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LETTER AND COMMENTS FROM U S NAVY IN RESPONSE TO U S EPA COMMENTS TO  
FINAL REMEDIAL INVESTIGATION REPORT SITE 41 NAS PENSACOLA FL  
2/15/2001  
NAS PENSACOLA

**Navy Response to USEPA Comments  
Final Remedial Investigation Report  
Site 41 (Operable Unit 16), NAS Pensacola Wetlands  
Dated February 15, 2001**

**USEPA Comment 1:**

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.

**Response:**

The USEPA and FDEP approved investigation focused on sediments because contaminants sorb to this medium. However, the Navy resampled surface water in 2004 for several wetlands with identified surface water exceedances. These data are included in this report.

**WETLAND OVERVIEW**

Below are the wetlands that require additional information:

**USEPA Comment 2:**

**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.

**Response:**

**Wetland 64 is influenced by stormwater run off, yacht basin activities, and is in close proximity to the locations of several previously active sites (Sites 11, 12, 26, 32, 33, and 35) on base. Stations 6402, 6403, 6404, 6405, and 6406 are located in the southernmost portion of the wetland, which is influenced by Wetland 6, 5A, and 5B runoff. Section 11 of the Final Site 41 RI addresses the OU 2 Wetlands, which include Wetlands 5A, 5B, 6, and 64. The Navy is recommending that Wetland 64 remain in the IR program and that an FS be conducted.**

**USEPA Comment 2a:**

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.

**Response:**

**A groundwater resampling effort at OU 2 was conducted in 2003, which included all monitoring wells upgradient from OU 2 wetlands, including Wetland 64. The results of this sampling effort are summarized in the OU 2 Addendum, EnSafe Inc. July 2004 and are used in this report to evaluate the fate and transport of the contaminants.**

**USEPA Comment 2b:**

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.

**Response:**

**The Navy is recommending that an FS be conducted on Wetland 64 and for the wetland to remain in the IR program.**

**USEPA Comment 2c:**

The source of the Petroleum odor should be identified.

**Response:**

**The Navy is recommending that an FS be conducted on Wetland 64 and for the wetland to remain in the IR program.**

**USEPA Comment 3:**

**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.

**Response:**

**Detected pesticide concentrations will be evaluated in the OU 1 food chain model to assess impacts to ecological receptors.**

**USEPA Comment 3a:**

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.

**Response:**

**Detected pesticide concentrations will be evaluated in the OU 1 food chain model to assess impacts to ecological receptors. This wetland is not maintained through dredging; therefore exposures and transport of contaminants resulting from dredging the wetland would not occur.**

**USEPA Comment 4:**

**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 Naphthalene, Lead, Chromium, Benzene, Chlorobenzene and 1,4, Dichlorobenzene.

**Response:**

**The constituents detected in Wetland 18 are likely a result of past Site 1 activities.**

**USEPA Comment 4a:**

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

**Response:**

**Wetland 18 is not included in the sampling plan for the Long Term Monitoring Program conducted by TtNUS. However, monitoring wells on the northern extent of Site 1 are sampled. Low levels of VOCs have been detected. TtNUS has performed an optimization study of the Site 1 remedial action. The study concluded that additional monitoring wells are needed along the northern extent to ensure that groundwater is not discharging at levels greater than surface water standards.**

**USEPA Comment 4b:**

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

**Response:**

**As needed, additional contaminants may be added to the Site 1 monitoring program.**

**USEPA Comment 5:**

**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.

**Response:**

**Wetland 1 has been divided into Wetland 1A and Wetland 1B. Wetland 1B is an open storm water ditch. This drainage ditch begins at an outfall formed by twin 54-inch concrete pipes and**

merges downstream with Wetland W2. Sample locations 041M010301 and 041M010401 were collected just downstream from this outfall. A review of the NAS Pensacola SWPPP shows a system of underground concrete pipes leading to this outfall. Wetland 1B is currently being monitored under the Storm Water Pollution Prevention Program in accordance with the Florida Generic Permit.

**USEPA Comment 5a:**

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.

**Response:**

Wetland 1 has been divided into Wetland 1A and Wetland 1B. Wetland 1B is an open storm water ditch. This drainage ditch begins at an outfall formed by twin 54-inch concrete pipes and merges downstream with Wetland W2. Sample locations 041M010301 and 041M010401 were collected just downstream from this outfall. A review of the NAS Pensacola SWPPP shows a system of underground concrete pipes leading to this outfall. Wetland 1B is currently being monitored under the Storm Water Pollution Prevention Program in accordance with the Florida Generic Permit.

**USEPA Comment 6:**

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

**Response:**

The final Site 41 RI will re-evaluate the ecological risk and human health risk associated with Wetland 48. The Navy concurs that the sample contained high pesticide levels. However, the pesticides are not related to Site 37, Sherman Field Fuel Farm which was identified as the suspected source of contamination for Wetland 48.

**USEPA Comment 7:**

**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?

**Response:**

This surface water sample was collected in a wetland containing very little water. Field notes revealed that the surface water sample for this wetland was collected from the pit dug for the sediment sample, which had filled with muddy water. The collected surface water was very turbid, which resulted in the surface water metals exceedances. A re-sampling event in 2004 was attempted, but the wetland did not contain surface water in spite of recent rain events.

**USEPA Comment 7a:**

An attempt should be made to identify the source of the contamination.

**Response:**

Field notes revealed that the surface water sample for this wetland was collected from the pit dug for the sediment sample, which had filled with muddy water. The collected surface water

was very turbid, which resulted in the surface water metals exceedances. A re-sampling event in 2004 was attempted, but the wetland did not contain surface water in spite of recent rain events. The source of contamination is a result of sample turbidity.

**USEPA Comment 7b:**

Additional sediment, surface water and groundwater samples should be collected.

**Response:**

A re-sampling event in 2004 was attempted at Wetland 13, but the wetland did not contain surface water.

**USEPA Comment 8:**

**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 concentrations of anthracene, fluoranthene, fluorene, naphthalene and phenanthrene above sediment benchmark values.

**Response:**

Sample location 52E3 is located within a portion of Wetland 52 that does not receive stormwater runoff from UST-18. This sample location is at the southern end of a stormwater drainage pathway extending from the south end of the southernmost aircraft parking apron at Forest Sherman Field. Visiting transient aircraft are parked in this area. The Navy believes the contaminants identified at sample location 52E3, are related to stormwater runoff from this portion of the airfield instead of impacts from UST-18. Furthermore, PAHs were not retained as a COPC for this wetland based on the results of the TOC normalization.

**USEPA Comment 8a:**

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.

**Response:**

The Navy believes the contaminants identified at sample location 52E3, are related to stormwater runoff from an aircraft parking apron at Forest Sherman Field instead of impacts from UST-18. Since this contamination is not related to UST-18, this sample location will not be included in the UST-18 remediation area. Furthermore, PAHs were not retained as a COPC for this wetland based on the results of the TOC normalization.

**USEPA Comment 9:**

**Wetland 58** — The text states that this is a fresh water wetland and is seasonally saturated during the rainy season. High levels of 2-methylnaphthelene, acenaphthene, naphthalene and phenanthrene were detected in the sediment sample.

**Response:**

Wetland 58 receives stormwater runoff from the MWR cabins east of the Oak Grove Campground and the service road that leads to the lighthouse. This road has vehicular traffic throughout the year; and especially in the warmer seasons, April through October. Furthermore, PAHs were not retained as a COPC for this wetland based on the results of the TOC normalization.

**USEPA Comment 9a:**

An attempt should be made to identify the source of the contaminants.

**Response:**

**The Navy believes the contaminants are related to the vehicular traffic associated with the service road that leads to the light house and the Oak Grove Campground, along with activities around the MWR cabins along this service road. PAHs are not considered a COPC for this wetland.**

**USEPA Comment 9b:**

Additional samples should be collected to verify if this is an isolated area or a part of a larger problem.

**Response:**

**TOC normalization indicates that the detected concentrations are not a concern at Wetland 58. Therefore, no additional sampling will be conducted.**

**OVERALL COMMENTS**

**USEPA Comment 10:**

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.

**Response:**

**Fish and sediment samples were collected in 2001 for mercury. The data are used in a food chain model presented in this RI report.**

**USEPA Comment 11:**

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.

**Response:**

**The RI report addresses detected pesticide concentrations in operable-unit wide food chain models.**

**USEPA Comment 12:**

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.

**Response:**

**The food chain models now present data for both detected maximum and average pesticide concentrations on an operable unit wide basis.**

**USEPA Comment 13:**

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.

**Response:**

**The food chain models now present data for both detected maximum and average pesticide concentrations on an operable unit wide basis.**

**GENERAL COMMENTS**

**USEPA Comment 14:**

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.

**Response:**

**Screening values are the lower of the USEPA Region 4 SVs or the FDEP TEL. Refinement values are the FDEP PELs, where available.**

**USEPA Comment 15:**

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.

**Response:**

**Risk to fisherman have been assessed using the fish tissue data collected in 2001.**

**USEPA Comment 16:**

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.

**Response:**

**A similar screening and refinement approach was used for all wetlands.**

**USEPA Comment 17:**

Section: 6.3, Pages: 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?

**Response:**

**The Final Site 41 RI Report details how basewide concentrations for DDT, which were approved by the Tier I Team, were derived. Basewide levels are discussed in Section 6 (Nature and Extent) and in Section 8 (ERA Methods) and are considered background concentrations for 4,4'-DDD, 4,4'-DDT, 4,4'-DDE and Total DDT.**

**USEPA Comment 18:**

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.

**Response:**

**The Final Site 41 RI Report details how basewide concentrations for DDT, which were approved by the Tier I Team, were derived. Basewide levels are discussed in Section 6 (Nature and Extent) and in Section 8 (ERA Methods). Appendix J details the data used in the development of the basewide levels that were applied to the wetlands located on base.**

**USEPA Comment 19:**

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.

**Response:**

**The units have been corrected in the Final Site 41 RI Report.**

**USEPA Comment 20:**

Table: 6-2, Page: 6-10, Row: Mean, Column: Cyanide.

This column shows a mean adjusted value for cyanide of 1.72 ug/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.

**Response:**

**In order to derive reference values, one-half of all "U" or "UJ" qualified data values were considered in calculating reference values. Assigning one-half the detection limit to not detected values is a simplistic approach that checks whether the not detected results could significantly change evaluations based on only the quantified data values. For Site 41, this simple assignment rule was judged to be adequate for that limited purpose.**

**USEPA Comment 21:**

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.

**Response:**

**The Final Site 41 RI Report contains a human health risk conceptual model that will evaluate the human health risk pathways found for each wetland.**

**USEPA Comment 22:**

Table: 8.3-5, Page: 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.

**Response:**

**Agreed. Risk due to dermal water exposure has been calculated in accordance with Region 4 guidance.**

**USEPA Comment 23:**

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.

**Response:**

**For the revised RI a conservative food chain model was completed. This model assumed a foraging factor of 1 for all exposure units (OU1, OU2, etc.). Therefore, the models included in the RI are adequately conservative.**

**USEPA Comment 24:**

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.

**Response:**

**Equations were revised, and the multiplier was not used to account for edible portions of fish tissue. See the text in revised Sections 9.3.5.1 and 9.3.5.2.**

**USEPA Comment 25:**

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.

**Response:**

**The fate and transport analysis has been updated. A dilution attenuation is no longer applied.**

**USEPA Comment 26:**

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.

**Response:**

**Mercury was assessed further in a 2001 sampling event where both sediment and fish tissue samples were collected.**

**SPECIFIC COMMENTS**

**USEPA Comment 27:**

Section: 5.4, Page: 5-4, Paragraph: 3, Sentence: 1.

This sentence states that the MS/MSD 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.

**Response:**

**Section 5 of the Final Site 41 RI Report states, 'All reported MS/MSD results were satisfactory for the Site 41 investigation'.**

**USEPA Comment 28:**

Table: 6-1, Page: 6-3, Column: Hardness Result.

This column should be reformatted to show the correct number of significant figures.

**Response:**

**The table reflects the surface water hardness results as they were reported by the analytical laboratory.**

**USEPA Comment 29:**

Section: 8.1.1, Page: 8-2, Paragraph: all.

This section keeps referring to the ERA not the HHRA. This should be corrected.

**Response:**

**The report clearly identifies the differences between ERAs and HHRA, per each wetland discussion.**

**USEPA Comment 30:**

Section: 8.1.1, Page: 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 HHRA, then baitfish samples may not be appropriate to estimate human health risk.

**Response:**

**Bait fish tissue concentrations were modeled to estimate predatory fish tissue concentrations, and extrapolate fish tissue ingestion. A detailed description of how the estimated fish tissue models were derived is explained in Section 9.**

**USEPA Comment 31:**

Table: 8-2, Page: 8-1, Row: Surface Water/Inhalation, Column: Reason.

The reason 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.

**Response:**

**Unless volatile compounds are identified as chemicals of potential concern, the inhalation pathway is generally insignificant for soil because the only pathway is inhalation of chemicals in dust, where ingestion would contribute orders of magnitude more than the estimated intake for dust. Surface water and sediment would limit the potential for dust generation and subsequent exposure. Exposure media for Site 41 are limited to sediment and surface water, which would limit the potential for the inhalation pathway to be complete, with the exception of volatile compounds.**

**USEPA Comment 32:**

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.

**Response:**

**The document was revised and excludes this statement.**

**USEPA Comment 33:**

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 a trophic transfer coefficient was used. This paragraph should be revised to impart this concept.

**Response:**

**Uncertainties related to fish tissue estimates were discussed in the revised uncertainty section. See Sections 9.3.8.1.1 and 9.3.8.3.**

**USEPA Comment 34:**

Table: 8-3, Page: 8-15, Row: SA with Sediment.

The skin surface area contact with sediment was stated to 4,100 cm<sup>2</sup>/event. However, the derivation of this value was not given. It should be 25% of the total skin surface area.

**Response:**

**Skin surface areas were revised. The revised values are in accordance with RAGS Part E and the USEPA's Exposure Factor's Handbook.**

**USEPA Comment 35:**

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.

**Response:**

**This comment is no longer applicable because calculations were revised. Please see the revised Section 9.3.5 and corresponding tables.**

**USEPA Comment 36:**

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.

**Response:**

**An exposure frequency of 52 days per year was assumed to represent the *total* time a maintenance worker would spend performing maintenance in wetlands during a year, whether that is applicable to only one wetland or more than one. If a worker is assumed to spend time in more than one wetland, the exposure frequency should be divided by the number of wetlands to account for their exposure during that year, unless site-specific information is available.**

**USEPA Comment 37:**

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:**

**Comment noted. At wetlands where an FS is recommended, antimony will be included on the list of analytes. Reference concentrations were calculated using 1/2 the sample quantitation limit for not detected parameters.**

## RESPONSE TO COMMENTS

### Major Comments and Recommendations:

**USEPA Comment 38:**

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.

**Response:**

**The Navy recognized the data gap at Wetland 64 and collected additional sediment and fish samples in 2001. The data are included in the Final Site 41 RI Report. Wetland 64 will be discussed individually and as a part of the OU 2 Wetlands in Section 11.0 of the Final Site 41 RI Report.**

**USEPA Comment 39:**

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.

**Response:**

**Radium was not a concern at any of the Site 41 wetlands and therefore was not analyzed for in any of the wetland sample analyses. Radium was a concern for two OU 2 sites (Sites 25 and 27) and possibly at Site 12. The Final OU 2 RI Report details what was found during the investigations of these sites, none of which is directly adjacent any of the OU 2 wetlands. Historical information about the OU 2 sites is included in the Final Site 41 RI report to provide background information on the industrial activities that took place in the vicinity of the OU 2 wetlands. Both the Final OU 2 RI Report and OU 2 RI Addendum are referenced in the Final Site 41 RI Report.**

**USEPA Comment 40:**

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.

**Response:**

**The Final Site 41 RI Report has reorganized all the wetlands to be grouped pertaining to nearby IR Sites and the potential influence those nearby IR Sites may have on the individual wetlands. This new organization is clearly explained in Sections 1 and 2 of the Final Site 41 RI Report.**

**USEPA Comment 41:**

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 not 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.

**Response:**

**The Final Site 41 RI Report has clearly defined the freshwater reference wetlands, Wetlands 25 and 32, and the estuarine wetlands as, Wetlands 27 and 33. A detailed explanation of how the data was utilized to generate reference values is provided in Section 6.**

**The wetlands which are both palustrine and estuarine are divided into A and B portions. A description of these wetlands including their water type occurs in each wetland's site description. The Navy is also performing regression analysis of freshwater and estuarine sediment concentrations to aluminum and iron to better assess what may be considered background.**

**Additional Comments**

**USEPA Comment 42:**

An abbreviation and acronym list should be included.

**Response:**

**Abbreviation and acronym lists are included in the Final Site 41 RI Report.**

**USEPA Comment 43:**

Section 4.3 describes the Analytical Parameters. Radium is not described.

**Response:**

**Radium was not analyzed for during the Site 41 investigation, as explained in the response to comment 39**

**USEPA Comment 44:**

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.

**Response:**

**The Final Site 41 RI Report has clearly defined the freshwater reference wetlands, Wetlands 25 and 32, and the estuarine wetlands as, Wetlands 27 and 33. A detailed explanation of how the data was utilized to generate reference values is provided in Section 6.**

**Essential nutrients were recognized and compared to reference wetland values during the refinement stage of the ERA Process. Estuarine wetlands were compared to estuarine reference values; likewise, palustrine wetlands were compared to freshwater reference values. The Navy is also performing regression analysis of detected inorganic concentrations in sediment to better assess what should be considered background.**

**USEPA Comment 45:**

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

**Response:**

**Radium was not analyzed for during the Site 41 investigation, as explained in the response to comment 39**

**USEPA Comment 46:**

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.

**Response:**

**Wetland 25 is one of four reference wetlands. Wetland 25 and 32 are freshwater reference wetlands, while 27 and 33 are estuarine reference wetlands. No data were rejected because of the low completeness percentages. Moreover, metals concentrations were also evaluated using**

**regression analysis to determine if the concentrations were representative of naturally occurring conditions.**

**USEPA Comment 47:**

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.

**Response:**

**The Final Site 41 RI Report has clearly defined the freshwater reference wetlands, Wetlands 25 and 32, and the estuarine wetlands as, Wetlands 27 and 33. A detailed explanation of how the data were used to generate reference values is provided in Section 6.**

**Inorganic sediment and surface water data were recognized and compared to reference wetland values during the refinement stage of the ERA Process. Estuarine wetlands were compared to estuarine reference values; likewise, palustrine wetlands were compared to freshwater reference values. The Navy has also performed regression analysis of detected concentrations in freshwater and estuarine sediments to better determine what is naturally occurring.**

**USEPA Comment 48:**

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.

**Response:**

**The Final Site 41 RI Report has clearly defined the freshwater reference wetlands, Wetlands 25 and 32, and the estuarine wetlands as, Wetlands 27 and 33. A detailed explanation of how the data were used to generate reference values is provided in Section 6. Estuarine wetlands were compared to estuarine reference concentrations, likewise, palustrine wetlands were compared to freshwater reference concentrations. The Navy has also performed regression analysis of detected concentrations in freshwater and estuarine sediments to better determine what is naturally occurring.**

**USEPA Comment 49:**

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 present a problem for Wetland 64 which supports recreational fishing.

**Response:**

**Bait fish were collected from Wetland 64 during 2001. Tissue samples will be used to extrapolate game fish values for the human health models. A detailed explanation of the model and how it will be applied is described in Section 9.**

**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.

**Response:**

**Comment noted. At wetlands recommended for an FS, antimony will be included on the list of analytes.**