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EnSafe

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October 10,1997

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NAS PENSACOLA
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USEPA
ATTN: Gena Townsend
Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, GA 30303-3104

RE: Remedial Investigation Report for NAS Pensacola Operable Unit 2
Contract # N62467-89-D-0318/059

Dear Ms. Townsend:

On behalf of the Navy, EnSafe is pleased to submit one copy of the Remedial Investigation Report for Operable Unit 2, at Naval Air Station Pensacola, Florida. A final response to comments is provided to facilitate the review process. If you should have any questions or need any additional information regarding this document, please do not hesitate to call me.

Sincerely,

EnSafe Inc.

Henry H. Beiro, P.G.
Task Order Manager

Enclosure

cc: Bill Hill, SOUTHNAVFACENGCOM – 2 copies
Ron Joyner, NAS Pensacola – 2 copies
John Mitchell, FDEP – 1 copy
Tom Dillon, N O M – 1 copy
Linda Boldyreff, John C. Pace Library – 1 copy
Judeth Walker, NAS Pensacola – 1 copy
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DRAFT REMEDIAL INVESTIGATION REPORT OU 2
SITES 11, 12, 25, 26, 17, 30, AND 36
NAS PENSACOLA, FLORIDA
RESPONSE TO EPA REGION IV COMMENTS

October 17, 1996 (Gena D. Townsend)

INVESTIGATIC I URES:

Sediment and surface water sampling and locations are not discussed. The sampling pattern depicted in Figure 1 does not account for the shifting of soil that happens during construction which may increase the area of contamination.

EPA MCLs are not totally risk-based values for groundwater, but are used in the COPC screening process which may be inappropriate.

RESPONSE:

The revised Section 5.2.5 explains the objectives for surface water and sediment sampling. Section 9.1 of the revised Fate and Transport section discusses the contaminant transport pathways to include surface water and sediment. The Site 40 and 41 remedial investigations will detail the effects to ecological and human receptors.

Major construction at NAS Pensacola commenced in 1995 with the building of the NATTC. Within OU 2, the impact to the sampling plan included the remodeling of Buildings 3220 and 3450 (studied with the Sites 30 and 36 study area) and the demolition of Building 3189 (Site 36 study area). These are the only major construction activities which took place at OU 2 since the 1993 field investigation. In late 1995 near the end of construction, the Phase II sampling event resampled many of the wells in these areas.

The use of MCLs in the screening process suggests a level at which clean-up may be required since these levels are acceptable for public potable water.

DATA PRESENTATION:

There are no tables summarizing the nature and extent of contamination. It should be noted that the section of "nature and the extent of contamination" should mainly address an analysis of data collected which describes contaminant concentration levels found in the media in the study area. The comparisons of the contaminant concentrations with the PRGs should be considered as a COPC screening process in the risk assessment section (Section 10). When risk-based criteria are used in comparisons, the comparisons should be addressed in the risk assessment section.

There are no figures or maps to identify Wetland 5A, 5B, 6 and 7 (near Site 30) where sediment samples were collected. This section does not provide a summary of the sediment results for review. Therefore, concluding that the sediments in these wetlands are contaminated by either a groundwater source or a surface water discharge source does not have adequate support.

The boundary for each site is not identified on the maps presented in Appendix G. Also, in Figures 1 through 23 in Appendix G it is difficult to see the migration of the plume is difficult to see. Isoconcentration maps contouring the horizontal distribution of contamination and the most widely distributed contaminant should be included for clarity. These maps should be developed for groundwater.

Section 10 (Risk Assessment) indicates that a FI/FC term of 0.4 based on frequency of detection (7 of 19) was used to adjust the exposure estimates. However, the use of frequency of detection to derive a fractional exposure point factor is not appropriate. Also, application of FI/FC has resulted in lower risk estimates. Therefore, all risk estimates that use this FI/FC factor should be recalculated.

RESPONSE:

Tables of contaminant exceedances are provided in Appendix I as appropriate. Section 7 describes the nature and extent of contaminant exceedances. The use of RBCs or any other risk based criteria for screening has been agreed upon by the Tier I Partnering Team.

Section 2.3 addresses the removal action in Wetland 5A. Figure 2-3 identifies Wetland 5A, 5B, and 6 which are downstream of the Site 30 study area. In addition, Figure 2-3 also depicts the location and identifies samples collected during the removal action. Sections 5.2.5, 7.4 and 9.3 discusses the purpose of sediment sampling, its limited focus, and addresses that these areas are part of the Site 41 remedial investigation.

All site boundaries have been applied to Figures in Appendix E. Shading is provided to highlight the exceedances aiding the visualization of the contamination.

Appendix J had been added to provide the frequency of detection.

Sample point estimates of risk are provided in the revised report in Figures 10-3 through 10-26.

The FI/FC usage is described in revised Section 10.2.7.

RISK ASSESSMENT GENERAL:

The conclusions regarding risk in the risk assessment are not valid because of multiple procedure errors. It is not clear that all COPCs were selected appropriately. There are deviations from guidance in calculation of the groundwater exposure point concentrations. The use of the FI/FC term to calculate fractional soil exposure is inappropriate. Surface water exposures were not considered. Also, some potential receptors and exposure pathways were not considered. In addition, determination of the EPC is confusing.

The risk assessment does not explain why surface water is not considered as a medium of exposure. Subsurface soils were included in the risk assessment without explanation. Subsurface soils are analyzed for the protectiveness of groundwater.

Usually, the selection of COPCs is performed in Section 10 of the Risk Assessment section, not in the Nature and Extent of Contamination section (Section 7). Tables which contain ll detected compounds for each media, the frequency of detection, the maximum concentration, the screening value (and source of the screening value), the background concentrations are not provided in the text. The COPC selection which uses more than one screening value for each contaminant does not follow EPA procedures.

In the risk assessment, there is no mention of potential trespassers or recreational receptor exposure to surface water and/or sediments for either current land use or future land use.

RESPONSE:

Paragraph 1

Section 10 has been revised to reflect the EPA risk assessment guidance. Section 10.2.5 addresses the COPC selection in the risk assessment. The relationship between exposure point concentrations and the usage of FI/FC are detailed in 10.2.7. No COPCs were evaluated in Section 7.

No surface water exists at OU 2. Adjacent to OU 2 are surface water bodies contained within Wetland 5A, 5B, and downstream. This surface water is to be addressed in the Site 41 remedial investigation. The revised Section 10 discusses the risk characterization for each OU 2 site identifying other potential receptors and pathways considered in the baseline risk assessment.

Paragraph 2

Surface water exposure at OU-2 is not possible. No surface water exists at OU 2. Adjacent to OU 2 are surface water bodies contained within Wetland SA, 5B, and downstream. This surface water is to be addressed in the Site 41 remedial investigation.

Paragraph 3

Section 10 has been revised to reflect the EPA risk assessment guidance. Section 10.2.5 addresses the COPC selection. The relationship between exposure point concentrations and the usage of FI/FC are detailed in 10.2.7. No COPCs were evaluated in Section 7. The BRA in the Draft OU 2 RI referred to risk tables included in an appendix. The revised BRA for the Final OU 2 RI has incorporated these tables into the text for easy reference.

Paragraph 4

Since no surface water exists on OU 2, Section 10.2.9 addresses risk uncertainty relative to soil and groundwater exposures. Surface water and sediment exposures from adjacent wetlands will be addressed in the Site 41 RI.

GENERAL COMMENTS:

1. Page 1-2, First sentence: Remove "To Make it easier".

RESPONSE:

Section 1.0 has been revised.

COMMENT:

2. Page 5-2, Section 5.2.2: Remove the sentence "Therefore, it was presumed that the radiation."

RESPONSE:

Section 5.2.2 has been revised removing the "resumption".

COMMENT:

3. Page 7-13, First sentence: Remove "appears to have formed an immobile slug", unless there is sufficient justification for this statement.

RESPONSE:

Section 7.1.6.1 (Draft OU 2 RI) discussed surface soil radiation. This discussion is now contained in Section 7.1.5.1 and the "appears to have formed an immobile slug" has been removed.

COMMENT:

4. Page 7-28, Section 7.3.1: Reword the last sentence. If the VOCs were detected in groundwater at concentrations above the MCLs and in the soils above the leachability values additional information will be needed to support a no action (i.e., leachability modeling...).

RESPONSE:

Section 7.3.1 has been revised discussing the relationship between soil and groundwater VOC exceedances.

COMMENT:

5. Page 7-28, Section 7.3.2, first paragraph: Remove the last, "No relationship can be ...". This is an invalid point, if there is soil contamination this area must be addressed. However, if the discussion is to justify that the soils are not leaching into the groundwater based on actual data, then the sentence should be rewritten.

RESPONSE:

The correlation of soil and groundwater SVOC exceedances (7.3.2) has been revised and no longer discusses the relationship between surface and subsurface soil SVOC exceedances and Phase II groundwater exceedances.

COMMENT:

6. Page 9-17, Second paragraph: the Site 41 investigation will assess the Ecological impacts. What about human health effects.

RESPONSE:

Section 9 has been reformatted. Section 9.3 reflects how the Site 40 and 41 remedial investigations will assess human and ecological impacts.

COMMENT:

7. Page 9-17, Fourth paragraph: The last sentence leaves a question. "Direct evidence is not presently available", will it become available" Please explain.

RESPONSE:

Section 9 has been reformatted. The groundwater to surface water and surface soil to sediment pathways, discussed now in Section 9.3, will be investigated in detail in the Site 40 and 41 RIs. The field investigation approach for Sites 40 and 41 were tailored to assess the impacts from NAS Pensacola sites affecting OU 2 adjacent wetlands.

COMMENT:

8. Page 11-3, Section 11.2, Second paragraph: Remove the last sentence, "The feasibility study should always...".

RESPONSE:

Section 11.2 has been revised removing the sentence requested.

1.0 GENERAL COMMENTS

COMMENT:

1. Section 1.0, Page 1-1 and 1-2, states that the objectives of the RI are "to characterize the surface soil and groundwater at various points within the site", and "to determine source, nature, and, to the 'degree practicable for an acceptable FS', the extent of soil and groundwater contamination, as well as to 'make it easier to evaluate risk' to human health and the environment from onsite contaminated media." However, this statement is unclear and confusing because phrases such as, "the degree practicable for an acceptable FS" and "easier to evaluate risk" is not appropriate for a presentation of RI objectives. EPA guidance clearly states the objectives of an RI, so this section of the report should be revised accordingly.

RESPONSE:

Section 1.0 has been revised and these statements are no longer included.

COMMENT:

2. Section 2.2.2, Page 2-13, Paragraph 2, Sentence 9, states that the Radiological Affairs Support Office (RASO) recommended that the drain pipe outfall from Building 709 (Site 27) be located and checked for radiation contamination. However, the building and the outfall are not shown on Figure 2-2 (site map). The outfall and Building 709 should be identified on the site map.

RESPONSE:

Building 709 and the outfall no longer exist having been demolished years prior to the investigation. The outline to former Building 709 has been placed on Figure 2-2 for reference.

COMMENT:

3. Section 2.2.2, Page 2-14, Paragraph 3, Sentence 3, discusses Phase I inspections performed on the sites. However, the text does not indicate that a Phase I inspection was performed on Site 11. The text should indicate why a Phase I inspection was not done on Site 11. The text should indicate why a Phase I inspection was not done on Site 11.

RESPONSE:

Section 2.2.2 now contains reference to the E&E Phase I Contamination Assessment for Site 11.

COMMENT:

4. Section 5.0 discusses the field investigation methods at OU-2. However, the text does not discuss why background samples were not collected for OU-2. The text should explain why no background samples were collected at this site. "Background" should be discussed. Also, a discussion should be included explaining where the reference values in the COPC Table of the risk assessment.

RESPONSE:

Simultaneous to this investigation, the Site 1 remedial investigation installed 4 borings converted to monitoring wells to be used as background for NAS Pensacola. The Section 5.2.6 of the revised Section 5, discusses background sampling.

COMMENT:

5. Section 5.0 discusses the investigation of OU-2 but does not indicate that surface water and sediment samples were collected. However, the site history and description state that a wetland is present at the site along with water bodies. The EPA SOPQAM recommends that when there is a wetland and surface water as receptors, surface water and sediment should be sampled at OU-2. The text should be revised accordingly.

RESPONSE:

Figure 2-3 identifies Wetland 5A, 5B, and 6 which are downstream of the Site 30 study area. Figure 2-3 also depicts the location and identifies samples collected during the Wetland SA removal action. Sections 5.2.5, 7.4 and 9.3 discusses the purpose of sediment sampling, its limited focus, and acknowledges that these areas are part of the Site 41 remedial investigation. The approved Site 41 Sampling and Analysis Plan (E/A&H, 1995) emphasizes its goal of assessing the nature and extent of contamination in any NAS Pensacola wetland.

COMMENT:

6. Section 5.2.1, Page 5-2, Paragraph 1, states that due to the potential presence of heterogeneous wastes at Site 11, and lack of knowledge regarding their distribution, trenching was performed instead of soil brings. However, there are no analytical results regarding the trenching in the following sections. There is no explanation why the trenching samples are not presented. The text should give the explanation regarding the results from trenching on Site 11.

RESPONSE:

The results of trenching are discussed in Section 7.

COMMENT:

7. Section 5.2.3, Page 5-2, Paragraph 3, refers to Appendix G, Figure 1, for soil borings and monitoring well locations. Section 2 states that there has been a large amount of construction, and as such, surface soil has been shifted around. However, the sampling pattern depicted in Figure 1 does not account for the shifting of soil that happens during construction. The sampling pattern depicted in Figure 1, Appendix G, is more of a random pattern. Add an explanation that the sampling pattern addresses surface soil distribution.

RESPONSE:

Section 5.2.3 has been revised reflecting how sampling patterns were biased based on soil gas survey results. Major construction at NAS Pensacola commenced in 1995 with the building of the

Naval Air Technical Training Command (NATTC). Within OU 2, the impact to the sampling plan included the remodeling of Buildings 3220 and 3450 (studied with the Sites 30 and 36 study area) and the demolition of Building 3189 (Site 36 study area). These are the only major construction activities which took place at OU 2 since the 1993 field investigation.

COMMENT:

8. Section 7.0 addresses the nature and the extent of contamination. In addition, the text only indicates the number of contaminants above the PRGS but does not mention the detected concentrations which are above the PRGs. Although the tables showing the investigation results are presented in appendices, they are not well organized for review. Appendix J has been added providing the frequency of detection.

RESPONSE:

The text in Section 7 was designed to guide the reader through the figures and tables by providing the sample location for each exceedance. Section 7 has been revised to include a discussion of the detection rate for each contaminant type. Because of the sheer quantity of data, the detections below a PRG or RC have been omitted to reduce clutter on the figures. The appendices are organized by site, matrix and analyte group.

COMMENT:

9. Section 7.0 discusses the comparisons of contaminant concentrations with PRGs. However, this section should mainly address an analysis of data collected which describes contaminant concentration levels found in the media in the study area. The comparisons of the contaminant concentrations with the PRGs should be considered as a COPC screening process in Section 10, the risk assessment. It should be noted that when risk-based criteria are used in comparisons, the comparisons should be addressed in the risk assessment section, but not in the nature and extent of contamination section. The report should be revised accordingly.

RESPONSE:

The introduction of Section 7 has been revised to explain how PRG exceedances were used to manage and screen data for the RI.

COMMENT:

10. Section **7.0,** Page 7-1, Paragraph **1,** Sentence **4, states** that **analytical** results **were** compared to general **and** site-specific PRGs. However, it is unclear what **distinguishes the** general from the site-specific PRGs. According to *this* **section, PRGs** are the **screening** criteria set by **EPA and** the State of Florida, but there is no mention of which one should be general or specific. The text should present clear definitions of the general **and** site-specific PRGs.

RESPONSE:

Reference to "general and site-specific" PRGs **has** been replaced with references to "established" PRGs.

COMMENT:

11. Section **7.1.1.2,** Page **7-3,** Paragraph **2,** Sentences **4** and **5,** indicate that methylene chloride and a number of compounds are likely false positive and are difficult to assess because they are **so** common in the laboratory. However, **this** statement is inappropriate because EPA guidance specifically states that the **10x** rule should be used to determine positive detections when common laboratory contaminants are found in samples. Using such a rule with the results of blanks makes it possible to determine positive detections. The text should be revised accordingly.

RESPONSE:

Section 7.1.1.2 no longer refers to common laboratory contaminants.

COMMENT:

12. Section **7.4,** Pages **7-31** and **7-32,** address the sediment study which assesses impact to wetlands adjacent to **OU-2.** However, there are no figures or maps **to** identify Wetlands 5A, 5B, 6 and **7** (near Site **30)** where sediment samples were collected. **This** section does not provide a summary of the sediment results for review. Therefore, it cannot be concluded that the sediments in these wetlands are contaminated by either **a** groundwater source or a surface water discharge **source** due to lack of reference data. This

section should be revised to provide all required references and the results in order to draw a conclusion about sediments.

RESPONSE:

Section 7.4 now discusses how the Sites 40 and 41 investigations are to assess impacts to wetlands adjacent to OU 2 and Bayou Grande. It also discusses how the limited OU 2 sediment and surface water sampling were not designed to replace or supplement the sampling to be performed during the Sites 40 and 41 investigations.

COMMENT:

13. Appendix D presents groundwater contamination PRGs which include EPA MCLs, FPDWS, etc. However, normally risk-based concentrations should be used as screening criteria to screen COPCs for further risk assessment. Since EPA MCLs are not totally risk-based values for groundwater, use of EPA, MCLs in this screening process may be inappropriate. For further risk assessment, the Region 3 RBC tap water values should be used because they are the risk-based values. For example, Appendix D shows EPA MCL and FPDWS for vinyl chloride as 2 μg/L and 1 μg/L, respectively. If the Region 3 RBC tap water value is used, the screening value for vinyl chloride should be 0.019 μg/L. For vinyl chloride, the difference between the PRG values in Appendix D and the Region 3 RBC tap water value is significant. Therefore, the most conservative value for screening vinyl chloride is the Region 3 RBC tap water value, and the risk-based value instead of the MCL value should be used. The report should be revised to use the risk-based values for screening purposes because the screening process is for further risk assessment. Review this information. If the review comment is correct, the calculations should be revised.

RESPONSE:

Appendix D has been moved to Appendix I in the revised OU 2 RI. Appendix I is provided to document a comparison of site analytical data to PRGs. The revised Section 7 now includes the tap water RBCs in the groundwater PRGs. This screening comparison to PRGs (MCLs, tap water RBCs, etc.) is used to evaluate the nature and extent and not risk in Section 7. Any reference to COPCs in Section 7 has been eliminated. Section 10 does utilize the Region 3 RBC for vinyl chloride in the risk characterization.

COMMENT:

14. Appendix G presents OU-2 figures. However, the boundary for each site is not identified on these maps. Because the operable unit contains multiple sites and different work is performed at each site, the site boundaries should be clearly marked.

RESPONSE:

Appendix G is now Appendix E in the revised OU 2 RI. Site boundaries have been added to these figures as appropriate.

COMMENT:

15. Appendix G, Figures 1-23, show positive detections of constituents of concern at OU 2. However, the migration of the plume is not shown clearly on the figures. Isoconcentration maps contouring the horizontal distribution of contamination and the most widely distributed contaminant should be included for clarity. Maps should be developed for groundwater.

RESPONSE:

Contaminant detections were often isolated hits both in soil and groundwater not allowing an inference to be drawn between points for contouring. Shading has been provided to illustrate the isolated nature of the exceedances. Appendix G is now Appendix E.

COMMENT:

16. Appendix G, Figure 5, identifies 14 VOCs that exceeded PRGs at Sites 11, 12, 27, and 30. However, Section 11 does not discuss these VOC exceedances in the subsurface soil at these sites. Section 11 should reference Figure 5 and discuss the origin and the dispersion of these constituents within the media.

RESPONSE:

Section 11 provides the recommendation and conclusions as a brief *summary* of the nature and extent (Section 7), fate and transport (Section 9) and baseline risk assessment (Section 10) for the OU 2 RI. Specific reference to subsurface VOC exceedances has been added to these sections.

COMMENT:

17. Appendix G, Figure 6, identifies seven SVOCs that exceeded PRGs at Sites 11, 12, 25, 26, 27, and 30. Section 11 lists conclusions based on the results of the RI, but it does not address the seven SVOC exceedances in the surface and subsurface soil at these sites. Section 11 should present a conclusion that references Figure 6 and the origin and dispersion of the constituents within the media.

RESPONSE:

Section 11 provides the recommendation and conclusions for the OU 2 RI. Section 7 and 9 provide the origin and dispersion of these constituents within the media. The conclusions summarize the findings from nature and extent (Section 7) and fate and transport (Section 9) relative to the baseline risk assessment (Section 10). Specific reference to SVOCs has been added to Section 11.

COMMENT:

18. Appendix G, Figures 13 and 14, show VOCs exceeding FSDWS. However, the text does not explain how these VOCs migrated to the intermediate groundwater. The text should explain how the VOCs migrated to the intermediate wells in the fate and transport section or the conclusion.

RESPONSE:

Section 9 has been revised to include a discussion of contaminant migration from shallow to intermediate groundwater.

2.0 SPECIFIC COMMENTS

COMMENT:

1. Table of Contents, Page v.

There are no appendices listed in the Table of Contents. All appendices should be added to the contents page.

RESPONSE:

A Table of Contents is now provided at the beginning of each volume of the report.

COMMENT:

2. Section 1.0, Page 1-1, Paragraph 2, Sentence 2.

The text gives the location of OU-2 in relation to the golf course and yacht basin. However, the yacht basin and the golf course are not depicted on Figure 2-1, the site map. The site map should show the locations of the golf course and yacht basin.

RESPONSE:

Figure 2-1 has been revised to include the golf course and Yacht Basin.

COMMENT:

3. Section 2.1, Page 2-1, Paragraph 2.

The text states that Building 3445 is at the southwestern comer of Site 11. However, the text should indicate that Building 3445 is located at the southeastern comer of the site.

The text also refers to two prefabricated buildings (Buildings 3727 and 3628) and Pat Bellinger Road. However, these buildings are not shown on the site area map. Buildings 3727 and 3628 as well as Pat Bellinger Road should be added to the site area map and the site map, respectively.

RESPONSE:

The text has been revised to indicate that Building 3445 is east of Site 11 as depicted on Figure 2-2. Figure 2-2 has also been revised to indicate the building numbers and road names as requested.

COMMENT:

4. Figure 2-1.

Figure 2-1 is the site location map. However, there is no boundary line for Site 26. Also, the legend does not show roads or highways. The map should be revised to show roads and highways on the legend as well as a boundary line for Site 26.

RESPONSE:

The boundary for Site 26 has been placed on Figure 2-1. Figure 2-2 has been revised to include the roads and highways.

COMMENT:

5. Figure 2-2.

Figure 2-2 presents the site area map. However, unlike other sites, the boundary of Site 36 is not shown on this map. The boundary of Site 36 should be shown in Figure 2-2. In addition, the legend does not show roads. The site map should have roads included in the legend.

RESPONSE:

Site 36 is a sewer line as depicted in the legend and exhibited on Figure 2-2. The figure has been revised to include roads to the legend.

COMMENT:

6. Section **2.1,** Page 2-4, Paragraph **2, Sentence 2.**

The **text** gives the location for Site **25 as** north of Farrar Road. **However, Farrar** Road is not on the site map. **Farrar** Road should be identified **on *the*** site map.

RESPONSE:

Figure **2-2 has** been revised to include the names of roads, specifically **Farrar** Road.

COMMENT:

7. Section **2.1,** Page **2-5,** Paragraph **2,** Sentence **2.**

The text refers to a wetland that drains surface runoff **into** the yacht **basin.** However, the wetland is not shown on the site map. These two areas should **be** identified on the site map.

RESPONSE:

Figure **2-1** depicts the Yacht Basin. Figure **2-2 has** been revised to include **the** site boundaries **and** the wetland south of Site **30.** Figure **2-3** does not need site boundaries.

COMMENT:

8. Section **2.1,** Page **2-5,** Paragraph **3,** Sentence **4.**

The text discusses a segment of the sewer line **joining the** main line **running to** the **IWTP.** However, the IWTP is not identified on Figure **2-2,** the site map. The site map should identify the IWTP.

RESPONSE:

The Navy disagrees. The subject of this report is not the IWTP and is **far** removed **from** the operable unit. The IWTP sewer line is on Figure **2-2.**

COMMENT:

9. **Section 2.1,** Page **2-7,** Paragraph **1, Sentence 1.**

The text states: 'Site **26** - From **1956 until 1964,** supply department Site **26** to store incoming paint strippers **and** acids." However, the **meaning** of **the** text is not clear. The text should **be** clarified.

RESPONSE:

Section **2.1 has** been revised for clarity.

COMMENT:

10. Section **2.2,** Page **2-9,** Paragraph 3, Sentence **1.**

The text states that in **1973** minor painting operations **started** in Building **3450** "(near Sites 27 and 30)." However, the text should read: "near Sites **25** and **27."** The text should **be** revised accordingly.

RESPONSE:

Section 2.1 has been revised.

COMMENT:

11. Table 2-1.

The table shows hazardous wastes generated, disposed of, or spilled near the **study** area. However, the table does not include Building **755** which was used **as** a plating shop at Site **30.** Building **755** should **be** added to the table.

RESPONSE:

The revised Section 2 no longer includes **this** table.

COMMENT:

12. Table **2-1.**

The title of Table **2-1** indicates that the table contains information on hazardous waste handled near the study area. However, according to the site map, Building **648** and *649* complex and Building **741** shown in the table are actually within the study area (Sites 30 and 27) instead of near the area. The title of the table should be revised accordingly.

RESPONSE:

The revised Section **2** no longer includes this table.

COMMENT:

13. Section **2.2.2,** Page **2-13,** Paragraph **1,** Sentence **1.**

The text summarizes work related to the different sites at **OU-2.** However, Site **11** is omitted. This text should be revised accordingly.

RESPONSE:

Section 2.2.2 has been revised for clarity to include Site **11.**

COMMENT:

14. Section 2.2.2, Page **2-13,** Paragraph **3,** Sentence **5.**

The text indicates that both Sites **11** and **27** were recommended for confirmation studies of suspected contaminants. However, only Site **11** is addressed. Thus, the text should be revised to also address Site **27.**

RESPONSE:

Section **2.2.2** has been revised to include Site **27.**

COMMENT:

15. Section 2.2.2, Page 2-17, Paragraph 3.

The text indicates that an investigation was performed on the south side of Building 3450 (Site 30). However, the title refers to 'Site 3450S". The title should be corrected.

RESPONSE:

The text has been revised for clarity.

COMMENT:

16. Figure 4-2.

The legend of Figure 4-2 shows the Ra 226 level as pC/g. However, for consistency the radiation level should be written as pCi/g (picocuries per gram). The text should be revised accordingly.

RESPONSE:

Figure 4-1 and 4-2 has been revised. Text revision was unnecessary.

DRAFT REMEDIAL INVESTIGATION REPORT OU 2
NAS PENSACOLA, FLORIDA
RESPONSE TO U.S. ENVIRONMENTAL PROTECTION AGENCY COMMENTS

November 26, 1996 (Gena D. Townsend)

GENERAL COMMENTS

COMMENT:

1. The conclusions regarding risk in this risk assessment are not valid because of multiple procedure errors. First, not all COPCs appear to have been selected appropriately. Second, the calculation of the groundwater exposure point concentrations deviate from EPA guidance. Third, use of the FI/FC term to calculate fractional soil exposure is inappropriate. Fourth subsurface soils, sediments, and surface water exposures were not considered. Fifth, some potential receptors and exposure pathways were not considered. Sixth, this RI report contains numerous discrepancies and data gaps and appears to have been written by several different writers. The report should be revised accordingly.

RESPONSE:

First, the Region IV guidance - November 1995 supplement to RAGS was used for COPC selection criteria (screening concentrations were taken from Region III RBC Tables, FDEP Soil Cleanup Goals, and FDEP Groundwater Guidance Concentrations.

Second, the revised 10.2.7 provides a complete discussion on exposure point concentration calculation.

Third, the relationship between exposure point concentrations and the FI/FC term are detailed in the revised Section 10.2.7.

Fourth, sediments and surface water are not found on OU 2 proper. Sediments and surface water are found down gradient in adjacent wetlands. Those wetlands are being assessed under the Site 41 RI. Subsurface soils were not treated as surface soils in the risk assessment. Subsurface soils were evaluated for their potential to leach to groundwater using the FDEP Soil Cleanup Goals and EPA SSLs.

Fifth, additional receptors and pathways have been revised in Section 10.

For purposes of this report no data gaps noted in Section 7.6 affect the final conclusions. Data gaps are discussed in Section 7.6 of the revised OU 2 RI.

COMMENT:

2. Throughout this risk assessment the term BEQ is used to refer to the PAH equivalency factor estimates. However, it is unclear what a BEQ is and which PAHs are contributors to the risk. Either the term PAH equivalents or BAP equivalents should be used for clarity.

RESPONSE:

The Region IV supplemental guidance to RAGS (11/95) specifies a toxicity equivalence factor approach for seven carcinogenic PAHs (benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene). The definition of BEQs is explained in the revised Section 10.4, Toxicity Profiles. One term was selected and used throughout the risk assessment to represent benzo(a)pyrene equivalents (BEQs).

COMMENT:

3. Section 10.1, Page 10-4, Paragraph 1, Sentence 1, addresses the organization of the risk assessment. However, the text does not explain in sufficient detail the organization of the risk assessment. It is unclear that Section 10.2 covers the general aspects of the development of the risk assessment and that Section 10.3 covers the specific elements for each site until the end of Section 10 Additional statements explaining the purposes of Sections 10.2 and 10.4 would be helpful at this point. Moreover, the ecological risk assessment should be placed in a section of its own, to allow for expansion of the numbering system.

RESPONSE:

Section 10 has been reformatted to clarify the organization of this section. The ecological risk assessment can be found in Section 10.5.

COMMENT:

4. Section 10.1, Page 10-5, Paragraph 1, Sentence 4, mentions collection of surface water samples. However, the surface water samples were not mentioned earlier in Section 7 (Nature and Extent of Contamination). There is no discussion as to why surface water is not considered as a media of exposure. This is true especially for Site 11 which is at the edge of the base and is described as a wetland area. Exposure to surface water is a potential route of exposure for workers and trespassers (recreational visitors), but this pathway is not addressed. The text should explain why the surface water exposure is not considered, and the discrepancy should be rectified.

RESPONSE:

No surface water point source discharge was observed from OU 2. It is true Site 11 is adjacent to Bayou Grande, however no surface water can be found to flow from Site 11 to Bayou Grande. Surface water samples collected are discussed in Section 2 relative to the immediate removal action. The exposure to contaminants in adjacent wetlands and Bayou Grande is to be addressed in detail under the Site 40 and 41 RIs.

COMMENT:

5. Section 10.2.1, Page 10-5, Paragraph 1, Sentence 5, states: "results from surface soils, shallow and intermediate groundwater were used to assess possible human exposure to contaminants. However, subsurface soils were not considered in the risk assessment, and there is no explanation given for this omission. Although this is an active military base that is not targeted for closure, future plans may include construction of new buildings thereby exposing workers to subsurface contaminants. Other pathways of transport and exposure that should be considered for subsurface soils include transport of subsurface contaminants into the shallow groundwater and volatilization and transport of contaminants into buildings via foundation cracks. The screening procedure should include the soil leaching as referenced in EPA's "Soil Screening Levels Guidance" document in the selection of COPCs. If these pathways are not considered, then an adequate rationale must be presented to justify not including the subsurface soil exposure. The report should be revised accordingly.

RESPONSE:

The revised Section 9.1 states that subsurface soils do not exceed the USEPA SSL for the soil to air pathway. In addition, Section 9.1 provides a pathway analysis for subsurface soils to groundwater for each contaminant type.

COMMENT:

5. Section 10.2.5, Page 10-8, addresses the selection of chemicals of potential concern (COPCs). However, the selection of COPCs from the detected compounds or chemicals present in site samples (CPSS) is usually performed in the risk assessment, not in the nature and extent section. The current organization of this report makes it difficult to determine what was selected. In addition, the organization of Section 7.0 is by compound group and not by site. In Section 7.0 it is unclear which compounds are selected as COPCs for which sites. The text should be revised accordingly.

RESPONSE:

Section 10 has been revised to reflect the EPA risk assessment guidance. The revised Section 10.2.5 addresses the COPC selection in the risk assessment. No COPCs were evaluated in Section 7. Section 7 uses PRB exceedance as a screening tool for further investigation and not as a determination as a COPC.

COMMENT:

6. Section 10.2.5, Page 10-8, Paragraph 2, Sentence 3, states that the nature and extent of CPSS at each site are discussed in detail in Section 7. However, the COPCs rather than the CPSS were discussed in detail in Section 7. (This applies to each of the sites in Section 10.3.) It is customary and preferred to perform the selection of COPCs in the Risk Assessment section (Section 10) and not in the Nature and Extent of Contamination section (Section 7).

   In addition, tables should usually be provided in the text which contain all detected compounds for each media, the frequency of detection, the maximum concentration, the screening value (and source of the screening value), the background concentration as applicable and whether or not the detected compound was selected as a COPC. The COPC screening value should usually be the lowest of the applicable RBCs or in the case of

Florida, the lowest value of the RBCs or the FDER values. However, in the COPC selection discussed in this report, multiple screening values for each contaminant are presented. The text should be revised accordingly.

RESPONSE:

The revised Section 10 has incorporated the tables from the old Appendix H into the text. References to Section 7 concerning the CPSS or COPC evaluation have been eliminated. A table of contents was not provided for each volume in the draft document making this information harder to find, the Navy has provided a table of contents for each volume.

COMMENT:

8. Section 10.2.7, Page 10-12, Paragraph 2, addresses potential exposed populations. However, there is no mention of potential trespasser or recreational receptor exposure to surface water and/or sediments for either current land use or future land use. The potential for trespasser or recreational user exposure is highest for Site 11 where it is at the edge of the base. Although the site is an active military base with security patrols so the trespasser exposure for current land use may be minimal, it is possible that in the future that the base could be closed or the mission could be changed to make access likely. Also, the other receptor and pathway that are not considered are the future construction worker exposure to subsurface soils. This pathway should be considered.

   In addition, volatilization of VOCs in the subsurface soils through foundations into buildings is a pathway that needs to be addressed. Since subsurface soils were not summarized or screened, it is difficult to determine if VOCs are in the subsurface soils.

RESPONSE:

The revised 10.2.7 addresses potential exposed populations at OU 2, not the adjacent wetlands. The adjacent wetlands are to be assess during the Site 41 RI risk assessment. No surface water or sediment was observed on OU 2 proper.

The surface soil to air pathway is discussed in the revised Section 9.1 (fate and transport) as is appropriate.

COMMENT:

9. Section 10.3.1.3, Page 10-43, Paragraph 2 and 3, discusses exposure point concentrations used in the investigation. However, it is unclear why the average of the detects was used for some COPCs and the UCL used for other COPCs. The calculations suggest that the UCL was calculated over all wells. Similarly, the average of all detects was not used for the Phase II samples. Use of a different statistical basis for the exposure point concentrations invalidates any risk comparison between the two phases. Therefore, groundwater data from the two phases may need to be re-examined.

RESPONSE:

To clarify the COPCs evaluation, Section 10.2.5 has been revised. The use and application of Phase I and Phase 11 groundwater data in this risk assessment is addressed.

COMMENT:

10. Section 10.3.1.5, Page 10-44, Paragraph 3, mentions that Tables H-16 and H-17 present the computed carcinogenic risks and/or HQs associated with the incidental ingestion of and dermal contact with site surface soil, respectively. However, these tables containing the summary of the risk calculations should be included in Section 10 instead of Appendix H.

In addition, the risks and HQs were not summarized across all soil pathways. The report should be revised accordingly.

This comment applies to all the sites.

RESPONSE:

Cumulative risk and hazard were summarized for each site and appeared in Appendix H. As requested, Appendix H has been integrated into the text.

COMMENT:

11. Section 10.3.1.5, Page 10-45, Paragraph 3, Sentences 4 and 5, mention the risk and hazard for the Central Tendency (CT) assessment. However, there is no discussion of how the

CT parameters are derived other than a brief discussion of the exposure point concentration derivation. These exposure parameters for the CT analysis need to be presented and discussed in this section but are discussed later in the Uncertainty Section.

The CT assessment should use the same exposure point concentration as the RME (reasonable maximum exposure) concentration used in the BRA. Confirm that the RME was used in the CT assessment, if not, correct the document.

This comment applies to all the sites.

RESPONSE:

The revised Section 10.2.6 provides a general outline of how risk and hazard are calculated including the usage of central tendency. However, each site discussion of risk and hazard has been revised to include the exposure parameters used in the calculation of central tendency.

COMMENT:

12. Section 10.3.1.6, Page 10-52, Paragraph 1, Sentence 6, indicates that a FI/FC term of 0.4 based on frequency of detection (7 of 19) was used to adjust the exposure estimates. However, the use of frequency of detection to derive a fractional exposure point factor is not appropriate. Although this term was used to derive the risk estimates for all sites for different compounds, this term was not presented in the risk result section or discussed fully in the EPC derivation section. For example, in the Site 11 risk calculations, only the PAH BEQ has a FI/FC factor applied. The factor is 0.4 which resulted in a total risk estimate of 1.1×10^{-5} for the worker exposure to soil. The RME risk without the factor is 2.8×10^{-5}. Throughout the risk calculations, factors as low as 0.1 are observed. Using the FI/FC factor has resulted in lower risk estimates. Therefore, all risk estimates that use this FI/FC factor should be recalculated.

RESPONSE:

The revised Section 10.2.7 provides a complete discussion of the relationship of FI/FC usage. Figures 10-3 through 10-26 of Appendix E provide point estimate for risk reducing the likelihood of biasing the risk estimates low.

COMMENT:

13. Section 10.3.1.7, Page 10-57, Paragraph 1, Sentence 4, states that Table H-30 presents risk summaries for each pathway/receptor group evaluated for Site 11. However, the tables for the risk summaries should be presented in this section instead of Appendix H.

RESPONSE:

Section 10 has been revised to include all tables from Appendix H.

SPECIFIC COMMENTS

COMMENT:

1. Section **10.1,** Page **10-2,** Paragraph 0.

The text list guidance documents (see bullets). However, the FDER guidance document "Soil Cleanup Goals for the Military Sites" is not included in this list of guidance documents. This source should be added to the list.

RESPONSE:

This guidance was superceded by the Florida Soil Cleanup Goals (memo: September 29,1995 and applicability defined in the follow-up memo 1/19/96). Appendix H provided these characteristic comparisons under the misnamed 'FCCG" and has been renamed "FSCG" to represent Florida soil cleanup goals. The tables provided in Appendix H have integrated into the text of Section 10 in the revised OU 2 RI.

COMMENT:

2. Section **10.2.4,** Page **10-6** to **10-7,** Paragraph **2.**

The text discusses the quantitation limit. However, this term is not adequately defined. In data evaluation, there are Practical Quantitation Limits (PQL), Method Detection Limits (MDL), Contract Required Detection Limits (CRDL), and Sample Quantitation Limits (SQL). Typically, what is reported with lab results is the CRDL, or if the sample is diluted then the CRDL is multiplied by the dilution factor. Thus, it suggests that a non-detect may be less than the PQL not the CRDL. This is an important issue because the texts states that the lesser of one-half the detection limit or one-half of the lowest detected value (less than the detection limit) was used as the best estimate of the concentration for that analyte and sample in this investigation. This approach is not commonly used in risk assessments. For example, if the detection limit was 10 μg/kg and there was a sample which had a value of 8 μg/kg, then 4 μg/kg would be used as the "best estimate". But, if a sample was diluted 10X and had a detection limit then of 100 μg/kg for the undetected analytes, it is unclear if a value of 4 μg/kg be used as the "best estimate" or if a value of 40 μg/kg would be used instead of the usual 50 μg/kg. There were samples which were highly diluted as can be seen in Table H-1. Some of the analytes had reported maximum detection limits greater than the detected maximum, but the text does not discuss how these values were handled. The text should present a discussion or references to how samples with grossly elevated detection limits were handled in the data evaluation.

RESPONSE:

The revised Section 10.2.4 addresses the management of site related data and each site characterization within Section 10 addresses how censored data was managed.

COMMENT:

3. Section 10.2.5, Page 10-9, Paragraph 4, Sentence 2.

The text states that screening values based on surrogate compounds were used if no screening values (RBC or toxicology values) were available. However, the text does not discuss what compounds are applied to this method. The text should present a discussion accordingly.

RESPONSE:

The revised Section 10.2.5 provides a general discussion of how surrogate compounds are to be used.

COMMENT:

4. Section 10.2.5, Page 10-10, Paragraph 1.

The text indicates that screening levels for groundwater include federal MCLs. However, generally, MCLs should not to be used as screening values in risk assessments because many of the MCLs are technology based and not entirely risk based. The text should be revised accordingly.

RESPONSE:

MCLs were not used for risk assessment screening. MCLs were used for screening comparison in Section 7, Nature and Extent.

COMMENT:

5. Section 10.2.5, Page 10-10, Paragraph 2, Sentence 2.

The text indicates that soil and groundwater background concentrations were determined using results from two background sampling locations. However, *two* samples are not an adequate number for background samples especially for a base wide background set. This report should address this issue accordingly.

RESPONSE:

These wells were sampled using quiescent methods from a topographic divide upgradient of all sites on base. There is not any historical evidence of hazardous material use or industrial activity in these areas. The close proximity and similar geology of soil horizons convinced the Navy that these samples offer the best reference for background on the base.

COMMENT:

6. Section **10.2.7,** Page **10-15,** Paragraph **1,** Sentence **4.**

The text indicates that the groundwater **EPC** was established as the greater of the *95%* UCL or the arithmetic mean of the detected concentration. However, **EPA** Region **4** guidance states that the groundwater EPC should be the arithmetic average of the wells in the highly contaminated area of the plume. In Table **H-8** (groundwater at Site **11, Phase** I), EPCs include the **95%** UCL, arithmetic average, and maximum detected concentrations which could mean that the set of wells was different for each **COPC.** The text should present a discussion regarding the groundwater **EPCs** used in the risk assessment.

RESPONSE:

Section 10 has been revised to reflect the **EPA** risk assessment guidance. Section 10.2.5 addresses the COPC selection in the risk assessment. The relationship between exposure point concentrations and the usage of the **95%** UCL are detailed in **10.2.7.**

COMMENT:

7. Section 10.2.7, Page 10-16, Table 10-1.

The text shows that dermal contact area for an adult is 4,100 cm^2. However, a more typical value of exposed skin surface area from the dermal *exposure* assessment guidance is 25% of the adult surface area or 5,300 cm^2. The text should be corrected accordingly.

RESPONSE:

The skin surface area value of 4,100 cm^2 for adults accounts for head, bands, and forearm at the 90th percentile from Table 4B.1, Exposure Factors Handbook, and assumes the individual is clothed with shoes, long pants, and short sleeves. The Navy believes this to be a reasonable estimation.

COMMENT:

8. Section 10.2.7, Page 10-21, Figure 10-2.

The text presents formulas for calculating CDI for groundwater. However, dermal exposure *to* semivolatiles and metals while bathing is not considered. Such a consideration should be included.

RESPONSE:

This is an insignificant exposure pathway as it relates to SVOCs and metals. Based on reviewer's comments to previous RI reports this pathway was excluded due to the negligible contribution to cumulative risk. Groundwater is not currently nor is it likely to be used as a potable or bathing water source because of natural iron and salt content.

COMMENT:

9. Section 10.2.8, Page 10-24, Paragraph 2, Sentence 4.

The text states that Table H-1 summarizes toxicological data for each COPC identified at OU 2. However, Table H-1 should be presented in this section not in Appendix H. The report should be rearranged accordingly.

RESPONSE:

Section 10 has been revised to include all tables from Appendix H.

COMMENT:

10. Section **10.2.8,** Page **10-24,** Paragraph 3, **Sentence 4.**

The text indicates that toxicological profiles are provided in Section **10.4.** However, the toxicology profiles should be placed in Appendix H. The report should be rearranged accordingly.

RESPONSE:

The toxicological profiles have not been placed in an appendix because no other document for NAS Pensacola is formatted that way.

COMMENT:

11. Section **10.2.9,** Page **10-29,** Paragraph 3, Sentence **2.**

The text indicates that a more conservative risk level (10^{-6}) is used to identify COCs in this investigation. However, the text does not explain why 10^{-6} was used as the cumulative risk threshold instead of **lo".** The text should give the explanation accordingly.

RESPONSE:

The revised Section **10.2.9** provides an explanation that the State of Florida requires a comparison to the 1.0E-6 value.

COMMENT:

12. Section 10.2.10, Page **10-32,** Paragraph **0, Sentence 4.**

The text indicates **that** inhalation and dermal ***exposure*** **are not incorporated** into **the soil screening** values calculated by **EPA.** However, **since October 1995,** the **RBC** Table **has** included **an** RBC for inhalation exposure. The text should **be corrected** accordingly.

RESPONSE:

The revised **10.2.10 no** longer indicates that **inhalation and** dermal exposure **are** not **incorporated** into the soil screening values calculated by EPA.

COMMENT:

13. Section **10.2.10,** Page **10-36,** Paragraph **2, Sentence 5**

The text states: "Phase I groundwater **data** was collected using techniques amenable to **the** entrainment of sediments in the groundwater samples." However, it is unclear if the **Phase** I groundwater data includes the trench samples as part of the groundwater data set. If **so,** Phase I samples should **be** removed from the groundwater data set **and** discussed separately. Two sets of groundwater risk calculations may **be** confusing. The text should be revised accordingly.

RESPONSE:

Trench samples were not included in the risk assessment for Site **11** with **an** explanation given in the revised Section **10.3.1.** Each groundwater phase is considered separately in the risk assessment since the wells sampled in Phase **1** did not match the wells sampled in Phase II.

COMMENT:

14. Section **10.3.1.1,** Page **10-39,** Paragraph **3,** Sentence **4.**

The text indicates that **trench** water samples were not considered appropriate for consideration in the human health risk assessment **since** the sampling technique resulted in turbidity uncharacteristic of monitoring well samples. However, this is the first mention of trench water samples. There

was a reference to trench water samples in Section 7 but in the context of groundwater samples. It is unclear whether the samples were the water from trenches dug *during* the field investigation or the water from permanent trenches or canals. The text should present a clear description of the trench water samples.

RESPONSE:

There are no permanent trenches or canals on Site 11. All sampling locations are detailed in Section 5.

COMMENT:

15. Section 10.3.1.1, Page 10-39, Paragraph 3, Sentence 8.

The text references Tables H-1 and H-2. However, the text should refer to Tables H-2 and H-3.

RESPONSE:

The revised Section 10 has been reformatted to include tables from Appendix H in the text. These references no longer exist.

COMMENT:

16. Section 10.3.1.2, Page 1040, Paragraph 1, Sentence 1.

The text presents soil COPCs indicating that they are listed in Table H-4. However, the text does not show PAHs as the COPC which *can* be found in Tables H-4 and H-6 in the risk calculations. The text should explain the discrepancy.

RESPONSE:

Carcinogenic PAHs are carried through the risk assessment as benzo(a)pyrene equivalents (BEQs) as per Region IV guidance. The data for the individual carcinogenic PAHs are presented on the summary table for informational purposes only. Each site risk characterization has been revised to reflect this change.

COMMENT:

17. Section **10.3.3.6,** Page **10-86,** Paragraphs **1 and 2.**

The text **contains two** subsections 10.3.1.7 **and** 10.3.1.8 that **are** numbered **incorrectly. The** text should **be** corrected.

This comment also applies **to** Section 10.3.4.7 **(see** page 10-96).

RESPONSE:

Section 10 has been reformatted correcting **this** problem.

COMMENT:

18. Section 10.3.3.6, Page 10-86, Paragraphs 3 and **4.**

The text mentions Phases I and 11 groundwater RGOs (also **see** Tables H-88 through H-91). However, definitions of Phases I and 11 groundwater RGOs are not presented. In **this report,** Phases I and II are only referred to as sampling phases. Therefore, the text should present clear descriptions of Phases I and **II** groundwater RGOs.

This comment applies to Sections **10.3.5.8** and 10.3.6.8.

RESPONSE:

Revised Section **10.2.12** provides an explanation of Phase I and 11 groundwater RGOs.

COMMENT:

19. Appendix **H,** Table H-151.

The text presents statistical analysis of **COPC** groundwater at Site 30. However, **this** table is not well presented due to incomplete and missing subtitles for each column. The table should **be** revised accordingly.

RESPONSE:

Table H-151 has been revised and is now Table 10.3.6-9.