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NAS WHITING FIELD
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LETTER REGARDING U S NAVY RESPONSE TO FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION AND U S EPA REGION IV COMMENTS ON DRAFT RISK ASSESSMENT RE-EVALUATION OF SOILS AT SITES 9-18 NAS WHITING FIELD FL
7/7/2006
TETRA TECH NUS

TETRA TECH NUS, INC.
3360 Capital Circle N.E., Suite B • Tallahassee, FL 32308
Tel 850.385.9899 • Fax 850.385.9860 • www.tetratech.com

TtNUS/TAL-06-051/0052-3.2

July 7, 2006

Florida Department of Environmental Protection
ATTN: Mr. Jim Cason
Twin Towers Office Bldg.
2600 Blair Stone Road
Tallahassee, FL 32399

Subject: **Response to USEPA and FDEP Comments on the Draft Risk Assessment Re-evaluation of Soils at Sites 9 through 18 (submitted October 2004) Naval Air Station (NAS) Whiting Field, Milton, Florida**

Dear Mr. Cason:

Attached please find a copy of Tetra Tech's response to comments for both FDEP and the USEPA comments issued on the above referenced report. These responses were initially submitted in October 2005 per the attached transmittal letter.

Please call me at 850.385.9899 if you have any questions regarding this letter or attachments.

Sincerely,

Michael O. Jaynes, P.E.
Project Manager

Enclosures

Cc: Larry Smith, TtNUS

October 4, 2005

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: Ms. Linda Martin, Code ES31
P.O. Box 190010
2155 Eagle Drive
North Charleston, SC 29419-9010

Reference: Contract No. N62467-94-0888 (CLEAN III)/CTO 79

Subject: Response to USEPA and FDEP Comments on Human Health Risk Assessment, and Ecological Risk Assessment for Sites 9 through 18, Naval Air Station (NAS) Whiting Field, Milton, Florida

Dear Ms. Martin:

The response to comments issued by the USEPA and FDEP on the above report are attached.

Please call me at 850.385.9899 if you have any questions regarding this letter or attachments.

Sincerely,

Terry Hansen, P.G.
Task Order Manager

Enclosures

C: Mr. Jim Cason, FDEP (electronic copy)
Mr. Craig Benedikt, USEPA (electronic copy)
Lee Ann Sinagoga, TtNUS (electronic copy)

RESPONSES TO FDEP COMMENTS ON
RE-EVALUATION OF SOILS AT SITES 9 THROUGH 18

FDEP COMMENT No. 1:

Statistical comparisons with background. One significant change in the reevaluation is the method of comparison of site concentrations with background. Previously, an approach comparing ratios of soil concentrations for pairs of inorganics was used, as described in the document, Analysis of Background Concentrations for Inorganics in Soil at Naval Air Station, Whiting Field, Milton, Florida. We reviewed this approach and expressed several concerns to you in a letter dated June 7, 2000. The present analysis uses approaches outlined in Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites (EPA 540-R-01-003, September, 2002). As you know, we have previously reviewed this guidance and endorsed its use for sites in Florida. However, we have some specific concerns regarding the way this guidance was applied to data sets for Whiting Field sites. One concern involves minimum data requirements. In Appendix A, the document states that a minimum of three samples in both the site and background data sets is needed to use a parametric ANOVA. A parametric ANOVA requires knowledge of how the data sets are distributed. Although normality tests such as the Shapiro Wilk test can be conducted with as few as three samples, they perform poorly when the number of samples is small. Consequently, parametric tests should only be performed when there are sufficient data to adequately assess the data distribution and select the most appropriate test. The US EPA guidance cited in the re-evaluation recommends at least 24 data points in each group to conduct a parametric test. The background data sets do not have that many samples, yet in some cases a parametric test (principally, the Student's t-test) was used for comparison (for example, lead in Table A-6-8, and arsenic in Table A-8-11).

For non-parametric tests such as the Wilcoxon Rank Sum (WRS), there are two forms of the test. Each form tests a different hypothesis. It appears from the discussion in Appendix A that only Form 1 was used. The Form 1 test in effect begins with the assumption that the site is not contaminated with the inorganic of interest and tests to see if this assumption can be rejected with confidence. Thus, the burden of proof is on demonstrating that the site is, in fact, contaminated with the chemical. Form 2 takes the opposite approach. It begins with the assumption that the site is contaminated, and determines whether the data can show with confidence that concentrations of the chemical on site are really representative of background conditions. Using just the Form 1 test can be un-conservative. That is, it can result in concentrations of a chemical incorrectly being characterized as background and dropped from the risk assessment. We recommend performing both Form 1 and Form 2 tests, or just the Form 2 test if only one type is conducted.

RESPONSE TO FDEP COMMENT No. 1:

It is recognized that minimum data requirements for the statistical analyses presented in this RI were based on the ability of the statistical tests to function and not strictly on the amount of power the results may have. It is also recognized that some of the datasets evaluated were limited in size and this impacts the statistical analyses performed on the datasets. However, the current RI document identifies when sample size is an issue and when further evaluation, quantitative or qualitative, is necessary to provide more support for the conclusions of the risk assessments. Please note that for the risk analyses performed according to FDEP guidance (i.e., comparisons of maximum concentrations to unapportioned SCTLs), none of the metals for which background comparisons were performed were eliminated as COPCs on the basis of background comparison but rather these metals were eliminated as COPCs because the concentrations were below the SCTLs. (Please also see comment/response regarding aluminum, arsenic, iron, and vanadium below.) For the risk assessments performed per US EPA guidelines, several metals (e.g., antimony and chromium) were eliminated as COPCs for some sites on the

basis of background. However, an analysis of potential risks for these metals indicated that Hazard Quotients were approximately 0.1 to 0.2 and were, therefore, less than the FDEP and US EPA goal of 1 for non-carcinogenic health effects. Therefore, although background sample size should always be carefully evaluated and assessed, the results and conclusions of the risk assessments presented in the RI were not affected by the background sample size limitations.

It is recognized that the WRS Test Form 2 should be assessed in the evaluation of the site data sets versus the background data sets comparisons. However, a review of the risk evaluation for each site at NAS Whiting Field indicates that no analytes evaluated using the WRS test where excluded from the risk evaluation solely based on the conclusions of the site-data to background data comparisons. Therefore, no further re-analysis of the background comparisons is recommended at this time. However, future assessments conducted for NAS Whiting Field will be conducted using both WRS Test Form 1 and Test Form 2.

FDEP COMMENT No. 2:

Elimination of aluminum, arsenic, iron, and vanadium. Four chemicals - aluminum, arsenic, iron, and vanadium - were eliminated from the risk assessment for all sites with the following rationale: "... these inorganics are not known to be associated with past practices or processes at any NAS Whiting Field sites. Also, surface soils associated with NAS Whiting Field disposal areas are composed of natural soil covers and do not reflect subsurface contents." These Whiting Field sites are, for the most part, disposal areas rather than areas associated with a specific chemical or process. There is always some uncertainty regarding what has been dumped historically at any disposal area, and eliminating chemicals because they cannot be tied to some specific use, practice, or event seems unjustified under the circumstances. However, the elimination of these chemicals does not appear to have compromised the risk assessment. From a practical standpoint, elimination of aluminum and iron from the risk assessment is probably not a significant issue. A risk management decision was made to consider arsenic concentrations in soils at the sites as naturally occurring, and therefore not subject to remediation (see letter to Mr. James Holland from Mr. James Cason, Remedial Project Manager for FDEP, dated April 11, 2001). For vanadium, few sites have a maximum vanadium concentration above the new residential SCTL of 67 mg/kg, and where maximum concentrations are greater than the SCTL, the exceedance is small. Consequently, vanadium is not likely to be a significant health issue. [Note: It is possible that vanadium concentrations at these sites represent natural background, but the statistical analysis to evaluate this was not presented.]

RESPONSE TO FDEP COMMENT No. 2:

Agreed there is uncertainty associated with the assumption regarding past practices and processes. Also agree that the elimination of these chemicals does not affect the results and conclusions of the risk assessments. Note that the implications of eliminating aluminum, arsenic, iron, and vanadium from the quantitative risk assessment are discussed in the uncertainty section of each risk assessment. In these sections, a semi-quantitative risk analysis is presented by comparing the maximum detected concentrations of these metals (and other metals eliminated on the basis of background) with their SCTLs and the implications on the risk assessments are discussed. With regard to vanadium, the SCTL is based on acute effects. If risks were calculated (using US EPA methodology) for the maximum detected vanadium concentration (105 mg/kg at Site 17) and the current FDEP reference dose (0.007 mg/kg/day), the calculated hazard quotient for a child resident (worst case) would be 0.2 which is less than the US EPA and FDEP goal of 1. Based on this analysis, the elimination of vanadium does not affect the results of the risk assessments.

FDEP COMMENT No. 3:

Calculation of exposure point concentrations. Exposure point concentrations in some situations are based on the 95% UCL of contaminant concentrations. The US EPA ProUCL tool was used for this purpose. One limitation of the ProUCL tool is its ability to handle censored data sets. The ability of the software to select the best method for calculating a 95% UCL has not been evaluated for data sets with more than 15% censoring (Le., more than 15% non-detects). Consequently, we do not recommend its use for those data sets. FDEP also has a software tool for calculating 95% UCL values - FLUCL - that was developed to be able to handle censored data sets. It was not used for any of the calculations in the re-evaluation, apparently because it was not available. This is unfortunate because a high percentage of data sets for which 95% UCL values were calculated with ProUCL involve censoring more than 15%. We do not consider these 95% UCL values to be reliable.

RESPONSE TO FDEP COMMENT No. 3:

FLUCL was not available at the time the risk assessments were performed and, therefore, the UCLs could not be calculated using FLUCL. Risks were evaluated using both USEPA methodology and the draft Florida tiered risk assessment approach (Chapter 62-780 F.A.C.). The US EPA approach used UCLs calculated by ProUCL or maximum concentrations. The Florida approach used maximum concentrations only. The results of the two approaches agreed at every site. Therefore, it is unlikely that use of ProUCL affected the results and conclusions of the risk assessments.

FDEP COMMENT No. 4:

Assessment of sites using procedures developed for Chapter 62-780, F.A.C. The re-evaluation of human health risks includes incorporation of some new, tiered risk assessment approaches developed for Chapter 62-780, F.A.C. At the time this reevaluation was conducted, those risk assessment approaches had not been finalized, and some changes in the process were made late in rule development. Consequently, although key elements of the new FDEP procedures for risk assessments were incorporated in concept (namely, the use of 95% UCL values for comparison with cleanup targets and consideration of additive effects of chemicals in establishing cleanup targets), there are some inconsistencies between this re-evaluation and the guidance that emerged from the rule-making process. Comments regarding specific sites are as follows:

RESPONSE TO FDEP COMMENT No. 4:

Agree that the risk assessments were performed before Chapter 62-780, F.A.C. was finalized. If the final version had been available (April 2005), this guidance would have been used to prepare the risk assessments presented in the RI. Some of the apparent inconsistencies mentioned above were due to the fact that the risk assessments were performed using two different approaches. Each site was evaluated using both FDEP and US EPA risk assessment methodology. The elements of FDEP protocols and US EPA Region 4 methodology were both considered in the RI in order to meet the requirements of both Agencies. There are a number of areas where the two risk assessment methodologies are somewhat different but, in the end, the conclusions of the human health risk assessments are similar regardless of the methodology used.

FDEP COMMENT No. 5:

Site 9

This site has been capped with 2 ft of clean soil. Data described as representing surface soil are from a soil horizon that currently lies below the cap. Although contaminant concentrations in this soil layer appear to satisfy default residential direct exposure SCTLs, the extent of contamination below this layer is unknown, since no "subsurface" soil samples were taken. Given that this was formerly a disposal pit, it cannot be assumed that subsurface soils are clean. Consequently, direct contact risks from soils would likely be acceptable to FDEP provided access to subsurface soil is restricted through implementation.

RESPONSE TO FDEP COMMENT NO. 5:

Comment acknowledged. Please note that the Re-evaluation Report (RR) did note that the risk assessment presented was based on surface soil (underlying the cap) only.

FDEP COMMENT No. 6:

Site 10

This site has been capped with 2 ft of clean soil, and data described as representing surface soil are from a soil horizon that currently lies below the cap. Benzo(a)pyrene equivalents (BaP), barium and TRPH concentrations in surface soil exceed residential land use criteria, based on comparison of maximum concentrations with unapportioned FDEP residential SCTLs. Barium and TRPH concentrations would be acceptable under commercial/industrial land use, but BaP equivalents are above even alternative cleanup targets based on recreational land use. In the final form of Chapter 62-780, F.A.C., alternative soil cleanup targets are always apportioned to account for additive effects. In the reevaluation of Site 10, exposure point concentrations of BaP are compared with unapportioned alternative soil cleanup targets [based on recreational exposure]. BaP is a carcinogen, and apportionment considering the presence of other carcinogens is required. Guidance allows elimination of other carcinogens from apportionment if they are present in low concentrations (1/10 default cleanup targets), are detected infrequently, for are present at or below natural background levels. We have not redone the BaP comparisons for Sites 10, but it is possible that the apportioned alternative cleanup targets would be lower than the unapportioned values used for comparison in the current re-evaluation if other carcinogens come into play. Lowering the alternative cleanup targets would not alter the conclusion presented in the report that BaP concentrations present exceed alternative cleanup targets, but it could affect remedial targets based on a recreational scenario, if those are selected as a basis for risk management. Direct contact risks from soils would be acceptable provided the current cap remains in place. Assurance of this would require an institutional control.

RESPONSE FDEP COMMENT No. 6:

The Navy agrees with reviewer's comment regarding barium and TRPH.

In response to the comment regarding BaP, an analysis of recreational exposure to BaP in surface soil at Site 10 was performed according to the 2005 guidance (i.e., using apportionment). The results of the analysis are as follows:

> ***There were 14 carcinogens in the surface soil data set for Site 10 (no carcinogenic PAHs were detected in subsurface soil). The maximum concentrations of 11 of these were less than 1/10 of the unapportioned alternative SCTLs. Therefore, these 11 would not be included in the apportionment process. One carcinogen (arsenic) was eliminated on the basis of background and also would not be apportioned. BaP and Aroclor-1260 would then be the only remaining carcinogens***

subject to apportionment. Consequently, the apportioned alternative SCTL for BaP would be 0.4 mg/kg (based on the unapportioned recreational SCTL of 0.8 mg/kg and using a simple apportionment technique). However, the list of COCs for recreational land use at Site 10 would not change using apportionment. The apportioned recreational SCTL is greater than the current Chapter 62-777 residential SCTL for BAP (0.1 mg/kg) and less than the industrial SCTL (0.7 mg/kg).

FDEP COMMENT No 7:

Site 11

Dieldrin and lead concentrations in surface soil exceed residential land use criteria, based on comparison of maximum concentrations with unapportioned residential SCTLs. Contaminant concentrations in surface soil would be acceptable for commercial/industrial land use, which would require an institutional control. Maximum contaminant concentrations in subsurface soil meet unapportioned SCTLs, but only three samples were available for analysis. The limited data available for subsurface soils make it difficult to reach conclusions about subsurface soil risks.

RESPONSE TO FDEP COMMENT No. 7:

Comment acknowledged. Please note that the Re-evaluation Report (RR) did note that the subsurface soil dataset was limited.

FDEP COMMENT No. 8:

Site 12

No chemical was present in surface or subsurface soil samples in concentrations exceeding FDEP default residential SCTLs.

RESPONSE TO FDEP COMMENT No 8:

Comment acknowledged.

FDEP COMMENT No. 9:

Site 13

Maximum concentrations of contaminants in surface soils were less than unapportioned FDEP residential SCTLs. Data from only three subsurface soil samples are available. Mercury concentrations in subsurface soil are above the residential SCTL, but below the concentration limit for commercial/industrial land use. Allowing mercury contamination to remain in place would require an institutional control to either: 1) restrict the site to commercial/industrial land use; or 2) prevent excavation of subsurface soils.

RESPONSE TO FDEP COMMENT No 9:

Comment acknowledged. Please note that the Re-evaluation Report (RR) did note that that the subsurface soil dataset was limited.

FDEP COMMENT No. 10:

Site 14

Maximum concentrations of contaminants in surface soil meet unapportioned residential SCTLs. Maximum contaminant concentrations in subsurface soil also meet unapportioned residential SCTLs, although data from only two subsurface samples are available.

RESPONSE TO FDEP COMMENT No. 10:

Comment acknowledged. Please note that the Re-evaluation Report (RR) did note that that the subsurface soil dataset was limited.

FDEP COMMENT No. 11:

Site 15

Maximum concentrations of contaminants in surface soil meet unapportioned residential SCTLs. Only five subsurface soil samples are available for this 21-acre site. Maximum PCB concentrations in subsurface soil are above the unapportioned residential land use SCTL, but below the value for commercial/industrial land use. Allowing PCB contamination to remain in place would require implementation of an institutional control that either: 1) restricts site use to commercial/industrial uses; or 2) prevents excavation at the site.

RESPONSE TO COMMENT No. 11:

Comment acknowledged. Please note that the Re-evaluation Report (RR) did note that that the subsurface soil dataset was limited.

FDEP COMMENT No. 12:

Site 16

Several chemicals (BaP, barium, copper, and lead) are present in surface soil with maximum concentrations that exceed unapportioned residential land use criteria. Maximum concentrations of each of these chemicals would be acceptable under commercial/industrial land use, however. Only five subsurface soil samples are available for this 12-acre site. Subsurface soil contamination is also above unapportioned residential land use SCTLs, but meets commercial/industrial land use values. Management under a commercial/industrial land use scenario would require an institutional control.

RESPONSE TO FDEP COMMENT No. 12:

Comment acknowledged.

FDEP COMMENT No. 13:

Site 17

This site has been capped with 2 ft of clean soil. Data described as representing surface soil are apparently from a soil horizon that currently lies below the cap. Maximum concentrations of barium, copper, and TRPH in surface soil are above unapportioned residential SCTLs. TRPH concentrations also exceed commercial/industrial land use criteria, but are below alternative cleanup targets based on recreational land use. Management of the site using commercial/ industrial or alternative SCTLs would require an institutional control. Also, use of alternative

SCTLs requires that the cleanup targets be apportioned. Maximum concentrations of contaminants in subsurface soils meet unapportioned residential SCTLs.

RESPONSE TO FDEP COMMENT No. 13:

Comment acknowledged.

FDEP COMMENT No. 14:

Site 18

This site has been capped with 2 ft of clean soil. Data described as representing surface soil are apparently from a soil horizon that currently lies below the cap. Surface soil contains BaP, barium, copper, and TRPH with maximum concentrations above unapportioned residential SCTLs. Maximum concentrations of BaP and TRPH concentrations in surface soil also exceed unapportioned commercial/industrial SCTLs. BaP concentrations were also above alternative cleanup targets based on recreational land use. For subsurface soil, TRPH concentrations exceeded residential and commercial/industrial SCTLs, but not alternative criteria based on recreational land use. Management of the site using SCTLs for either commercial/industrial or alternative (e.g., recreational) land use would require implementation of institutional controls.

RESPONSE TO FDEP COMMENT No. 14:

Comment acknowledged.

FDEP COMMENT No. 15:

In the final form of Chapter 62-780, F.A.C., alternative soil cleanup targets are always apportioned to account for additive effects. The re-evaluation of Sites 17 and 18, exposure point concentrations are compared with unapportioned alternative soil cleanup targets [based on recreational exposure]. For TRPH, one of the chemicals of potential concern, this is not a problem. TRPH is a complex mixture of petroleum hydrocarbons, and potential additive effects of TRPH constituents are addressed conservatively in developing the soil cleanup targets. Generally, additional apportionment of TRPH cleanup goals based on the presence of other chemicals is not required. BaP, another of the chemicals of potential concern, is a carcinogen, and apportionment considering the presence of other carcinogens would be required. Guidance allows elimination of other carcinogens from apportionment if they are present in low concentrations (1/10 default cleanup targets), are detected infrequently, or are present at or below natural background levels. We have not re-done the BaP comparisons for Site 18, but it is possible that the apportioned alternative cleanup targets would be lower than the unapportioned values used for comparison in the current re-evaluation if other carcinogens come into play. Lowering the alternative cleanup targets would not alter the conclusion presented in the report that BaP concentrations present exceed alternative cleanup targets, but it could affect remedial targets based on a recreational scenario, if those are selected as a basis for risk management.

RESPONSE TO FDEP COMMENT No.15:

As discussed above, the risk assessments were performed before Chapter 62-780, F.A.C. was finalized. If the final version had been available (April 2005), the alternative SCTLs for recreational users would have been apportioned and risks would have been evaluated according to the guidance.

The Navy agrees with reviewer's comment regarding TRPH.

In response to the comment regarding BaP, an analysis of recreational exposure to BaP in surface soil at Site 18 was performed according to the 2005 guidance (i.e., using apportionment). The results of the analysis are as follows:

> ***There were five carcinogens in the surface soil data set for Site 18. The maximum concentrations of three of these were less than 1/10 of the unapportioned alternative SCTLs. Therefore, these three would not be included in the apportionment process. One carcinogen (arsenic) was eliminated on the basis of background and also would not be apportioned. BaP would then be the only remaining carcinogen and, therefore, its SCTL would not be apportioned. Consequently, the apportioned alternative SCTL for BaP would not be lower than the unapportioned value (0.8 mg/kg) since no other carcinogens need to be considered in the apportionment process.***
>
> ***Another important factor to consider concerning BaP at Site 18 is that BaP was detected in only 1 of 47 surface soil samples and was not detected in any of the Site 18 subsurface soil samples (0 of 13).***

FDEP COMMENT No. 16:

Ecological risks - Sites 11 and 16.

Site 11 was one of two sites to be evaluated for risk to ecological receptors. The ecological receptors considered were the cotton mouse, the shrew, the bobwhite, robin, hawk and fox. The robin was included in this latest update of the ERA since the Initial Assessment Study. We agree with this addition, as the robin is a sensitive receptor to various soil contaminants, particularly DOT. Comparison of maximum concentrations of soil contaminants with Region 4 Ecological Soil Screening Levels (SSLs) during direct toxicity screening is also appropriate; however, in discussing the screening level food chain modeling (FCM) it is stated that "conclusions cannot be made regarding potential risk" to the avian species considered for heptachlor and heptachlor epoxide due to an absence of an avian toxicity reference value. US EPA Region 6 data may be useful in this instance, as there is an avian toxicity value listed for heptachlor in the Region 6 Screening Level Ecological Risk Assessment Protocol, Appendix E, Toxicity Reference Values.

During the refinement steps for direct toxicity, average site concentrations were compared with Region 4 SSLs and, in general, did not reveal significant changes in hazard quotient values, as most still remained above 1.0. We believe this refinement to be appropriate. Refinement of the FCM resulted in a reduced number of contaminants of concern for all six species being considered, and actually eliminated the mouse, bobwhite, hawk and fox from being considered at risk. However, we are in agreement that the robin should remain in consideration for risk to contaminants, especially to DOT in the vicinity of sample site 11-SL-02. We are also in agreement with the deletion of the previous toxicity testing data, as it did not include sampling at the locations of highest contamination. In addition, the lack of TOC information makes the bioavailability predictions impossible for organic compounds such as pesticides. Overall, we find the updated ecological assessment to be more appropriate than the Initial Assessment Study.

Site 16 was the second of two sites that were evaluated for risk to ecological receptors. The six ecological receptors considered were the cotton mouse, the shrew, the bobwhite, robin, hawk and fox. The robin was included in this latest update of the ERA since the Initial Assessment Study. We agree with this addition as stated for Site 11 (see the March 28, 2005 review letter for Sites 9-13), since the robin is a sensitive receptor to various soil contaminants. Comparison of the maximum concentrations of the contaminants with Region 4 Ecological Soil Screening Levels in direct toxicity screening is also appropriate; however, in discussing screening level food chain modeling (FCM) it is stated that "conclusions cannot be made regarding potential risk" to the bobwhite, robin or hawk for exposure to silver due to the absence of an avian toxicity reference value. As stated for Site 11, consultation of US EPA Region 6 toxicity reference values may be

useful, as there is an avian toxicity value listed for silver in the Region 6 Screening Level Ecological Risk Assessment Protocol, Appendix E, Toxicity, Reference Values.

During the refinement step for direct toxicity, average site concentrations were compared with Region 4 values, resulting in hazard quotients values below 1.0 for a few constituents, however, the majority of the contaminant HQs remained above 1.0. We believe this refinement to be appropriate. Refinement of the FCM resulted in a reduced number of contaminants of concern for all six species being considered, and actually eliminated the mouse, bobwhite, hawk and fox from being considered at risk. However, it is agreed that the robin should continue to be considered at risk for exposure to several listed contaminants, especially lead. We are also in agreement with the deletion of the previous toxicity testing data, as it did not include sampling at the locations of highest contamination. In addition, the lack of TOC information makes the bioavailability predictions impossible for organic compounds such as pesticides. Overall, we find the updated ecological assessment to be more appropriate than the Initial Assessment Study.

RESPONSE TO FDEP COMMENT No. 16:

TtNUS agrees with the recommendation made by FDEP and the University of Florida regarding the use of an alternate avian Toxicity Reference Value (TRV) source for heptachlor and heptachlor epoxide at Site 11, and silver at Site 16 . As recommended, the US EPA Region 6 avian toxicity reference values will be consulted and potential avian risks from exposure to heptachlor and heptachlor epoxide at Site 11, and silver at Site 16 estimated using these values.

FDEP COMMENT No. 17:

We hope that these comments are helpful for the Department in its evaluation of these sites. Please do not hesitate to contact us if you have any questions regarding our comments.

RESPONSE TO FDEP COMMENT No. 17:

The Navy did find the comments provided by the University of Florida useful in the evaluation of Sites 9 through 18.

July 7, 2006

Florida Department of Environmental Protection
ATTN: Mr. Jim Cason
Twin Towers Office Bldg.
2600 Blair Stone Road
Tallahassee, FL 32399

Subject: **Response to USEPA and FDEP Comments on the Draft Risk Assessment Re-evaluation of Soils at Sites 9 through 18 (submitted October 2004) Naval Air Station (NAS) Whiting Field, Milton, Florida**

Dear Mr. Cason:

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Please call me at 850.385.9899 if you have any questions regarding this letter or attachments.

Sincerely,

Michael O. Jaynes, P.E.
Project Manager

Enclosures

Cc: Larry Smith, TtNUS

July 7, 2006

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ATTN: Mr. Jim Cason
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Michael O. Jaynes, P.E.
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RESPONSES TO US EPA COMMENTS ON RE-EVALUATION OF SOILS AT SITES 9 THROUGH 18

US EPA COMMENT No. 1:

SUMMARY

I have prepared a table of the various soil sites and their current conditions so that this information is easily seen and grasped. This table follows:

Site 9	A 2 acre waste fuel disposal pit, currently covered with 24" soil with grass cover. The site is not being used presently.	Indeterminate, but very low due to the soil cap
Site 10	A 4 acre open disposal area adjacent to Site 9, currently cover with 24" of soil with grass cover, Unused at this time.	Indeterminate, but very low due to the soil cap
Site 11	A 3 acre area composed of an old borrow pit and an open disposal area. Unused at this time.	Residential: 3E-06, HI < 1 Industrial: < 1E-06, HI < 1
Site 12	A 0.1 acre area used for sludge disposal. Unused at this time and densely vegetated.	Residential: < 1E-06 Industrial: < 1E-06
Site 13	A 4 acre sanitary landfill, closed and covered in 1984. Unused with exposed soil and sparse vegetation.	Indeterminate but very low because no COPCs were identified for the site.
Site 14	A 3 acre sanitary landfill closed in 1979. Unused with some exposed soil.	Indeterminate but very low because no COPCs were identified for the site.
Site 15	A 21 acre operational landfill at which operation ceased in 1979. Unused with sparse vegetation.	Residential: 4E-06 (subsurface) Industrial: 1E-06 (subsurface)
Site 16	A 12 acre prior waste disposal area, closed in 1965. Unused with good vegetative cover.	Residential: 5E-06 Industrial: 1E-06
Site 17	A 4 acre former air crash training/fire training area, currently covered with 24" of soil with grass cover..	Indeterminate, but very low due to the soil cap
Site 18	A 5 acre formerfire training area, currently covered with 24" of soil with grass cover.	Indeterminate, but very low due to the soil cap

As can be easily seen from the table, the sites all have very low risks. The document made this clear; however, inclusion of a table like the one above would have been helpful. Hence, I have put it in this memo. Per your instructions, no evaluation of ecological risk assessment or migration to groundwater was performed.

RESPONSE TO US EPA COMMENT No. 1:

Agree. This is a useful table. Thanks. The table will be included in the executive summary.

US EPA COMMENT No. 2:

FDEP Apportionment Procedure

Recently, FDEP has introduced a method for determining cleanup levels based on apportionment of risk by individual chemicals. I recently received an explanation of apportionment by FDEP personnel. I found it close to impossible to understand the method. In my opinion, it is an arithmetic shell game that obfuscates consideration of actual risks and renders the results of a risk assessment and the associated cleanup goals unclear and difficult to fathom or explain to stakeholders.

That said, I am in agreement with the underlying philosophy of considering aggregate risk of multiple chemicals. However, this consideration is not necessarily a strictly quantitative exercise. Knowledge of the toxicology of the various chemicals must be considered to address the issue of risk from multiple chemical in an adequate fashion. In my opinion, the overdependence on the arithmetic exercise of apportionment in lieu of actual consideration of the potential of interactive toxic effects of the chemicals present is wrong-headed.

RESPONSE TO US EPA COMMENT No. 2:

Comment acknowledged.

US EPA COMMENT No. 3:

Background Evaluation

I realize that the inclusion of background data would have rendered this document very large; nonetheless, it was difficult to evaluate the background comparison without the data. In addition, the probability plots shown in appendix A would have been better performed by putting the expected normal value or Z-score on the X-axis and concentration on the y-axis. Log transformation should also be used. For example, figure A-11-12 is useless and would have been much more clear with log-transformed concentration data.

RESPONSE TO US EPA COMMENT No. 3:

The analytical results of the background data for both the surface soil and subsurface data sets are found in Tables A-11-1 and A-11-2 respectively. The summary of chemicals detected for both data sets are found in Tables A-11-3 and A-11-4.

It is noted that the preference of the reviewer is to place the expected normal value or Z-score on the X-axis and the concentration on the y-axis; however, the conclusions drawn from those plots would not differ from those already presented. Consequently, the Navy recommends no further adjustments to the document at this time. However, the US EPA suggestion will be considered in all future reports prepared for NAS Whiting Field.

It is noted that the reviewer's preference is to view some probability plots using log-transformed data. Although this may be useful for some plots, the interpretations and conclusions drawn based on the original probability plots are clear. The Navy recommends no further adjustments to the document or the plots at this time. However, the US EPA suggestion will be considered in all future reports prepared for NAS Whiting Field.

Please also see responses to comments prepared for comments received from the State of Florida, Department of Environmental Protection. A review of the chemical of potential concern (COPC) tables prepared for the sites included in the Re-evaluation Report indicates that very few chemicals were eliminated from the human health risk assessment on the basis of site-to-background data set comparisons.

US EPA COMMENT No. 4:

Adult Lead Model

The text describing the model suggests that the receptor is the fetus of a pregnant worker. Without additional explanation, this suggests that the indirect receptor is a pregnant woman. Not so! The receptor is a woman of child-bearing age. Lead is sequestered in her bones and may be released into her circulation at a future time when she does become pregnant. The results of the risk assessment are not incorrect, but the text should be clarified. This is not a major issue.

RESPONSE TO US EPA COMMENT No. 4:

Agree that the direct receptor is the woman of child-bearing age. The discussion in the text reflected statements made in the Adult Lead Model guidance document and on the TRW website. For example, guidance presented in the Frequently Asked Questions (FAQs) document on the Adult Lead Model website indicates that the receptor population for the model is the fetus. The document states that "the most sensitive receptor is the fetus of a worker who develops a body burden as a result of non-residential exposure to lead." The guidance document for the Adult Lead Model, Recommendations of the Technical Review Workgroup for Lead for an Approach to Assessing Risks Associated with Adult Exposure to Lead in Soil (EPA, January 2003), also states "The basis for the RBRG calculation is the relationship between the soil lead concentration and the blood lead concentration in the developing fetus of adult women that have site exposures." The text of the risk assessment will be amended to state that the direct receptor is a woman of child-bearing age.