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NAS CECIL FIELD
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LETTER AND U S NAVY RESPONSE TO REGULATOR COMMENTS TO DRAFT RISK ASSESSMENT REPORT OPERABLE UNIT 7 (OU7) SITE 16 NAS CECIL FIELD FL
8/30/1995
ABB ENVIRONMENTAL

4.7.1

ABB

August 30, 1995

Mr. Michael J. Deliz P.G.
Remedial Project Manager
Florida Department of Environmental Protection
Twin Towers Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Subject: Responses to Comments on Draft Risk Assessment Report, Operable Unit (OU) 7, Site 16, Naval Air Station Cecil Field, Florida

Dear Mr. Deliz,

On behalf of Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), ABB Environmental Services, Inc. is pleased to forward five copies of Responses to Comments to the Draft Risk Asssessment Report for OU 7, Site 16, NAS Cecil Field, Florida.

Sincerely,

ABB ENVIRONMENTAL SERVICES, INC.

Rao Angara
NAS Cecil Field
Installation Manager

cf: Mr. Bart Reedy, USEPA Region IV (4 copies)
Mr. John Mitchell, FDEP - DNR (1 copy)
Mr. Dave Kruzicki, NAS Cecil Field (1 copy)
Mr. Gerry Young, City of Jacksonville (1 copy)
Messrs. A. Shoultz, B. Kizer, S. Wilson SOUTHNAVFACENGCOM (1 copy)
Ms. Lynn Sims, Bechtel Environmental, Inc. (1 copy)
BCT Office, NAS Cecil Field (2 copies)
File

PROJECT REVIEW COMMENTS

NAS Cecil Field Operable Unit 7
Jacksonville, Florida
Baseline Risk Assessment

Department of the Navy - J. Lloyd Crews

1. The subject BRA has been reviewed and comments follow:

   (a) Page xii, "individual/m^2, "should read individual/mi^2."
   (b) Page xii, "Initial Remedial Action" should read "Interim Remedial Action."
   (c) Page 2-1, 2nd paragraph, 1st sentence, change "southernmost" to "south-central."
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   (f) Page 2-8 1st full paragraph, 2nd sentence, change to read "The main station, NAS Cecil Field, consists..."
   (g) Page 4-69, last full paragraph, last sentence, change "...below 0.015 μ/l" to "below 0.015 mg/l."

   The text will be revised as noted in comments 1(a) through 1 (g).

Florida Department of Environmental Protection (FDEP) - John Mitchell

2. Section 6.1.2 (Selection of Ecological Chemicals of Potential Concern (ECPC)) uses only USEPA Region IV screening values. For media selected, FSWQS (Class III-Freshwater) should also be used for screening.

   The U.S. Environmental Protection Agency (USEPA) Region IV Waste Management Division Screening values used to select ECPCs are generally more conservative than Florida Surface Water Quality Standards (FSWQS), and Region IV specifies that the screening values be used to select ECPCs. Some FSWQS have been derived to protect human health rather than ecological endpoints and would not be applicable for screening contaminants for ecological receptors. In future risk assessments FSWQS (protective of ecological receptors) will also be used to select ECPCs where they are ecologically based and are more stringent than Region IV screening values.

3. Section 6.2.2.1 (Surface Water) selects the American robin as a representative wildlife species for evaluating risk. We agree with using the robin for the immediate area of Site 16 as it is an open grassy area. However, the area of the drainage ditches where the surface water is present is a wetland habitat. We believe the red-winged blackbird would be a more representative species for this environment.

   The Navy agrees the drainage ditches could be considered a wetland habitat, although the area immediately surrounding them is not. The ditches are surrounded by mowed field with wetland lying further east, and the red-winged blackbird would be found more often in the

ditches than the robin. The robin was only intended as a "representative" of small avian species at the ditch area. The risk assessment results represent results for any of a number of small birds including the blackbird and do not specifically represent results for only the robin.

Use of the red-winged blackbird as a representative species should not change the results of the risk analyses. Both birds have similar body weights and water ingestion rates which would indicate similar doses associated with ingestion of surface waters. Risks may actually be lower for the red-winged blackbird as this species is herbivorous and would be expected to consume less sediment incidently than the robin, which forages in the soil (and possibly sediment). Section 6.2.2.1 will include the red-winged blackbird as a representative wildlife species instead of the American robin.

4. Table 6-14 lists the NOAA ER-L and ER-M values for chromium incorrectly. The correct values are 80 mg/kg and 145 mg/kg, respectively.

   Table 6-14 will be corrected to include the NOAA ER-L and ER-M values of 80 mg/kg and 145 mg/kg, respectively, for chromium.

5. Appendix P (Results of Aquatic Sampling), Section 4 discusses collection and sampling of biota at 16 stations. A figure showing these locations should be included with the appendix.

   A figure will be included in Appendix P (Results of Aquatic Sampling) to indicate all 16 locations sampled for biota at NAS Cecil Field. The other 16 locations are not relevant to OU 7 and represent sampling for other Operable Units at NAS Cecil Field and sampling in support of a Basewide Ecological Risk Assessment for the watersheds at NAS Cecil. Discussion of the entire biological sampling program will be included in a forthcoming NAS Cecil Field Basewide Ecological Assessment Report.

Florida Department of Environmental Protection - Mike Deliz

6. This document was produced concurrent with the review of the Baseline Risk Assessment for Operable Unit 2, Site 5 and 17. Verbal and written and comments by FDEP were submitted and acceptable responses to those comments took place in meetings in December, April, and May. During that time, FDEP presented concerns and requirements for an acceptable Baseline Risk Assessment (BRA). Most of these concerns have not been addressed in this document and make it difficult to review. The understandings and agreements reached by ABB-ES, the Navy, and FDEP, during the May 1, 1995 meeting, should be incorporated into this document when it is submitted as Final. In addition, comments submitted for the OU-2 BRA and the draft comments for the OU-8 BRA (copy enclosed) should be examined to determine if similar questions or

deficiencies exist in this document. As can be seen by the enclosed OU-8 BRA comments the document is acceptable with minor changes in its Draft form.

Although the Navy believed that an agreement had been reached during a teleconference on December 1, 1994 (with participants from USEPA, FDEP, and ABB-ES) that the FDEP Soil Cleanup values need not be used in the HHCPC tables for the OU7 BRA, to be consistent with risk assessments for OU 8 they will now be incorporated into the Final document.

7. Page 3-8, Section 3.2.2, change ". . ./Bio/box-1. . ." to ". . ./Bio/Tox-1. . .".

".../Bio/box-1..." will be revised to read ".../Bio/Tox-1..."

8. Page 3-11, Section 3.4, why is the discussion of the background sampling program for soil, as it pertains to OU-7, in an appendix and not within the main body of this report?

The detailed information has been presented in the appendix in order to streamline the report, allowing presentation of information in a manner which focuses on results and conclusions.

9. Pages 4-1 through 4-26, are too generic and read like a textbook.

This section is intended to provide the lay public with information on the technical approach used in the risk assessment. No revisions are anticipated in response to this comment.

10. Page 4-3, Section 4.1.2, as has been discussed numerous times, chemicals should also be screened against FDEP *Soil Cleanup Goals for Military Sites*, dated April 5, 1995.

Although the Navy believed that an agreement had been reached during a teleconference on December 1, 1994 (with participants from USEPA, FDEP, and ABB-ES) that the FDEP Soil Cleanup values need not be used in the HHCPC tables for the OU7 BRA, to be consistent with the risk assessment for OU8 they will now be incorporated into the Final document.

11. Page 4-7, Section 4.1.3.3, the text states that ". . .where there are fewer than four samples or where the UCL is greater than the maximum detected concentration. . ." according to current informal guidance from USEPA Region IV, a 95% UCL should not be calculated if there are less than 10 samples. The maximum value should be used instead of the exposure point concentration.

The Navy agrees. For the OU 7 risk assessment the 95 percent UCL was not calculated when the data set for a given exposure area contained fewer than 10 samples.

12. Tables 4-4 and 4-5, these tables should include FDEP *Soil Cleanup Goals for Military Sites.*

Although the Navy believed that an agreement had been reached during a teleconference on December 1, 1994 (with participants from USEPA, FDEP, and ABB-ES) that the FDEP Soil Cleanup Goals need not be used in the HHCPC tables for the OU7 BRA, to be consistent with the risk assessment for OU8 they will now be incorporated into the Final document.

13. Tables 4-8 and 4-9, these tables should include FDEP Groundwater Guidance Concentrations.

To be consistent with risk assessment for OU8, the FDEP Groundwater Guidance Concentrations will now be incorporated into the Final document.

14. Table 4-10, the Child Resident should be added to the Potential Exposed Population column

The Navy agrees. The Child Resident will be added to the Potential Exposed Population column.

15. Page 6-10, Section 6.1.2, sediment should also be screened against FDEP Sediment Quality Assessment Guidelines (SQAG) contained in *Approach to the Assessment of Sediment Quality in Florida Coastal Waters*, dated November 1994.

The USEPA Region IV sediment screening values are based on FDEP's Sediment Quality Assessment Guidelines (MacDonald, 1992) and NOAA's Effects Range Low (ER-L) values. If the Contract Lab Protocols - Practical Quantitation Limits (CLP-PQL) can achieve the NOAA ER-L or FDEP's NOEL value, then the lowest of those values is used for screening purposes; otherwise, the screening value defaults to the CLP-PQL. The FDEP SQAGs will be used for screening purposes once the ECPCs have been selected.

16. Page 6-15, Section 6.1.4.1, see comment 15.

Please see response to comment 15.

17. Table 6-5, the cadmium detected listed on this table exceeds the FDEP SQAG. The Probable Effects Limit (PEL) for cadmium is 4.21 mg/kg.

Although cadmium exceeded the FDEP SQAG, the assessment of risk related to cadmium would not change because it was previously identified as an ECPC.

18. Table 6-14, see comment 15.

Please see response to comment 15.

19. Table 6-15, based on comment 17, cadmium should be listed as a ECPC in sediment.

Table 6-15 is incorrectly titled. The title should indicate that the contaminants listed are associated with risk and not just EPCPs. The title will be changed and therefore cadmium will not be included on the table since it was not associated with risk.

20. Appendix L, Tables L-1 and L-2, these tables are excellent and should be included in Section 4.

The Navy agrees these tables are useful and informative; however, to avoid cluttering the main body of the text with tables, the referenced tables will remain in Appendix L.

21. Appendix M, Table M-1 and M-2, these tables are excellent and should be included in Section 4.

The Navy agrees these tables are excellent; however, to avoid cluttering the main body of the text with tables, the referenced tables will remain in Appendix M.

22. Appendix T, the model for prediction of groundwater to surface water transport and dilution of ecological chemicals of potential concern (ECPCS) has been omitted. The background sampling program and summary, with supporting data has been mistakenly submitted. The model should be included, and this background sampling summary should be included as a separate appendix.

Appendix T will be included in the Final RA report and the background sampling summary will be moved to the appropriate appendix.

Florida Department of Environmental Protection - Jane Fulger

23. The underground stormwater pipelines connecting OU7 to the ditches should be assessed as a conduit for contamination to surface waters.

Assessment of the stormwater pipelines connecting OU 7 to the ditches as a conduit for contamination to surface water is included in the risk assessment. Water samples were collected where the pipelines discharge into the surface water of the ditches. These samples represent contamination which could be emanating from OU 7 or other sources which discharge to the storm sewer. Volatiles were detected in the surface water samples that are also found in the plume. There was no risk associated with the volatiles in surface water. Although not included in the risk assessment, confirmatory samples of the pipeline water before discharging to the ditches were also collected. This sampling confirmed the surface water results. Also, part of the pipe connecting OU 7 to the storm sewer was removed and plugged during the interim remedial action in May 1994.

24. The assessment endpoints are too general. It is important to have specific endpoints in order to determine appropriate measurement endpoints, such as toxicity tests, and then establish the relevance of the tests results to site conditions.

The Navy believes the endpoints selected for OU 7 are sufficient for remedial decision making and represent the most practicable ones available. The assessment endpoints are specific to the protection of the survival and reproduction of aquatic life and terrestrial wildlife. Assessment endpoints are the broader measures of what is to be protected. The measurement endpoints approximate the assessment endpoints. For example, at OU 7 one of the assessment endpoints is to protect for the survival of fish and invertebrate communities with the measure being the toxicity observed to the amphipod communities in the sediment.

25. FDEP water and sediment criteria and guidance concentrations should be used in screening ecological chemical of potential concern (ECPCs) and later when evaluating these chemicals.

The USEPA Region IV Waste Management Division Screening values used to select ECPCs are generally more conservative than FSWQS, and Region IV specifies that the screening values be used to select ECPCs. Some FSWQS have been derived to protect human health rather than ecological endpoints and would not be applicable for screening contaminants for ecological receptors. In future risk assessments any FSWQS lower than the Region IV Screening value and protective of ecological receptors will be used to select ECPCs.

The USEPA Region IV sediment screening values are based on FDEP's Sediment Quality Assessment Guidelines (MacDonald, 1992) and NOAA's ER-L values. If the CLP-PQL can achieve the NOAA ER-L or FDEP's NOEL value, then the lowest of those values is used for screening purposes; otherwise, the screening value defaults to the CLP-PQL. The FDEP SQAGs will be used for screening purposes once the ECPCs have been selected.

26. FDEP does not allow the use of dilution of groundwater entering a surface water body in determining exposure concentrations. The benthic organisms are not protected nor the species that ingest these organisms, sediments and water. Also, these discharges are unregulated non-point sources. Therefore, the 900 dilution factor should not be used in the comparison with the benchmarks in Table 6-16 or as discussed in section 6.2.4.3 (page 6-51). Also, Appendix T does not provide the calculations for the dilution factor.

For purposes of risk assessment and decision making concerning groundwater remediation, the Navy used a dilution factor for groundwater concentrations to approximate the amount of contaminant to which an aquatic organism in Sal Taylor Creek would be exposed. Discharge of groundwater from the plume into wetland, however, assumed no dilution. Use of undiluted groundwater concentrations for Sal Taylor Creek in the ecological risk assessment is not technically reasonable because it is unlikely that terrestrial wildlife and aquatic receptors would be exposed prior to dilution.

Appendix T, the model for prediction of groundwater to surface water transport and dilution of ECPCs will be included in the final report.

27. Springborn Laboratories, which conducted the toxicity tests, does not have approved QAP with FDEP.

The Navy believes that Springborn's lack of a FDEP-approved QAP does not invalidate the results of their tests. ABB-ES is confident in the reliability of their quality assurance program.

28. Since the total petroleum hydrocarbons levels were high in the sediments (Table 6-6), it was surprising to not find any of the components expected in petroleum products in the PAH analyses. However, a brief review of data in the Remedial Investigation revealed that the detection limits were too high. EPA method 602 or 625 should be conducted on sediments and surface water samples in the ditches. The detected compounds should then be handled as ECPCs.

The high detection limits were related to matrix interference. This interference would still occur with USEPA methods 602 and 625. It is doubtful that USEPA method 602 or 625 would have better detection levels than the method used.

29. Biological sampling and surface water and sediment analyses should be conducted in Sal Taylor Creek and the wetlands. It is apparent that the ditch habitat and water quality are not optimal; however, the impacts to the creek and wetlands are unknown.

Biological, surface water, and sediment samples were collected from the ditches that drain into Sal Taylor Creek and associated wetland. Sampling was sufficient to assess risks associated with the discharge of contamination from OU 7 into the stormwater system. Sampling was focused to the area of the point of discharge as this area would have the highest exposure concentrations. The chlorinated solvents would not be expected further downstream or in the wetland due to their volatility. Also, the area downstream in Sal Taylor Creek has been dramatically affected by a 900,000-gallon fuel spill that occurred at the North Fuel Farm. Surface water and sediment samples were collected under the Tanks Program for that portion of Sal Taylor Creek but are not appropriate for the baseline risk assessment for OU 7.

30. It is possible that the aluminum surface water criteria may not be appropriate for this site. If this matter is to be pursued, the surface water quality standards section of the department should be contacted by the consultant in order to ascertain the procedure to determine the site specific criteria using the water effects ratio.

The Navy agrees that the aluminum surface water value is a Federal AWQC derived to protect brook trout and striped bass, which are not present in the receiving system.

Therefore, the aluminum AWQC may not be appropriate as a benchmark of toxicity and risk for OU 7. The Navy does not believe establishing a site-specific standard for aluminum is necessary because a Florida surface water quality standard does not exist and the site is not a regulated point source discharge.

U.S. Environmental Protection Agency

31. Organization. The document was generally too sparse. Many of the important tables that should have appeared with the text were relegated to a series of unnumbered unlabeled appendices. The final BRA is part of the public record and should be as easy to read and understand as possible. Inclusion of these tables in unlabeled appendices made it extremely difficult to read.

The one positive exception was the inclusion of COPC tables in the main body of the text. Generally, the reviewer wishes to see the following in the main body of the text: tables of COPCs (HHCPCs), tables showing the exposure assumptions and intake equations, tables showing toxicity values for the COPCs, risk summary tables and RGO tables.

All appendices will be clearly labelled and numbered. The tables have been included in appendices in order to improve the flow and streamline the actual risk assessment text. It is agreed that risk summary tables and RGO tables should be placed in the text. However, exposure assumption tables, intake equation tables, and toxicity tables are quite lengthy and tend to interrupt the flow of the text. The placement of these tables in appendices enables the public to more clearly focus on the major findings of the risk assessment. We would be glad to further discuss the format of the text and the appendices for future risk assessments.

32. COPC Tables 4-4 to 4-7. A scheme of notation for indicating that a chemical was not a COPC (HHCPC) in the BRA for OU-2 at Cecil Field was excellent. The reviewer commented on this in a memo dated December 16, 1994. This terminology was excellent. For example,

F	eliminated based on frequency of detection
B	eliminated based on the 2X background criterion
RBC	eliminated based on Region III risk-based screening

Use of this notation allowed the reviewer to read the footnotes only a single time. This terminology should be used in all COPC (HHCPC) screening tables.

The Navy agrees that the scheme of notation for indicating that a chemical was not a COPC (HHCPC) in the BRA for OU-2 was excellent. This notation scheme will be incorporated into the Final version of this document.

33. Page 4-11, Oral Absorption Efficiencies. The document incorrectly attributes these values to a call to Ms. Julie Keller. Region IV Guidance in this regard is attached and should be the reference for this information.

The revised document will reference the 3/21/94 Draft Supplemental Guidance to RAGS: Region IV Bulletin, Default Oral Absorption Values for Dermal Reference Dose Calculations.

34. Use of FDEP DOD Soil Cleanup Levels. FDEP has issued a list of soil clean up levels based on multi-pathway exposure. In a meeting between Drs. Ted W. Simon and Elmer W. Akin of USEPA and Ligia Mora-Applegate and Dr. Steve Roberts of FDEP, it was agreed that at BRAC sites, the addition to the soil cleanup numbers would be used for screening in addition to the Region III Risk-Based Concentrations. The maximum detected levels of COPCs in soils will be screened against the lower of either the FDEP soil cleanup number or the Region III number based on a cancer risk of 10^{-6} or an HQ of 0.1.

Although the Navy believed that an agreement had been reached during a teleconference on December 1, 1994 (with participants from USEPA, FDEP, and ABB-ES) that the FDEP Screening values need not be used in the HHCPC tables for the OU7 BRA, to be consistent with risk assessment for OU8 they will now be incorporated into the Final document.

35. Uncertainties with high reporting limits. The RLs for arsenic and antimony in ground water were 10 $\mu g/\ell$ and 60 $\mu g/\ell$ respectively. Using standard exposure assumptions, the cancer risk due to arsenic at this reporting limit is 2E-04. The HQ due to antimony at its reporting limit is 4.1. Arsenic and antimony are both COPCs, and these reporting limits should be discussed as uncertainties.

Reporting levels for arsenic and antimony in groundwater, the cancer risks associated with exposure to those same concentrations, and the impact of those reporting levels on the risk estimates will be discussed as uncertainties.

36. Use of a current RBC table. The RBC table from Region III included in one of the unnumbered appendices is out of date. Dr. Michelle Andriot of ABB informed me at a meeting in Atlanta on April 27, 1995 that ABB is in possession of the most recent RBC table. It should be used a source of RBCs for COPC screening. For example, the screening level for aluminum was incorrect.

Navy risk assessments will use, and cite, the most recently available USEPA Region III RBC table at the time it is conducted. For the case of aluminum in soil, the maximum reported concentration (5,950 mg/kg) is well below the newly revised RBC (HQ of 0.1) of 7,800 mg/kg, indicating it will not be an HHCPC. Therefore, use of the revised RBC will have no impact on the risk assessment.

37. Inhalation of Volatiles During Showering. EPA guidance suggests that inhalation of VOCs during showering can be assumed to be equivalent to the ingestion of 2 ℓ of the contaminated water. This assumption is based on a study by Jo et al. (1990) in which volunteers showered with chloroform-contaminated water. Afterwards, chloroform was measured ont their breaths and intake calculated.

Considering TCE, the ingestion intake from the surficial aquifer for the future adult resident was 7.4E-03 mg/Kg-day. The intake from inhalation during showering can be calculated as follows:

$$Intake = \frac{C_{air} \times ET \times EF \times IR_{air} \times 10^{-3}\ mg/\mu g}{BW \times AT}$$

C_{air}	Concentration in air	2700 $\mu g/m^3$
ET	Exposure Time	0.2 hr
EF	Exposure Frequency	350 day/yr
ED	Exposure Duration	30 yr
IR_{air}	Inhalation Rate	0.833 m^3/hr
BW	Body Weight	70 Kg
AT	Averaging Time (cancer)	25,550 days

The intake from showering calculations this way is 2.6E-03 mg/Kg-day. This value is less than the ingestion intake, less than half as much.

The reviewer likes the method of calculation for showering intake as an alternative to the default method and suggests that some of the assumptions should be changed so that the results are in accord with EPA guidance. A copy of this guidance is attached.

A smaller point: although the risk results were the same, the reviewer found the use of the lifetime average concentration confusing. It was never made clear exactly how this lifetime average as calculated.

The calculation of shower-related exposures to volatiles in water is a chemical-specific exercise. The exposure parameters for the person exposed in the shower are consistent with recent USEPA guidance. For example, duration of a shower is 0.2 hour (12 minutes) which is the

90th percentile value per the 1989 RAGS guidance; exposure frequency is 350 days/year; duration of exposure is 30 years; and bodyweight is 70 kg. All of these values are consistent with RAGS guidance. The rest of the input values for calculation of exposure are related to the volatiles release model (Foster and Chrostowski, 1987). These inputs include chemical-specific physical properties as well as the physical properties of the shower itself. Values which have been employed in the model were obtained from published literature. If there are specific recommendations concerning revisions to these input parameters, they would be welcomed.

38. Soil Ingestion Rate for the Excavation Worker. The correct soil ingestion rate for this receptor should be 480 mg/day. This ingestion rate is used with a short (< 1 year) Exposure Duration. Attachment B to the Standard Default Exposure Factors suggests this value and is attached to this memo.

The Standard Default Exposure Factors do suggest a soil ingestion rate of 480 mg/day. However, Hawley's estimate of an excavation worker's soil ingestion rate was made prior to the publication of the USEPA 1992 guidance on dermal exposure assessment. This estimate relies on hand-to-mouth activities, making the amount of soil adhering to the skin critical to the soil ingestion rate. The adherence rates presented in the USEPA 1992 dermal guidance support a soil ingestion rate substantially lower than the 480 mg/day. Since the excavation worker's risks were very small (ECLR of $5x10^{-9}$ and HI of 0.002), incorporating the 480 mg/day soil ingestion rate will have no significant effect on the risk estimates. The Navy welcomes the opportunity to further discuss the worker soil ingestion rate for future risk assessments.

39. Table I-26. Omission of a definition for R was confusing. Inspection of an earlier unlabeled appendix indicated that R was the air exchange rate. This should have been included in this table with an appropriate value.

The first page of Table I-26 identifies "R" as the air exchange rate with a value of 0.03 min^{-1}. The revised document will also contain this information.

40. Appendix K, Toxicity Values.

Many of the toxicity values were presented with too many significant figures. IRIS and HEAST show the correct number of significant figures.

The inhalation SF for arsenic is given in HEAST as 50 $(mg/Kg\text{-}day)^{-1}$. The 1992 HEAST indicates that a 30% absorption factor should be used. Conversion of the unit risk for arsenic of 4.3E-3 $(\mu g/m^3)^{-1}$ to an SF give 15 $(mg/Kg\text{-}day)^{-1}$. Dr. Chao Chen of ORD recommends using the calculated SF from IRIS of 15 $(mg/Kg\text{-}day)^{-1}$. There is nothing really wrong with using the SF of 50 $(mg/Kg\text{-}day)^{-1}$ but the calculated dose in the BRA must be adjusted to an absorbed dose.

The inhalation SF for Cadmium is 6.3 $(mg/Kg\text{-}day)^{-1}$ calculated from the unit risk.

The provisional oral RFD for TCE is 6E-03 mg/Kg-day. A report from ECAO in this regard is attached.

The number of significant figures in the toxicity values will be revised to reflect the number of significant figures provided in IRIS and HEAST.

The inhalation slope factor of 15 $(mg/kg/day)^{-1}$ for arsenic will be incorporated into the revised document. The only effect of this change will be to lower the excavation worker's subsurface dust exposure risk from 4×10^{-10} to 3×10^{-10}.

The inhalation slope factor of 6.3 $(mg/kg/day)^{-1}$ for cadmium will be inserted into the dose-response tables. However, cadmium was not selected as an HHCPC for either surface or subsurface soil, and no inhalation risks for cadmium were calculated in this risk assessment.

The Provisional RfD for trichloroethylene will be incorporated into the risk assessment but will not likely change the results of the risk assessment. Future assessments will use the provisional RfD.

4.7.1
Superseded
Date: 8/22/95

PROJECT REVIEW COMMENTS

NAS Cecil Field Operable Unit 7
Jacksonville, Florida
Baseline Risk Assessment

Department of the Navy - J. Lloyd Crews

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Use of the red-winged blackbird as a representative species should not change the results of the risk analyses. Both birds have similar body weights and water ingestion rates which would indicate similar doses associated with ingestion of surface waters. Risks may actually be lower for the red-winged blackbird as this species is herbivorous and would be expected to consume less sediment incidently than the robin, which forages in the soil (and possibly sediment). Section 6.2.2.1 will include the red-winged blackbird as a representative wildlife species instead of the American robin.

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Table 6-14 will be corrected to include the NOAA ER-L and ER-M values of 80 mg/kg and 145 mg/kg, respectively, for chromium.

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A figure will be included in Appendix P (Results of Aquatic Sampling) to indicate all 16 locations sampled for biota at NAS Cecil Field. The other 16 locations are not relevant to OU 7 and represent sampling for other Operable Units at NAS Cecil Field and sampling in support of a Basewide Ecological Risk Assessment for the watersheds at NAS Cecil. Discussion of the entire biological sampling program will be included in a forthcoming NAS Cecil Field Basewide Ecological Assessment Report.

Florida Department of Environmental Protection - Mike Deliz

6. This document was produced concurrent with the review of the Baseline Risk Assessment for Operable Unit 2, Site 5 and 17. Verbal and written and comments by FDEP were submitted and acceptable responses to those comments took place in meetings in December, April, and May. During that time, FDEP presented concerns and requirements for an acceptable Baseline Risk Assessment (BRA). Most of these concerns have not been addressed in this document and make it difficult to review. The understandings and agreements reached by ABB-ES, the Navy, and FDEP, during the May 1, 1995 meeting, should be incorporated into this document when it is submitted as Final. In addition, comments submitted for the OU-2 BRA and the draft comments for the OU-8 BRA (copy enclosed) should be examined to determine if similar questions or deficiencies exist in this document. As can be seen by the enclosed OU-8 BRA comments the document is acceptable with minor changes in its Draft form.

Although the Navy believed that an agreement had been reached during a teleconference on December 1, 1994 (with participants from USEPA, FDEP, and ABB-ES) that the FDEP Soil Cleanup values need not be used in the HHCPC tables for the OU7 BRA, to be consistent with risk assessments for OU 8 they will now be incorporated in the Final document.

7. Page 3-8, Section 3.2.2, change ". . ./Bio/box-1. . ." to ". . ./Bio/Tox-1. . .".

".../Bio/box-1..." will be revised to read ".../Bio/Tox-1..."

8. Page 3-11, Section 3.4, why is the discussion of the background sampling program for soil, as it pertains to OU-7, in an appendix and not within the main body of this report?

The detailed information has been presented in the appendix in order to streamline the report, allowing presentation of information in a manner which focuses on results and conclusions.

9. Pages 4-1 through 4-26, are too generic and read like a textbook.

This section is intended to provide the lay public with information on the technical approach used in the risk assessment. No revisions are anticipated in response to this comment.

10. Page 4-3, Section 4.1.2, as has been discussed numerous times, chemicals should also be screened against FDEP *Soil Cleanup Goals for Military Sites*, dated April 5, 1995.

Although the Navy believed that an agreement had been reached during a teleconference on December 1, 1994 (with participants from USEPA, FDEP, and ABB-ES) that the FDEP Soil Cleanup values need not be used in the HHCPC tables for the OU7 BRA, to be consistent with the risk assessment for OU8 they will now be incorporated in the Final document.

11. Page 4-7, Section 4.1.3.3, the text states that ". . .where there are fewer than four samples or where the UCL is greater than the maximum detected concentration. . ." according to current informal guidance from USEPA Region IV, a 95% UCL should not be calculated if there are less than 10 samples. The maximum value should be used instead of the exposure point concentration.

The Navy agrees. For the OU 7 risk assessment the 95 percent UCL was not calculated when the data set for a given exposure area contained fewer than 10 samples.

12. Tables 4-4 and 4-5, these tables should include FDEP *Soil Cleanup Goals for Military Sites*.

Although the Navy believed that an agreement had been reached during a teleconference on December 1, 1994 (with participants from USEPA, FDEP, and ABB-ES) that the FDEP Soil Cleanup Goals need not be used in the HHCPC tables for the OU7 BRA, to be consistent with the risk assessment for OU8 they will now be incorporated in the Final document.

13. Tables 4-8 and 4-9, these tables should include FDEP Groundwater Guidance Concentrations.

To be consistent with risk assessment for OU8, the FDEP Groundwater Guidance Concentrations will now be incorporated in the Final document.

14. Table 4-10, the Child Resident should be added to the Potential Exposed Population column

The Navy agrees. The Child Resident will be added to the Potential Exposed Population column.

15. Page 6-10, Section 6.1.2, sediment should also be screened against FDEP Sediment Quality Assessment Guidelines (SQAG) contained in *Approach to the Assessment of Sediment Quality in Florida Coastal Waters*, dated November 1994.

The USEPA Region IV sediment screening values are based on FDEP's Sediment Quality Assessment Guidelines (MacDonald, 1992) and NOAA's Effects Range Low (ER-L) values. If the Contract Lab Protocols - Practical Quantitation Limits (CLP-PQL) can achieve the NOAA ER-L or FDEP's NOEL value, then the lowest of those values is used for screening purposes; otherwise, the screening value defaults to the CLP-PQL. The FDEP SQAGs will be used for screening purposes once the ECPCs have been selected.

16. Page 6-15, Section 6.1.4.1, see comment 15.

Please see response to comment 15.

17. Table 6-5, the cadmium detected listed on this table exceeds the FDEP SQAG. The Probable Effects Limit (PEL) for cadmium is 4.21 mg/kg.

Although cadmium exceeded the FDEP SQAG, the assessment of risk related to cadmium would not change because it was previously identified as an ECPC.

18. Table 6-14, see comment 15.

Please see response to comment 15.

19. Table 6-15, based on comment 17, cadmium should be listed as a ECPC in sediment.

Table 6-15 is incorrectly titled. The title should indicate that the contaminants listed are associated with risk and not just EPCPs. The title will be changed and therefore cadmium will not be included on the table since it was not associated with risk.

20. Appendix L, Tables L-1 and L-2, these tables are excellent and should be included in Section 4.

The Navy agrees these tables are useful and informative; however, to avoid cluttering the main body of the text ~~from being cluttered~~ with tables, the referenced tables will remain in Appendix L.

21. Appendix M, Table M-1 and M-2, these tables are excellent and should be included in Section 4.

The Navy agrees these tables are excellent; however, to avoid cluttering the main body of the text ~~from being cluttered~~ with tables, the referenced tables will remain in Appendix M.

22. Appendix T, the model for prediction of groundwater to surface water transport and dilution of ecological chemicals of potential concern (ECPCS) has been omitted. The background sampling program and summary, with supporting data has been mistakenly submitted. The model should be included, and this background sampling summary should be included as a separate appendix.

Appendix T will be included in the Final RA report and the background sampling summary will be moved to the appropriate appendix.

Florida Department of Environmental Protection - Jane Fulger

23. The underground stormwater pipelines connecting OU7 to the ditches should be assessed as a conduit for contamination to surface waters.

Assessment of the stormwater pipelines connecting OU 7 to the ditches as a conduit for contamination to surface water is included in the risk assessment. Water samples were collected where the pipelines discharge into the surface water of the ditches. These samples represent contamination which could be emanating from OU 7 or other sources which discharge to the storm sewer. Volatiles were detected in the surface water samples that are also found in the plume. There was no risk associated with the volatiles in surface water. Although not included in the risk assessment, confirmatory samples of the pipeline water before discharging to the ditches were also collected. This sampling confirmed the surface water results. Also, part of the pipe connecting OU 7 to the storm sewer was removed and plugged during the interim remedial action in May 1994.

24. The assessment endpoints are too general. It is important to have specific endpoints in order to determine appropriate measurement endpoints, such as toxicity tests, and then establish the relevance of the tests results to site conditions.

The Navy believes the endpoints selected for OU 7 are sufficient for remedial decision making and represent the most practicable ones available. The assessment endpoints are specific to the protection of the survival and reproduction of aquatic life and terrestrial wildlife. Assessment endpoints are the broader measures of what is to be protected. The measurement endpoints approximate the assessment endpoints. For example, at OU 7 one of the assessment endpoints is to protect for the survival of fish and invertebrate communities with the measure being the toxicity observed to the amphipod communities in the sediment.

25. FDEP water and sediment criteria and guidance concentrations should be used in screening ecological chemical of potential concern (ECPCs) and later when evaluating these chemicals.

The ~~U.S. Environmental Protection Agency~~ (USEPA) Region IV Waste Management Division Screening values used to select ECPCs are generally more conservative than ~~Florida Surface Water Quality Standards~~ (FSWQS), and Region IV specifies that the screening values be used to select ECPCs. Some FSWQS have been derived to protect human health rather than ecological endpoints and would not be applicable for screening contaminants for ecological receptors. In future risk assessments any FSWQS ~~that is~~ lower than the Region IV Screening value and is protective of ecological receptors will be used to select ECPCs.

The USEPA Region IV sediment screening values are based on FDEP's Sediment Quality Assessment Guidelines (MacDonald, 1992) and NOAA's ~~Effects Range Low~~ (ER-L) values. If

the ~~Contract Laboratory Protocols - Practical Quantitation Limits~~ (CLP-PQL) can achieve the NOAA ER-L or FDEP's NOEL value, then the lowest of those values is used for screening purposes; otherwise, the screening value defaults to the CLP-PQL. The FDEP SQAGs will be used for screening purposes once the ECPCs have been selected.

26. FDEP does not allow the use of dilution of groundwater entering a surface water body in determining exposure concentrations. The benthic organisms are not protected nor the species that ingest these organisms, sediments and water. Also, these discharges are unregulated non-point sources. Therefore, the 900 dilution factor should not be used in the comparison with the benchmarks in Table 6-16 or as discussed in section 6.2.4.3 (page 6-51). Also, Appendix T does not provide the calculations for the dilution factor.

For purposes of risk assessment and decision making concerning groundwater remediation, the Navy used a dilution factor for groundwater concentrations to approximate the amount of contaminant to which an aquatic organism in Sal Taylor Creek would be exposed. Discharge of groundwater from the plume into wetland, however, assumed no dilution. Use of undiluted groundwater concentrations for Sal Taylor Creek in the ecological risk assessment is not technically reasonable because it is unlikely that terrestrial wildlife and aquatic receptors would be exposed prior to dilution.

Appendix T, the model for prediction of groundwater to surface water transport and dilution of ~~ecological chemicals of potential concern~~ (ECPCs) will be included in the final report.

27. Springborn Laboratories, which conducted the toxicity tests, does not have approved QAP with FDEP.

The Navy believes that Springborn's lack of a FDEP-approved QAP does not invalidate the results of their tests. ABB-ES is confident in the reliability of their quality assurance program.

28. Since the total petroleum hydrocarbons levels were high in the sediments (Table 6-6), it was surprising to not find any of the components expected in petroleum products in the PAH analyses. However, a brief review of data in the Remedial Investigation revealed that the detection limits were too high. EPA method 602 or 625 should be conducted on sediments and surface water samples in the ditches. The detected compounds should then be handled as ECPCs.

The high detection limits were related to matrix interference. This interference would still occur with USEPA methods 602 and 625. It is doubtful that USEPA method 602 or 625 would have better detection levels than the method used.

29. Biological sampling and surface water and sediment analyses should be conducted in Sal Taylor Creek and the wetlands. It is apparent that the ditch habitat and water quality are not optimal; however, the impacts to the creek and wetlands are unknown.

Biological, surface water, and sediment samples were collected from the ditches that drain into Sal Taylor Creek and associated wetland. Sampling was sufficient to assess risks associated

with the discharge of contamination from OU 7 into the stormwater system. Sampling was focused to the area of the point of discharge as this area would have the highest exposure concentrations. The chlorinated solvents would not be expected further downstream or in the wetland due to their volatility. Also, the area downstream in Sal Taylor Creek has been dramatically affected by a 900,000-gallon fuel spill that occurred at the North Fuel Farm. Surface water and sediment samples were collected under the Tanks Program for that portion of Sal Taylor Creek but are not appropriate for the baseline risk assessment for OU 7.

30. It is possible that the aluminum surface water criteria may not be appropriate for this site. If this matter is to be pursued, the surface water quality standards section of the department should be contacted by the consultant in order to ascertain the procedure to determine the site specific criteria using the water effects ratio.

The Navy agrees that the aluminum surface water value is a Federal AWQC derived to protect brook trout and striped bass, which are not present in the receiving system. Therefore, the aluminum AWQC may not be appropriate as a benchmark of toxicity and risk for OU 7. The Navy does not believe establishing a site-specific standard for aluminum is necessary because a Florida surface water quality standard does not exist and the site is not a regulated point source discharge.

U. S. Environmental Protection Agency

31. Organization. The document was generally too sparse. Many of the important tables that should have appeared with the text were relegated to a series of unnumbered unlabeled appendices. The final BRA is part of the public record and should be as easy to read and understand as possible. Inclusion of these tables in unlabeled appendices made it extremely difficult to read.

The one positive exception was the inclusion of COPC tables in the main body of the text. Generally, the reviewer wishes to see the following in the main body of the text: tables of COPCs (HHCPCs), tables showing the exposure assumptions and intake equations, tables showing toxicity values for the COPCs, risk summary tables and RGO tables.

All appendices will be clearly labelled and numbered. The tables have been included in appendices in order to improve the flow and streamline the actual risk assessment text. It is agreed that risk summary tables and RGO tables should be placed in the text. However, exposure assumption tables, intake equation tables, and toxicity tables are quite lengthy and tend to interrupt the flow of the text. The placement of these tables in appendices enables the public to more clearly focus on the major findings of the risk assessment. We would be glad to further discuss the format of the text and the appendices for future risk assessments.

32. COPC Tables 4-4 to 4-7. A scheme of notation for indicating that a chemical was not a COPC (HHCPC) in the BRA for OU-2 at Cecil Field was excellent. The reviewer commented on this in a memo dated December 16, 1994. This terminology was excellent. For example,

F eliminated based on frequency of detection
B eliminated based on the 2X background criterion
RBC eliminated based on Region III risk-based screening

Use of this notation allowed the reviewer to read the footnotes only a single time. This terminology should be used in all COPC (HHCPC) screening tables.

The Navy agrees that the scheme of notation for indicating that a chemical was not a COPC (HHCPC) in the BRA for OU-2 was excellent. This notation scheme will be incorporated in the Final version of this document.

33. Page 4-11, Oral Absorption Efficiencies. The document incorrectly attributes these values to a call to Ms. Julie Keller. Region IV Guidance in this regard is attached and should be the reference for this information.

The revised document will reference the 3/21/94 Draft Supplemental Guidance to RAGS: Region IV Bulletin, Default Oral Absorption Values for Dermal Reference Dose Calculations.

34. Use of FDEP DOD Soil Cleanup Levels. FDEP has issued a list of soil clean up levels based on multi-pathway exposure. In a meeting between Drs. Ted W. Simon and Elmer W. Akin of USEPA and Ligia Mora-Applegate and Dr. Steve Roberts of FDEP, it was agreed that at BRAC sites, the addition to the soil cleanup numbers would be used for screening in addition to the Region III Risk-Based Concentrations. The maximum detected levels of COPCs in soils will be screened against the lower of either the FDEP soil cleanup number or the Region III number based on a cancer risk of 10^{-6} or an HQ of 0.1.

Although the Navy believed that an agreement had been reached during a teleconference on December 1, 1994 (with participants from USEPA, FDEP, and ABB-ES) that the FDEP Screening values need not be used in the HHCPC tables for the OU7 BRA, to be consistent with risk assessment for OU8 they will now be incorporated in the Final document.

35. Uncertainties with high reporting limits. The RLs for arsenic and antimony in ground water were 10 $\mu g/\ell$ and 60 $\mu g/\ell$ respectively. Using standard exposure assumptions, the cancer risk due to arsenic at this reporting limit is 2E-04. The HQ due to antimony at its reporting limit is 4.1. Arsenic and antimony are both COPCs, and these reporting limits should be discussed as uncertainties.

Reporting levels for arsenic and antimony in groundwater, the cancer risks associated with exposure to those same concentrations, and the impact of those reporting levels on the risk estimates will be discussed as uncertainties.

36. Use of a current RBC table. The RBC table from Region III included in one of the unnumbered appendices is out of date. Dr. Michelle Andriot of ABB informed me at a meeting in Atlanta on April 27, 1995 that ABB is in possession of the most recent RBC table. It should be used a source of RBCs for COPC screening. For example, the screening level for aluminum was incorrect.

Navy risk assessments will use, and cite, the most recently available USEPA Region III RBC table at the time it is conducted. For the case of aluminum in soil, the maximum reported concentration (5,950 mg/kg) is well below the newly revised RBC (HQ of 0.1) of 7,800 mg/kg, indicating it will not be a HHCPC. Therefore, use of the revised RBC will have no impact on the risk assessment.

37. Inhalation of Volatiles During Showering. EPA guidance suggests that inhalation of VOCs during showering can be assumed to be equivalent to the ingestion of 2 ℓ of the contaminated water. This assumption is based on a study by Jo et al. (1990) in which volunteers showered with chloroform-contaminated water. Afterwards, chloroform was measured ont their breaths and intake calculated.

Considering TCE, the ingestion intake from the surficial aquifer for the future adult resident was 7.4E-03 mg/Kg-day. The intake from inhalation during showering can be calculated as follows:

$$Intake = \frac{C_{air} \times ET \times EF \times IR_{air} \times 10^{-3}\ mg/\mu g}{BW \times AT}$$

C_{air}	Concentration in air	2700 $\mu g/m^3$
ET	Exposure Time	0.2 hr
EF	Exposure Frequency	350 day/yr
ED	Exposure Duration	30 yr
IR_{air}	Inhalation Rate	0.833 m^3/hr
BW	Body Weight	70 Kg
AT	Averaging Time (cancer)	25,550 days

The intake from showering calculations this way is 2.6E-03 mg/Kg-day. This value is less than the ingestion intake, less than half as much.

The reviewer likes the method of calculation for showering intake as an alternative to the default method and suggests that some of the assumptions should be changed so that the results are in accord with EPA guidance. A copy of this guidance is attached.

A smaller point: although the risk results were the same, the reviewer found the use of the lifetime average concentration confusing. It was never made clear exactly how this lifetime average as calculated.

The calculation of shower-related exposures to volatiles in water is a chemical-specific exercise. The exposure parameters for the person exposed in the shower are consistent with recent USEPA guidance. For example, duration of a shower is 0.2 hour (12 minutes) which is the 90th percentile value per the 1989 RAGS guidance; exposure frequency is 350 days/year; duration of exposure is 30 years; and bodyweight is 70 kg. All of these values are consistent with RAGS guidance. The rest of the input values for calculation of exposure are related to the volatiles release model (Foster and Chrostowski, 1987). These inputs include chemical-specific physical properties as well as the physical properties of the shower itself. Values which have been employed in the model were obtained from published literature. If there are specific recommendations concerning revisions to these input parameters, they would be welcomed.

38. Soil Ingestion Rate for the Excavation Worker. The correct soil ingestion rate for this receptor should be 480 mg/day. This ingestion rate is used with a short (< 1 year) Exposure Duration. Attachment B to the Standard Default Exposure Factors suggests this value and is attached to this memo.

The Standard Default Exposure Factors do suggest a soil ingestion rate of 480 mg/day. However, Hawley's estimate of an excavation worker's soil ingestion rate was made prior to the publication of the USEPA 1992 guidance on dermal exposure assessment. This estimate relies on hand-to-mouth activities, making the amount of soil adhering to the skin is critical to the soil ingestion rate. The adherence rates presented in the USEPA 1992 dermal guidance support a soil ingestion rate substantially lower than the 480 mg/day. Since the excavation worker's risks were very small (ECLR of $5x10^{-9}$ and HI of 0.002), incorporating the 480 mg/day soil ingestion rate will have no significant effect on the risk estimates. The Navy welcomes the opportunity to further discuss the worker soil ingestion rate for future risk assessments.

39. Table I-26. Omission of a definition for R was confusing. Inspection of an earlier unlabeled appendix indicated that R was the air exchange rate. This should have been included in this table with an appropriate value.

The first page of Table I-26 identifies "R" as the air exchange rate with a value of 0.03 min^{-1}. The revised document will also contain this information.

40. Appendix K, Toxicity Values.

Many of the toxicity values were presented with too many significant figures. IRIS and HEAST show the correct number of significant figures.

The inhalation SF for arsenic is given in HEAST as 50 $(mg/Kg\text{-}day)^{-1}$. The 1992 HEAST indicates that a 30% absorption factor should be used. Conversion of the unit risk for arsenic of 4.3E-3 $(\mu g/m^3)^{-1}$ to an SF give 15 $(mg/Kg\text{-}day)^{-1}$. Dr. Chao Chen of ORD recommends using the calculated SF from IRIS of 15 $(mg/Kg\text{-}day)^{-1}$. There is nothing really wrong with using the SF of 50 $(mg/Kg\text{-}day)^{-1}$ but the calculated dose in the BRA must be adjusted to an absorbed dose.

The inhalation SF for Cadmium is 6.3 $(mg/Kg\text{-}day)^{-1}$ calculated from the unit risk.

The provisional oral RFD for TCE is 6E-03 mg/Kg-day. A report from ECAO in this regard is attached.

The number of significant figures in the toxicity values will be revised to reflect the number of significant figures provided in IRIS and HEAST.

The inhalation slope factor of 15 $(mg/kg/day)^{-1}$ for arsenic will be incorporated into the revised document. The only effect of this change will be to lower the excavation worker's subsurface dust exposure risk from 4×10^{-10} to 3×10^{-10}.

The inhalation slope factor of 6.3 $(mg/kg/day)^{-1}$ for cadmium will be inserted into the dose-response tables. However, cadmium was not selected as an HHCPC for either surface or subsurface soil and no inhalation risks for cadmium were calculated in this risk assessment.

The Provisional RfD for trichloroethylene will be incorporated into the risk assessment but will not likely change the results of the risk assessment. Future assessments will ~~utilize~~ use the provisional RfD.