considered to be insignificant.

6. Section: 8.3.4, Page: 8-13, Paragraph: 1, Sentence: 2.
This sentence states that most chemicals detected pose little **risk** and would greatly increase the level of effort in this assessment. This sentence is not entirely correct and ignores the cumulative effects of many chemicals. It also adds little information. It is suggested that this sentence be deleted.

7. Section: 8.3.3, Page: 8-12. Paragraph: 3 (Tissue)
This paragraph discusses the use of baitfish data to estimate human health **risks.** Simply scaling or adjusting the data to predict higher trophic levels for human consumption is not appropriate. This does not allow for the effects of bioaccumulation or organ partitioning. It would be preferable to have collected other fish. It is stated in Section 8.3.4.1 that atrophic transfer coefficient was used. This paragraph should be revised to impart this concept.

8. Table: 8-3, Page: 8-15, Row: SA with Sediment.
The skin surface area contact with sediment was stated to 4,100 cm^2/event. However, the derivation of this value was not given. It should be 25% of the total skin surface area.

9. Table: 8-3, Page: 8-15, Row: Exposure Time.
The exposure time for both the worker and the trespasser was shown to be 2.6 hours per day. No rationale for this choice was given. It would seem that the maintenance worker would work more than 2.6 hours a day in the wetlands. A figure of 5 hours a day would be more appropriate.

10. Table: 8-3, Page: 8-15, Row: Exposure frequency.
The exposure frequency for both the worker and the trespasser was shown to be 52 days a year. However, It must be remembered that a maintenance worker will work in more than one wetland over the course of a year. To compensate for this, the exposure frequency should be increased to 104 days a year.

11. Table: 10-1-1, Page: 10-1-6, Row: Antimony, Column: Frequency of Detection.
This cell displays the frequency of detection for antimony to be 4/10 while at 24 samples were collected. A statement is made that no positive results were rejected. However, as this frequency shows, it can just as serious when non-detects were rejected. In this case the coverage of antimony results is only 42%. Since antimony was detected close to the screening levels (which are of question), this could be an issue. For example, antimony was non-detected in the reference samples. Therefore, antimony should be labeled as a COPC for both human health and ecological. This comment applies to the document as whole.

RESPONSE TO COMMENTS

1.0 Major Comments and Recommendations:

Comment 1: There appears to be a data gap in the analysis of Wetland **64.** The area supports recreational fishing but fish tissue analysis is incomplete and no surface water samples were collected. The statement is made that Bayou Grande does not support sufficient game for subsistence fishing and thus the overall impact from consuming fish originating in the Bayou Grande is considered insignificant. This is not **a** sufficient explanation to explain the absence of data, particularly mercury in fish tissue. The presence of mercury in the sediments would indicate that fish tissue samples should be analyzed for **risk** analysis. It appears that only PAHs, pesticides/PCBs and lead were analyzed in fish tissue. **A** model was used to generate mercury numbers thus compounding the uncertainty in the analysis. This method may be sufficiently protective in areas that do not allow public access or support no fish but it is a questionable practice for a public fishing area. There is no justification for the absence of surface water analysis. The continued recreational use of this wetland would permit exposure to surface water. Data should be obtained to protect the public.

Comment 2: The method of analysis for radium is not described. In addition, there appears to be no validation method or validation report for this constituent. It is stated in the text that no radium was found but the report does not contain enough information to ascertain the validity of that conclusion. This information may be included in an earlier report for Operable Unit 2. The report should be referenced. It would be helpful if in addition to referencing, the analytical and validation methods for radium were included in the appropriate sections. This would aid the reader in judging the correctness of the conclusions.

Comment 3: The organization by color coded wetland is understandable. **A** suggestion for improvement in future texts is that a section is developed to describe the continuous areas **and** relationship to the assessment areas. This information is included in the wetland text but an overview would be helpful in determining base wide actions. Some effort should be made to integrate the individual wetlands into common transport pathways.

Comment 4: The reference wetland selection and rationale as described in the text would compare freshwater or estuarine surface water criteria against the wetlands of concern, depending on whether the wetland contained freshwater or estuarine surface water. It is difficult to ascertain that this is the methodology in the comparisons of reference Wetlands 25 and 27 as these wetlands are divided into palustrine and estuarine sections. Was only data from the appropriate section **(A** or B) used, thus comparing freshwater with freshwater and estuarine water data with estuarine data? This is no? obvious in the text. The incompleteness of data for wetland 25 would make further division of the data into components **A** and B impractical. It appears that data from Wetland 25 was used as a fresh water reference and data from Wetland 27 was used as a saltwater reference. This without partitioning of the palustrine and estuarine sections would result in comparison of estuarine to freshwater constituents and vice versa.

2.0 Additional Comments

Comment 1:
An abbreviation and acronym list should be included.

Comment 2:
Section 4.3 describes the Analytical Parameters. Radium is not described.

Comment 3:
Section 4.3 states that samples for chemical analysis were analyzed for the full TCL and **TAL** parameters. It appears that marine water was analyzed for aluminum, calcium, magnesium, potassium, and sodium. This data could be used for purposes of remedial design but the use of these potentially elevated parameters in comparing reference wetlands could possibly eliminate from concern some freshwater parameters. The comparison of estuarine to estuarine numbers would not be compromised but it appears from the methodology description that estuarine constituents are compared to freshwater in the case of Reference Wetland 25. Sediment results from all four reference wetlands were considered together. The freshwater wetlands should be reevaluated to adjust to the potential comparison to elevated concentrations of aluminum, calcium, magnesium, potassium, and sodium.

Comment 4:
Section 5 describes Data Validation. Methods were not described for Radium.

Comment 5:
Section 5.3.1 describes the completeness of the data. Wetland 13 and 25 are described as having low completeness percentages. This is a concern as Wetland 25 is used **as** a reference wetland and the reported quantitation limits may not be representative.

Comment 6:
Section 6.4 describes the Inorganic Sediment and Surface Water Reference Criteria. The dual nature of Reference Wetlands 25 and 27 precludes the use of composite data to make comparisons of palustrine and estuarine wetlands to like wetlands.

Comment 7:
Section 7.6 describes the groupings and reference wetlands. As discussed above the use of Wetland 25 and 27 as reference wetlands have some concerns.

Comment 8:
Section 8.3.3 describes Exposure Pathways and Media. This section notes that ingestion of game fish tissue could be a complete pathway for Wetlands 18, 19 and 64. This **is** a potential data gap due to unavailable game fish tissue data. This is of lesser concern for Wetlands 18 and 19 where there is restricted access but presents a problem for Wetland 64 which supports recreational fishing.

Comment 9:
Appendix Validation Report. Apparently many of the antimony results were rejected. There is a discussion of percentage completeness but it was difficult to ascertain in the report how this was to be related to uncertainty.