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September 24, 1993

Florida Department of Environmental Protection
Federal Facilities Coordinator
Attn: Eric Nuzie
Twin Towers Office Building
2600 Stone Road
Tallahassee, Florida 32399-2400

Re: Response to Comments
Sites 40, 41 and 42 Work Plans
NAS Pensacola
Contract # N62467-89-D-0318/CTO-036

Dear Mr. Nuzie:

On behalf of the Navy, EnSafe/Allen & Hoshall is pleased to submit two copies each of the Response to Comments for the Sites 40 (Bayou Grande), 41 (NAS Pensacola Wetlands) and 42 (Pensacola Bay) work plans at the Naval Air Station Pensacola in Pensacola, Florida. In accordance with the 1994 Site Management Plan, the draft final work plans will be submitted by November 28, 1993.

Please let us know if you have any questions or comments regarding the responses.

Sincerely,

EnSafe/Allen & Hoshall

Allison L. Dennen
Project Geologist

Henry H. Beiro
Task Order Manager

Enclosures

cc: EnSafe/Allen & Hoshall file
Linda Martin, SOUTHNAVFACENGCOM

Technical Review and Comments
Draft RI/FS Work Plans for
Site 40 (Bayou Grande) and Site 42 (Pensacola Bay)
U. S. Environmental Protection Agency
Naval Air Station (NAS) Pensacola
Pensacola, Florida

Common Site 40 and 42:

Comments Applicable to both work plans. (Note: page and paragraph numbers provided **are** for the "Bayou Grande" **Work Plan.** Identical text requiring revision in the "Pensacola Bay" Work **Plan** may occur at **slightly** different locations, although **section** numbers should **be** the same.)

Comment 1 — Page 1-1, **Section 1.0, Paragraph 1:**

The **Florida** Department of **Environmental** Protection **(FDEP) is also a** *Party* to the Federal Facilities Agreement. Please make the **necessary correction.**

Response:

Agreed. The **Florida** Department of Environmental **Protection (FDEP) has been** added.

Comment **2** — Page 1-1, Section **1.0, Paragraph 2:**

This paragraph must **also briefly** summarize plans to conduct and prepare **a Baseline** Risk Assessment for the Operable Unit.

Response:

A Baseline Risk Assessment **will** be prepared for the sites.

Comment 3 — Pages 1-1 through **1-2, Section 1.0, Paragraph 3:**

The components **described in this** paragraph **(i.e.** the ***SAP*** **(including FSAP** and **QAPP)** and the HASP) **are** essential components of the **RI/FS** Work **Plan.** Consequently, **the** RI/FS **Work Plans**

for the subject Operable Units cannot be considered for approval until these components are received and approved.

Response:

Site-specific SAPs will be submitted to the Navy, USEPA, and FDEP.

Comment 4 — Page 2-8, Section 2.3.4, Paragraph 3:

The EPA Groundwater Classification for the surficial aquifer must be provided in this description as well.

Response:

The FDEP classification of the surficial aquifer is G-1. The EPA Groundwater Classification for the surficial aquifer is IIA. However, it should be noted the shallow and intermediate zones of the surficial aquifer are not used as a water supply. The deep zone of the surficial Sand and Gravel Aquifer is overlaid by a *confining* unit.

Comment 5 — Pages 2-8 through 2-12. Section 2.3.4:

A map depicting the direction of groundwater flow for NAS Pensacola for each zone of the Sand-And-Gravel Aquifer should be included in this section. The results of the forthcoming well inventory, together with existing hydrogeologic data and information which has been collected during previous investigations (E&E, Geraghty & Miller, etc.) should provide adequate information on which to base such maps.

Response:

Maps estimating the direction of groundwater flow in the shallow, intermediate, and deep zones at NAS Pensacola will be included if sufficient information has been obtained to construct the maps (e.g., top of casing elevations, water levels). If the information cannot be obtained until after the submittal of the work plans, the maps will be submitted under separate cover.

Comment 6 — Page 3-1, Section 3.1:

The text states that the scope of proposed work for the RI/FS will be discussed in Sections 5 and 6. However, Section 6 is a list of references and does not include such a discussion. Please clarify this point.

Response:

The scope of proposed work for the RI/FS is discussed in Sections 4 and 5; the text has been changed accordingly.

Comment 7 — Page 3-3, Figure 3-1:

The figure states that Site 36 is not shown. The text should discuss where Site 36 is located and its relationship to the contamination of the Bayou (/Bay).

Response:

Site 36 is the industrial waste sewer system. The sewer line is approximately 4.5 miles long and is located in an area approximately 1 mile wide by 1.5 miles long in the southeastern portion of NAS Pensacola. The contamination relationship to the Bayou (/Bay) is not known. A figure has been added illustrating the location of the sewer line.

Comment 8 — Pages 3-7 through 3-9, Section 3.3 (Section 3.2 for "Pensacola Bay" Work Plan):

This section presents a reasonable preliminary, or conceptual, identification of potential contaminant migration pathways and potential impacts on public health and/or the environment. However, while comprehensive, the information presented is too general to be of extensive use in directing and refining sampling plans. As a result, the sampling schemes proposed in subsequent sections consist of numerous sampling stations positioned at regular intervals along the entire lengtb of the NAS Pensacola coastline. While it is recognized that most of the available data is questionable due to the use of lower DQO analytical levels and less than rigorous QA/QC methods, some focusing of sampling efforts should still be possible through (i) and identification of likely contaminant pathways (GW,SW), (ii) the use of available survey results, site histories and (iii) conservative use of the available chemical data. In addition, given that higher DQO Level data for individual sites will be forthcoming prior to actual implementation of the "Bay" and "Bayou" work plans, an addendum to this work plan aimed at focusing the proposed sampling scheme should be submitted following receipt and evaluation of this new site-specific data.

Response:

The sampling scheme has been revised into a three-phase approach, as discussed in the meeting of May 12 and 13, 1993. A brief outline of the phases is presented below.

Phase I

For Pensacola Bay and Bayou Grande during Phase I, transects will be extended 300 feet perpendicular to the shore. Bathymetry will be measured along the length of the transect and sediment samples will be collected at 0 feet (shoreline), 150 feet and 300 feet along the transect. Sediment samples will be submitted for analysis of grain size and total organic carbon.

During Phase I at the NAS Pensacola Wetlands, all listed wetlands and/or potential wetlands as impacted by a corresponding site at NAS Pensacola will be investigated to identify basic biological characteristics of the wetland, to delineate the wetland boundary and to develop a sampling strategy for Phase II, as required. If impact is suspected, a grid will be established across the wetland. Bathymetry will be measured across the wetland, and sediment samples will be collected from selected locations for grain size and total organic carbon analysis.

A technical memorandum will be submitted upon completion of the Phase I activities. The memorandum will detail the results of Phase I sampling and will present the Phase IIA sampling locations. The technical memorandum will also present the rationale for additional sampling or the rationale for no further investigation.

Phase IIA

Phase IIA consists of collecting sediment and surface water samples for Target Analyte List/Target Compound List (TAL/TCL) analysis using CLP protocol. Phase II sampling locations will be selected based on various criteria, including but not limited to:

- storm water discharge points,
- areas hydraulically downgradient of other identified potential sources of contamination (PSCs),
- areas of surface water discharge,
- areas of high total organic carbon,
- areas of small grain size (e.g., high clay and silt content),
- background locations.

One sediment sample will be collected at each of these hot spot locations. The results of the analyses will initially be compared to background conditions. Locations where the detected concentrations of the sediments are greater than twice background will be further compared to the agreed trigger levels. At locations where the detected concentrations exceed the background or trigger levels, three additional sediment samples will be collected

for analysis to delineate the extent. Surface water samples will be collected at locations where the detected concentrations of the sediments exceed the background or trigger levels in standing bodies of water (i.e., wetlands) and not in dynamic environments (i.e., Pensacola Bay and Bayou Grande). A technical memorandum will be written upon completion of Phase IIA detailing the analytical results and the comparison to background and the trigger levels. The technical memorandum will also present the rationale and locations for the subsequent Phase IIB sampling or the rationale for no further investigation.

Phase *IIB*

Phase IIB consists of diversity and toxicity tests of potentially impacted *organisms.* During this phase of the investigation, a known volume of sediment will be collected. The sample will be submitted to the selected laboratory and the diversity of the organisms within the sediment will be determined.

Toxicity tests will also be performed during this phase. Selected species of organisms will be directly *exposed* in the laboratory to the site water and sediment. Acute (48 hour) toxicity will be tested on a portion of the *selected* organisms. Chronic (28 days) tests will be performed on all of the selected organisms.

A technical memorandum will be written upon completion of Phase IIB detailing the analytical results. The technical memorandum will also present the rationale and locations for the subsequent Phase III sampling or the rationale for no further investigation.

Phase III

Phase III consists of collection of selected organisms for studying the bioaccumulation of contaminants. Phase III tests may be performed if needed to further gauge the ecological impact of a site. This information must be weighed against time and expense to determine an agreement for clean up levels.

Comment 9 — *Pages* 3-8 through 3-9, Section 3.3 and Figure 3-2:

Estuarine systems *can* have high loads of suspended particulate matter (e.f., suspended silt or detritus) in the water column. Contaminants *can* adsorb onto this *suspended* particulate matter as well as being dissolved in the water. This could result in bioaccumulation by organisms such as filter-feeders. The following changes should therefore be made to the test and table to reflect these possibilities:

A. In the 6th and 7th sentences of Paragraph 3, mention adsorption of contaminants onto suspended particulate matter in the water column.

B. In the 8th sentence, change "accumulated contaminants" to "adsorbed contaminants".

C. In Figure 3-2, under the second occurrence of "Primary Sources", either add a third box for absorbed contaminants, or amend the box for "dissolved contaminants in surface water" to include a reference to contaminants adsorbed onto suspended particulate matter.

D. Also in Figure 3-2, add suspended particulate matter to the box under "Primary Release Mechanisms".

(Note: The proposed measurement of total suspended solids, in Section 5.2.1, page 5-7, should yield useful information on the amount of suspended particulate matter in the water column. It is not recommended that the proposed surface water samples be filtered for chemical analysis. If chemical analysis of the surface water samples indicates elevated concentrations of contaminants that might not be expected to partition into water, such as hydrophobic organic chemicals, analysis of particulate and dissolved fractions of surface water samples might be appropriate during a later phase of the investigation.)

Response:

A. Agreed. Adsorption of contaminants onto suspended particulate matter in the water has been added to the paragraph.

B. Agreed. "Accumulated contaminants" has been changed to "adsorbed contaminants."

C. A third box for absorbed contaminants has been added.

D. Suspended particulate matter has been added to the box under "Primary Release Mechanisms."

Note: Surface water samples will not be filtered before chemical analysis.

Comment 10 — Page 3-9, Figure 3-2:

Please make the following additional changes to this figure:

A. Delete "Terrestrial biota" from the "Secondary Sources" heading. Contaminants in Bayou Grande would first bioaccumulate in aquatic organisms, ingestion of these organisms by terrestrial biota could then lead to bioaccumulation in the terrestrial biota.

B. Draw a direct line from the "Bioaccumulation" box (Secondary Sources) to "Consumption of Affected Ecological Resources" (Pathways), since many benthic macroinvertebrates (e.g., infauna) are sessile and do not migrate.

Response:

A. *Agreed.* "Terrestrial biota" has been deleted.

B. Agreed. A line has been drawn from the "Bioaccumulation" box to the "Consumption of Affected Ecological Resources."

Comment 11 — Page 3-10, Table 3-2:

Please revise the format of this table to more clearly indicate that any of the "General Response Actions" or "Remedial Technology Types" may be used to achieve either human health or environmental/ecological "Remedial Action Objectives".

Response:

Table 3-2 has been amended to more clearly indicate the General Remedial Actions or Remedial Technology Types will be used to achieve either human health or environmental/ecological "Remedial Action Objectives."

Comment 12 — Page 4-1, Section 4.0:

A. "As analytic data becomes available from other site specific investigations completed at NAS Pensacola, this work plan will be re-evaluated." In order to assure meaningful and timely incorporation of this forthcoming data into the present, more conceptual plans, the logistics of this "re-evaluation" process must be clearly specified in some section of the present RI/FS Work Plan. For example, will data-supported modifications to the present sampling plans be submitted as a work plan addendum, technical memo, or in some other format? Would it be feasible (technically defensible, cost effective) to consider submitting any such addendums in pieces (e.g. west Bayou Grande, east Bayou Grande) so that work can commence on at least a portion of the Operable Unit? An adequate schedule for this "re-evaluation" process must he provided so that a realistic start date for implementing these work plans can be established. This schedule should include such information as (i) anticipated completion dates for "Phase II" data collection, validation, and evaluation efforts at each individual PSC, and (ii) proposed submittal dates for addendums to the "Bay" and "Bayou" RI/FS Work Plans. Adequate planning of this

process up front will assure timely initiation and completion of an effectively designed RI/FS for these "ecological" Operable Units.

B. Please delete the 4th and 5th sentences of this Section, and replace them with more general terminology, such as the following:

> "Biological effects will be investigated through the collection and taxonomic analysis of the benthic macroinvertebrate community."

The EMAP approach as contained in the document Ecological Indicators (EPA/600/3-90/060) is not appropriate, per se, for this site. The focus of the EMAP program is the ecological health of an area, while the focus of a Superfund investigation is cause and effect (i.e., determining whether ecological effects are related to site contaminants). Although some of the elements contained in this document can be applied to the investigation of Site 40, reference to the EMAP program, the Ecological Indicators document, and the EMAP terminology should be deleted to avoid confusion.

Response:

A. A phased sampling approach has been developed for the investigation. Upon completion of each phase of work, a technical memorandum will be submitted detailing the activities and results of the completed phase and outlining the number of samples and sampling locations for the subsequent phase. See the response to USEPA Comment 8 for a brief outline of the sampling approach to be followed during the investigation.

The Navy is dedicated to meeting all proposed schedules. To meet the schedules, Sites 40, 41 and 42 will be investigated simultaneously. A draft field schedule is provided in the Site Management Plan (SMP).

B. The 4th and 5th sentences of Section 4.0 have been replaced with "Biological effects will be investigated through the collection and taxonomic analysis of the benthic macroinvertebrate community." The EMAP approach is not applicable to the investigation. See the response to the USEPA Comment 8 for a brief outline of the sampling approach to be followed during the investigation.

Comment 13 — Pages 4-1 through 4-2, "Sediment Chemistry DQOs" and Table 4-1:

The term "chronic effects" usually refers to effects on biological receptors, not on sediment. clarify this point.

Response:

The term "chronic effects" has been deleted.

Comment 14 — Pages 4-2 through 4-3, "Surface Water DQOs" and Table 4-1:

The term "acute effects" usually refers to effects on biological receptors, not on surface water. clarify this point.

Response:

The term "acute effects" has been deleted.

Comment 15 — Page 4-3, Section 4.1, "Biological Effects DQOs":

An investigation of the benthic macroinvertebrate community, with the subsequent determination of distribution and diversity, should provide valuable information about biological effects. However, it should be noted that additional biological investigations (e.f., sediment toxicity testing, bioaccumulation studies) may be needed at a later point in the investigation in order to provide sufficient information for the ecological risk assessment.

Response:

Bioaccumulation studies are outlined in Phase III of the ecological assessment as a contingency plan if further investigation is need to gauge ecological impact.

Comment 16 — Pages 4-4 through 4-8, Section 4.2:

As mentioned above, this investigation is being conducted under the Superfund program, not the EMAP program. Several of the "indicators" presented in this section and the following subsections are applicable to the proposed investigation, but the terminology is not applicable. Please delete Section 4.2 and the indicated subsections (pages 4-4 through 4-8, including tables) and incorporate applicable portions under Section 5.0 (RI/FS Tasks) subheadings, as follows:

Section 4.2 — Delete

Subsection 4.2.1 — Delete. No detailed discussion is needed. Dissolved oxygen is already included among the general water quality parameters in Section 5.2.1, pages 5-7 through 5-9.

Subsection 4.2.2 and Table 4-2 — Combine this section with Section 5.2.1 (page 5-10). However, in the text on page 4-6, change "Most benthic organisms are sessile" to Many benthic organisms.. .."

Subsection 4.2.3 — Either delete this section, or add a subsection on sediment toxicity testing to Section 5.2.1 (pages 5-6 through 5-10). (It appears that no toxicity testing was planned for the proposed investigation. It might be more appropriate to include sediment toxicity testing in a later investigation phase.)

Subsection 4.2.4 — Delete. Measurement of water clarity (e.g., Secchi disk visibility?) can be added to a subsection of Section 5.2.1 (pages 5-6 through 5-10).

Response:

The EMAP approach has been deleted. See the response to the USEPA Comment 8 for a brief outline of the sampling approach to be followed during the investigation.

Comment 17 — Pages 4-8 through 4-9, Section 4.3:

The information contained in this section is overly general. Please refer to comments 8 and 12A.

Response:

The sampling approach has been revised **to focus on hot spot locations as was** discussed **during the meeting of May 12 and 13, 1993. See the response to the USEPA Comment 8 for a brief outline of the sampling approach to be followed during the investigation.**

Comment 18 — Page 4-9, Section 4.4:

Whenever possible, detection limits used in the chemical analysis of sediment samples should be sufficiently low that the data can be compared to the NOAA Effects Range-Low and Effects Range-Median values used as ecological sediment screening values by the USEPA Region IV Waste Management Division. Likewise, detection limits used in the chemical analysis of surface water samples should be sufficiently low that the data can be compared to the Florida Surface Water Standards and the ecological surface water screening values (including the Ambient Water Quality Criteria) used by the USEPA Region IV Waste Management Division.

Response:

The Navy will be submitting trigger level values for joint approval and subsequent use. If needed, the detection limits of the chemical analysis will **be lowered to be commensurate with the trigger levels. However, the added** *cost* **should be weighed** ***against*** **the usefulness of the** analytical **data in determining ecological risk.**

Comment 19 — Pages **5-2** through 5-10, Section **5.2:**

A. **The** proposed extensive transect sampling design appears **to be** very thorough with respect to determining the extent of contamination in the Bayou **(/Bay)** sediments. However, **EPA** is concerned that the planned full ***scan*** chemical **analyses** and the infaunal **benthic** macroinvertebrate analyses represent a major effort in terms of time **and** ***cost.*** The following comments **are** provided **as** recommended ways of decreasing the number of samples while still obtaining sufficient **data for** the site **characterization** and **risk assessment:**

(i) Collect **information on** the **nature of** the bottom sediment (e.g., sand, **silty** sand, silt, etc.) and the water column **depth** prior **to** choosing sediment sampling locations. Sediment sampling should then be focused **on** depositional **areas** with fine sediments, since many **types** of **con**taminants tend to adsorb onto such sediments. (However, some samples would **still** be needed **from** coarser-grained sediment locations.)

(ii) Collect sediment samples along **all** of the proposed sampling transects, but only **analyze** samples **from** every second ***or*** third transect, or transects **near areas** likely to have received **con**taminants from land-based **source areas.** Depending upon the holding time for chemical analyses, the remaining samples could be held (or extracted and held) until the results of the first sample batch were available. Analyzing benthic macroinvertebrate samples **from** every other transect **(as** mentioned in **Section 5.2.1,** page **5-10)** is **also a good approach.**

If a change is **made** in the proposed **transect** design, include **an** explanation/rationale **for** the sampling design.

B. Despite the extensiveness of the proposed sampling **scheme,** this **approach provides no** guarantee that any detected **contamination** will **be** adequately **delineated.** In particular, the work plan should include contingency **plans to** address the **delineation** of any **contamination** associated with **an NAS** Pensacola **source** which is found **to** extend greater **than 300** feet offshore.

C. Indicate which sampling stations will be used as background/control sampling stations for sediment, surface water, and biota.

Response:

A. See the response to the USEPA Comment 8 for a brief outline of the sampling approach to be followed during the investigation.

B. The three-phased sampling approach allows for adequate delineation of any detected contamination associated with NAS Pensacola. This includes contamination associated with an NAS Pensacola PSC which is found to extend greater than 300 feet offshore. However, if no evidence links offshore contamination to NAS Pensacola and approved by all parties during the May 12 and 13, 1993 meeting, further delineation of contamination is not within the scope of the investigation.

C. Because of the variability in currents during high and low tide events, background/control sampling locations will be determined statistically. A discussion of the equation and the assumptions to be used have been added to the work plan.

Comment 20 — Page 5-5, Paragraph 2:

The text states that temporary monitoring wells will be installed along the coast to determine the quality of groundwater being discharged to the Bayou (/Bay). The proposed locations for the temporary monitoring wells will be useful, but an insufficient number of groundwater sampling locations are proposed. The proposed locations should be supplemented with additional temporary well points and through the sampling of existing monitoring wells. Also, in order to increase the likelihood of locating groundwater hot spots along the coast that are discharging to surface water, additional groundwater sampling locations should be concentrated in areas of known or suspected contamination. Delineating groundwater hot spot areas along the coast early in the process will help focus surface water/sediment sampling locations for any additional rounds of sampling which may be needed. Specifically, once hot spot areas are identified in the Bayou (/Bay), sediment core samples extending several feet below the bottom of the Bayou (/Bay) should be collected to determine the vertical extent of contamination. The pore water from core samples could also be analyzed for contaminants of concern.

For further, OU-specific recommendations on the placement of additional temporary groundwater sampling locations, please refer to the comments provided for the Bay and Bayou in the following sections.

Response:

The revised sampling approach addresses the issue of hot spot sampling locations. All specific PSCs adjacent to the Bay/Bayou will have adequate groundwater monitoring

systems to determine migration to the Bay/Bayou. Surface water samples will be collected at locations where the detected concentrations of the sediments exceed the background or trigger levels in standing bodies of water (i.e., wetlands) and not in dynamic environments (i.e., Pensacola Bay and Bayou Grande). As agreed by all parties during the meeting of May 12 and 13, 1993, sediment samples will be collected from 0 to 6 inches depth at all locations. If areas of significant contamination are encountered, additional samples will be collected from 0.5 to 2 feet.

Comment 21 — Page 5-5, Paragraph 3:

The number of staff gauges which will be installed in the Bayou (/Bay) should be adequate for acquiring data that will allow for the calculation of groundwater flow velocity, once compared with groundwater level measurements from wells located adjacent to the Bayou (/Bay). However, this data should also be used to calculate the volume of groundwater discharge/recharge to the Bayou (/Bay) over a complete tidal cycle.

Response:

Agreed. The volume of discharge/recharge to the Bayou (/Bay) will be calculated over a complete tidal cycle.

Comment 22 — Page 5-5, Paragraph 4:

A. Why will surge blocks and bailers be used to develop monitoring wells, when peristaltic pumps will be used to purge wells prior to sampling?

B. According to the text, development will be considered complete "when the water has become as clear as possible given the subsurface lithology." This final phrase would appear unnecessary, "Given the predominantly sandy lithology of the area." Please delete.

Response:

A. Monitoring wells will be developed by bailing, surging and bailing or surging and pumping. Purging will be performed with a Teflon bailer or a decontaminated peristaltic pump. If the peristaltic pump is used for purging, at least one "polish" volume will be removed with a Teflon bailer. The text has been revised accordingly. This issue will be addressed in more detail in a technical letter.

B. *Agreed.* The unnecessary text has been deleted.

Comment 23 — Page 5-7, Paragraph 1:

A. Surface water samples for determination of total suspended solids should be collected at the same time and locations as the surf" water samples collected for water quality analyses.

B. Sediment samples for chemical analysis must be collected at both the 0-0.5 ft. interval and the 0.5-2.0 ft interval. Most benthic infaunal Organisms live in the upper part of the sediment, which is the interval that will be sampled using a Ponar grab. Therefore, sampling the upper interval is recommended for correlation with the benthic macroinvertebrate study. The lower interval should also be sampled, to check for historic deposition of contaminants.

Response:

A. Surface water samples will be collected at locations where the detected concentrations of the sediments exceed the background or trigger levels in standing bodies of water (i.e., wetlands) and not in dynamic environments (i.e., Pensacola Bay and Bayou Grande). Total suspended solids analysis will be collected at the same time and locations as the surface water samples collected for water quality analyses.

B. As agreed by all parties during the meeting of May 12 and 13, 1993, sediment samples will be collected from 0 to 6 inches depth. If areas of significant Contamination are encountered, additional samples will be collected from 0.5 to 2 feet.

Comment 24 — Pages 5-7 through 5-8:

Please provide the rationale for the locations of the total water quality stations.

Response:

The total water quality stations were located at regular intervals along the NAS Pensacola shoreline. The distance offshore was selected to minimize the impact of point and non-point source discharges.

Comment 25 — Pages 5-7 through 5-8, "Surface Water Sampling":

The following depths should be used in the collection of (i) surface water quality parameters at sediment sampling stations (i.e., temperature, pH, etc.) and (ii) surface water samples and the concurrent water quality parameters at total water quality stations:

Water Column Depth	SW Parameter Measurement Depth
3 feet or less	Mid-depth
3-10 feet	1 foot below water surface 1 foot above bottom
More than 10 feet	1 foot below water surface Mid-depth 1 foot above bottom

This sampling regime is similar to that recommended in the EPA Environmental Services Division's Environmental Compliance Branch Standard Operating Procedures and Quality Assurance Manual for surface water sampling in estuarine waters having a halocline (salinity stratification). The bottom measurements are especially important in conjunction with the benthic macroinvertebrate study.

Response:

Surface water samples will be collected at locations where the detected concentrations of the sediments exceed the background or trigger levels in standing bodies of water (i.e., wetlands) and not in dynamic environments (i.e., Pensacola Bay and Bayou Grande). The surface water samples would then be collected at the following intervals in accordance with the USEPA SOP/QAM and the CSAP:

Water Column Depth	SW Parameter Measurement Depth
3 feet or less	Mid-depth
3-10 feet	1 foot below water surface 1 foot above bottom
More than 10 feet	1 foot below water surface Mid-depth 1 foot above bottom

Comment 26 — Page 5-8, Paragraph 3:

A. "and during periods when the groundwater level exceeds the adjacent surface water level of Bayou Graude...". How will this determination be made? Will water level measurements be recorded on some regular basis?

B. "...surface water samples will be collected...to determine the quality of Bayou (/Bay) surface water.. .". Will surface water samples be analyzed for TCL/TAL parameters or only for water quality parameters?

Response:

A. Electronic pressure transducers and dataloggers will be deployed at the temporary monitoring well and staff gauge locations for a 24-hour period. The dataloggers will be used to collect water level measurements at regular intervals (every 10 minutes). Data will then be used to determine when the groundwater level exceeds the adjacent surface water level of Pensacola Bay or Bayou Grande.

B. **Surface water samples will be collected at locations where the detected concentrations of the sediments exceed the background or trigger levels in standing bodies of water (i.e., wetlands) and not in dynamic environments (i.e., Pensacola Bay and Bayou Grande). Surface water samples will be analyzed for TAL/TCL parameters.**

Comment 27 — Page 5-13

Although the Bayou (/Bay) *can* be considered a possible receptor of contaminants that have migrated from land-based source areas, an area of such contaminants present in the Bayou (e.f. in sediments) could act as a source of contaminants having the potential to migrate elsewhere (e.f. via surface water movement, food chains). The Feasibility Study for the land-based sites will focus on potential remedial alternatives for those sources and their contaminant transport mechanisms. The FS for Bayou Grande should focus on potential remedial alternatives for the Bayou itself.

Response:

Agreed. The FS for Bayou Grande will focus on potential remedial alternatives for the Bayou itself.

Comments applicable only to OU 40 (Bayou Grande) Work Plan:

Comment 1 — Page 2-1, section 2.2:

In the first sentence, change "estaurian" to "estuarine." In the fourth sentence, clarify that the net flow in Bayou Grande is apparently eastward, but tidal flow reversals also occur in the bayou.

Response:

Agreed. "Estaurian" **has been** changed **to** "estuarine." **The** fourth sentence **has been** revised to **state** the net flow in Bayou Grande is to the east, but **tidal** flow reversals may **also occur.**

Comment 2 — Pages 2-3 through 2-6, Section 2.2:

Much of the information contained **in** these pages **pertains** *to* Pensacola Bay as a whole, **yet** the section is titled "Site - Bayou Grande". The **text** should either be modified and/or **expanded** to illustrate the relevance of the information presented to the Bayou RI/FS, or deleted.

Response:

Although much of the discussion in **Section 2.2 pertains** to **Pensacola** Bay, it is specific **to** the Bayou Grande investigation. **Tidal** flow reversals may **cause** contaminants in Pensacola Bay near Bayou Grande to migrate **into** Bayou Grande. **This** statement **will** be included in the **text.**

Comment 3 — Page 2-7, Section 2.3.2:

"Some intermittent *streams* do flow north into Bayou Grande...". **These** streams should **be** clearly identified in some **figure,** along with the potential contaminant **sources which** may **impact** them.

Response:

Agreed. The intermittent **streams** have been **added** to Figures **2-1** and **3-1.**

Comment 4 — Pages 2-12 through 2-16, **Section** 2.4:

This section should be limited to a review of previous studies which **are** directly **applicable** to Bayou Grande and its interaction with Pensacola Bay.

Responses in bold denote changes to first draft.

Response:

Agreed. Previous studies not directly related to Bayou Grande or its interaction with Pensacola Bay have been deleted.

Comment 5 — Page 2-16, Section 2.5:

This section states that the average depth of the bayou is 6 feet, but Section 2.2, page 2-1, states that the average depth is 9 feet. Clarify this point.

Response:

The average depth of Bayou Grande is 6 feet. Section 2.2, page 2-1 has been corrected.

Comment 6 — Page 3-7, Section 3.2, "Minimal Impacting Sites":

Please check the results of previous studies conducted by Geraghty & Miller (1984 & 1986) for additional information on some of these sites. Several wells may have been installed to monitor a groundwater plume which *originated* at Site 31 and was believed to be migrating towards Sites 25 and 27 and the small arm of Bayou Grande.

Response:

The Navy agrees "minimal potential to impact" is vague. The sites potential to impact Bayou Grande will be evaluated during Phase 1.

Comment 7 — Pages 3-11 through 3-12, Table 3-2:

The contents of these two pages appear identical. Please check and correct as needed.

Response:

Page 3-12 has been deleted.

Comment 8 — Pages 5-3 through 5-4, Figures 5-1A and 5-1B:

A. In conjunction with comment 19. In the first group of comments (applicable to both the Bayou and Bay), use data from the USEPA Region IV Environmental Services Division, Environmental Compliance Branch's July 1992 field investigation at NAS Pensacola to help focus the sampling investigation in the Bayou.

B. According to these figures, 10 total water quality stations are planned. Since water quality measurements will be taken at these stations during the 8 surface water sample collection events, the proposed deployment of continuous water quality monitoring instruments at all 10 stations may not be necessary. EPA recommends that these instruments be deployed at a subset of the total water quality stations, to obtain information about water quality fluctuations over time.

Response:

A. Since the Navy was not allowed to take split samples during the July 1992 ESD Field Investigation, the data is not acceptable to the Navy for RI work. Additionally, the results of the RI will be used to perform a baseline risk assessment for human and ecological health purposes as recommended in the 1992 ESD investigation.

B. Total Water Quality stations will be deployed at a subset of the originally proposed locations. The locations are illustrated in Figures 5-1A and 5-1B.

Comment 9 — Page 5-5, Paragraph 2:

The most contaminated ground water that discharges into Bayou Grande appears to be located in the vicinity of Sites 1 and 11. The following additional groundwater sampling locations proximate to these sites are therefore recommended:

Site 1: Sample existing wells GM42, GM41, GM43, GM04 and GM40. Surface water samples should be collected from the Bayou adjacent to these well locations.

Site 11: Sample existing well GM26 and proposed Phase II wells 15, 10, 6, 2 and 1. To determine if groundwater discharging from OU10 is adversely impacting the Bayou, temporary well points should be installed near proposed intermediate well 12 and north of this location opposite proposed well 6 (downgradient of the former sludge drying beds at OU10).

Response:

The monitoring wells at Site 1 and 11 will be sampled as part of the site-specific investigation. The data obtained from those investigations will be used to assess groundwater quality as it discharges into Bayou Grande.

Comment 10 — Page 5-9, Paragraph 3:

In the 4th sentence, add the word "months" before the phrase "of the year". Also, "data sonde" should be capitalized, since it is a trade name.

Response:

Agreed. The word "months" has been added to the phrase "of the year." Data Sonde has been capitalized.

Comment 11 — Page 5-10, Section 5.2.1, "Biota Sampling":

This section should be similar to the corresponding section in the Site 42 (Pensacola Bay) Work Plan. For example, sediment lithology data should also be used in evaluating the benthic macroinvertebrate data. In addition to the identification of contaminant indicator species, benthic macroinvertebrate community diversity and distribution should also be determined. Include the diversity and similarity indices and the biotic indices mentioned in the Bay Work Plan.

Response:

Biota samples will be collected for determination of diversity and similarity indices and biotic indices. See the response to USEPA Comment 8.

Comments Applicable Only to OU 42 (Pensacola Bay) Work Plan:

Comment 1 — Page 2-5, Paragraph 2:

Discuss the deposition of the sediments that were dredged from Pensacola Bay during the latest dredging event and whether the sediments were tested to determine if they were hazardous waste.

Response:

The sediments dredged from Pensacola Bay were deposited at Site 14. Analytical results were summarized in the Thompson Engineering Testing report entitled "A Report of the Collection and Analysis of Sediment, Water, and Elutriate Samples NAS Turning Basin" Thompson Engineering Testing, Inc. (1984). The sediments were not classified as hazardous waste. Additionally, screening analyses of samples from Site 14 (E&E 1991) did not indicate significant soil or groundwater contamination.

Comment 2 — Pages 2-13 through 2-15, Section 2.4, Facility-Specific Studies:

The locations of these previous sampling events relative to the locations of the 42 currently-known potential sources of contamination should be shown on some figure. Such a summary map would facilitate the identification of potential problem areas. It would also highlight areas for which little or no data exists, thereby aiding the investigator's efforts to focus and direct future sampling events.

Response:

A figure will be included presenting the potential sources of contamination and the locations of previous Pensacola Bay sampling events.

Comment 3 — Pages 2-15 through 2-18, Section 2.5:

Please provide the *distance* and direction from NAS Pensamla to the City of Pensamla Main Street sewage treatment plant.

Response:

The City of Pensacola Main Street sewage treatment plant is approximately 3 miles northeast of NAS Pensamla. Other NPDES permittees will also be located as the data becomes available.

Comment 4 — Page 3-4, "Southeast Waterfront":

Clarify the boundaries of Site 2 with respect to Site 42 (e.g. distance along shoreline and distance into Bay). This is particularly important since the Sampling and Analysis Plan for Site 2 states that the western and easternmost portions of Site 2 will be incorporated into the Site 42 sampling investigations,

Response:

Agreed. A figure will be added to clarify the boundaries of Site 2.

Comment 5 — Page 3-7, "NAS Pensacola's Eastern Shore of Pensacola Bay":

Since the groundwater contaminants at OU 10 may discharge into the Bay, it would be more helpful (from an ecological perspective) to compare the groundwater contaminant concentrations found at OU 10 with Florida Surface Water Quality Standards for aquatic life (FAC, chapter 17-302).

Response:

Although comparing contaminant concentrations detected in groundwater with the Florida Surface Water Quality Standards (FAC, Chapter 17-302) may be helpful, it would be technically incorrect.

Comment 6 — Page 3-8, Paragraph 2:

Change "Sherman Filed.." to "Sherman Field.."

Response:

Agreed. "Sherman Filed" has been changed to "Sherman Field."

Comment 7 — Page 3-10, Figure 3-2:

Under "Primary Release Mechanisms" related to the 18 sites, "Fuel Pipeline/AST" should apparently read "Fuel Pipeline/UST".

Response:

Agreed. "Fuel **Pipeline/AST" has been changed** to "Fuel **Pipeline/UST."**

Comment **8** — Pages **5-3** through **5-5, Figures** 5-1A, **5-1B** and **5-1C:**

A. In conjunction with comment **19,** in the first group of comments (applicable to both the Bayou and the Bay), the attached copies of Figures 5-1A and 5-1B show two areas where the number of **transects** might **be** able **to** be halved **(i.e.** sample every other transect), **based** upon the locations of the land-based **sources** (figure 3-1) and **the** probable migration pathways into Pensacola Bay.

B. According to these figures, 16 **total** water quality **stations are** planned. Since water quality measurements will be **taken at** these stations during the **8 surface** water sample collection events, the proposed deployment of continuous water quality monitoring instruments at all 16 **stations** may not **be necessary.** EPA recommends that these instruments **be** deployed **at** a subset of the **total** water **quality stations,** to obtain information about water quality fluctuations over time.

C. Also with regards to the proposed water quality **stations,** it is recommended that the stations be positioned close to permanent **monitoring** wells which have **been installed near** the coast whenever possible. **This** would **allow** comparisons of groundwater samples collected near the stations with the chemical **and** physical **surface** water **conditions** in the Bay. For example, the proposed water quality station **north** of OU10 could be repositioned **to** a location which is more proximate to nearby well GM83.

Response:

A. **The sampling approach has been** revised **to better address migration pathways as** discussed **in the May 12 and 13,1993 meeting. See the response to Comment 8 in the Common Site 40 and 42 USEPA comments.**

B. The **total** water quality stations will **be** deployed at a subset of the previously proposed locations. Figures 5-1A, 5-1B, and 5-1C have been revised accordingly.

C. The **total** water quality stations were located **at** regular intervals **along** the **NAS Pensacola** shoreline. The **distance** offshore was selected to **minimize** the **impact** of point and non-point source discharges.

Comment 9 — Page 5-6, Paragraph 2:

The most contaminated groundwater that discharges into Pensacola Bay appears to be located in the vicinity of Operable Unit 10 and Sites 14, 20, 38, 2 and 21. The following additional groundwater sampling locations proximate to these sites are therefore recommended in order to better establish the degree of communication between groundwater and Bay surface water.

OU 10 (Sites 32, 33 & 35): Sample existing wells GM71, GM72, GM73, GM14 and GM83 and collect surface water samples from the Bay proximate to these well locations. If possible, relocate the proposed water quality station just south of OU10 so that it is adjacent to either existing well GM14 or proposed well 11 (for Site 14).

Site 14: Sample proposed wells 11 and 18 and compare the results to adjacent surface water samples from the Bay.

Site 20: If a permanent well exists or is proposed for this site, it should be sampled and compared to the results for a surface water sample collected from an adjacent area of the Bay. If no permanent well exists, a temporary well should be installed and sampled at the site.

Site 38: Sample the two shallow proposed wells located on the south si& of the site and compare the results to adjacent surface water samples from the Bay.

Site 2: Install and sample a temporary well at or near this site to provide a baseline of the groundwater quality discharging into the Bay.

Site 21: Sample proposed shallow monitoring wells 20 and 41 and compare the results to adjacent surface water samples from the Bay.

Response:
The wells at OU 10, Site 14, Site 2, Site 21 and Site 38 will not be resampled as part of the Site 42 investigation. The analytical data obtained from *each* of the site-specific investigations will be used to assess the groundwater quality as it discharges into the Bay. A temporary monitoring well will be installed and sampled at Site 20.

Comment 10 — Page 5-9, Paragraph 3:

Clarify what is meant by "nearshore" (i.e. distance from shoreline, surface water column depth).

Response:

Surface water samples will be collected at locations where the detected concentrations of the sediments exceed the background or trigger levels in *standing* bodies of water (i.e., wetlands) and not in dynamic environments (i.e., Pensacola Bay and Bayou Grande). Surface water samples will be analyzed for TAL/TCL **parameters.**

Comment 11 — Page 5-10, Paragraph 3:

"data sonde" should be capitalized, since it is a trade name.

Response:

Agreed. "Data Sonde" has been capitalized.

Comment 12 — Page 5-11, Paragraph 1:

Change "pollution diversity" to "community diversity".

Response:

Agreed. "Pollution diversity" has been changed to "community diversity."

Technical Review and Comments
Draft RI/FS Work Plans for
Site 41 (NAS Pensacola Wetlands)
Environmental Protection Agency
Naval Air Station (NAS) Pensacola
Pensacola Florida

Comment 1. Page 1-1, Section 1.0, Paragraph 2:

The Florida Department of Environmental Protection (FDEP) is also a Party to the Federal Facilities Agreement. Please make the necessary correction.

Response

Agreed. The Florida Department of Environmental Protection (FDEP) has been added.

Comment 2. Page 1-1, Section 1.0, Paragraph 3:

This paragraph must also briefly summarize plans to conduct and prepare a Baseline Risk Assessment for the Operable Unit.

Response

A Baseline Risk Assessment will be performed for Site 41.

Comment 3. Pages 1-1 through 1-2, Section 1.0, Paragraph 4:

The components described in this paragraph (i.e. the SAP (including FSAP and QAPP) and the HASP) are essential components of the RI/FS Work Plan. Consequently, the RI/FS Work Plans for the subject Operable Units cannot be considered for approval until these components are received and approved.

Response

Site-specific SAPs will be submitted to the Navy, USEPA, and FDEP.

Comment 4. Page 2-2, Figure 2-1:

This figure is good for presenting all existing wetlands at the facility. However, the following information must also be provided on this, or some other figure:

a. Complete the outline of NAS Pensacola, and make any other necessary corrections, in the inset location map

b. Indicate which wetlands, or portions thereof, are planned for investigation

c. Illustrate the sampling locations planned for each wetland

Response

A. Agreed. The outline of NAS Pensacola has been added to the inset location map.

B. and C. The OU-specific SAPs will be completed before Phase I and will focus on sampling procedures and protocols. Sampling locations for TAL/TCL analysis will be based on Phase I sampling results and will be presented in a technical memorandum before phase 11 sampling is initiated. The approach has also been altered to state if site history and a site visit do not indicate the likelihood of site specific contamination, then it will not be studied further. Phase I does not have to be completed in its entirety to show this. The only exception would be reference areas. See the response to Comment 8 in the Common Site 40 and 42 USEPA comments.

Comment 5. Pages 2-11 through 2-15. Section 2.3.5:

A map depicting the direction of groundwater flow for NAS Pensacola for each zone of the Sand-and-Gravel aquifer must be included in this section. The results of the forthcoming well inventory, together with existing hydrogeologic data and information which has been collected during previous investigations (E&E, Geraghty & Miller, etc.) should provide adequate infomation on which to base such maps.

Response
Maps estimating the direction of groundwater flow in the shallow, intermediate, and deep zones at NAS Pensacola will be included if sufficient information has been obtained to construct the maps (e.g., top of casing elevations, water levels). If the information cannot be obtained until after the submittal of the work plans, the maps will be submitted under separate cover.

Comment 6. Page 2-12 through 2-15. Section 2.3.5:

The EPA Groundwater Classification for the Sand-and-Gravel aquifer must be provided in this description as well.

Response

The Florida Department of Environmental protection classification of the surficial aquifer is G-1. The EPA Groundwater Classification for the surficial aquifer is IIA. However, it should be noted the shallow and intermediated zones are not used as a water supply. The deep zone of the surficial Sand and Gravel Aquifer is overlaid by a confining unit.

Comment 7. Page 2-16, Section 2.4, Paragraph 2:

As of January 4, 1993, USEPA reverted back to use of the 1987 manual for the identification and delineation of jurisdictional wetlands, pending Congressional review of the 1989 manual. Therefore, the 1987 manual must be used in place of the 1989 manual.

Response

The 1987 manual for the identification and delineation of jurisdictional wetlands will be used.

Comment 8. Page 2-18, Paragraphs 3 through 4 and *Appendix* C:

For the purposes of this investigation, a better presentation of the detected contamination having the potential to impact NAS Pensacola wetlands is needed. Specifically, a figure should be prepared for each wetland illustrating the location and nature of all contamination (i.e. that detected for each PSC) which has the potential to impact that wetland. Individual PSC locations and potential pathway (e.g. groundwater and surface water flow) should also be illustrated on a wetland-specific basis. Such a presentation should form the basis for development of a conceptual model for each wetland, and facilitate the identification of data gaps and justification of planned sampling locations. If the Navy feels that development of such a presentation could be better accomplished upon collection of additional data from individual PSCs, this approach may be presented to EPA for consideration. However, any such plans, including justification, proposed means (e.g. submittal format) and schedules for completion, must be clearly *stated* in the work plan text.

Response

Based on the limited knowledge of NAS Pensacola wetlands, the location and nature of contamination within specific wetlands is not known. The phased approach outlined in response to USEPA Comment 8 on the Common Site 40 and 42 work plans will allow for development of a conceptual model to guide sampling locations. The approach has also been altered to state if site history and a site visit do not indicate the likelihood of site specific contamination, then it will not be studied further. Phase I does not have to be completed in its entirety to show this. The only exception would be reference areas.

Comment 9. Pages 2-18 through 2-26, Section 2.5:

A. Paragraph 1 - The originally-designated wetland 14 is actually a non-wetland sand pit. Since the onginally-designated wetland 59 (now a ball field) is shown on Figure 2-1, wetland 14 should also be shown on this figure.

B. The wetland inhabitants noted in *this* section are primarily vertebrates, or, in general, higher trophic level organisms. During *the* planned field investigation, information should also be obtained on invertebrates/lower trophic level organisms, as potential ecological receptors for both palustrine and estuarine wetlands.

C. Please provide information on the current status of the following wetlands:

Wetland 15: Has the extent or shape of this wetland been altered by golf course construction activities? If so, this should be shown in Figure 2-1.

Wetland 13(?): During a recent EPA overview at OU 10, it was noted that a wetland area adjacent *to* the wastewater treatment plant received waste (bilge water) from a drain pipe when an overflow pipe to the waste storage tank was mistakenly left open. The vegetation in the immediate area of the waste *storage* tank was highly stressed. Have appropriate steps (e.g. soil, surface water sampling; appropriate remedial measures) been taken to address this situation?

Response

A. Wetland 14 has been added to the Figure 2-1.

B. *Agreed.* Toxicity testing to be performed in Phase IIB will be conducted on lower trophic organisms. See the response to Comment 8 in the Common Site 40 and 42 USEPA comments.

C. The impact to Wetland 15 from golf course construction activities will be investigated as part of the RI. The extent and change of shape of the wetland will be detailed in the technical memorandum to be submitted upon completion of Phase I activities.

The impact to Wetland 13 from the bilge water was assessed by the soil, surface water, sediment and groundwater sampling results in the report entitled "Contamination Assessment Report Bilge Water Treatment Plan, Pensacola Naval Air Station, Pensacola, Florida (1/11/93)" completed by Groundwater Technology, Inc. This report will not eliminate Wetland 13 from future study, but the final, accepted results of the investigation will be evaluated for their applicability to the investigation.

Comment 10. Page 3-1, Section 3.1:

The text states that the scope of proposed work for the RI/FS will be discussed in Sections 5 and 6. However, Section 6 is a list of references and does not include such a discussion. Please clarify this point.

Response

The proposed scope of work is discussed in Sections 4 and 5. The text has been revised accordingly.

Comment 11. Page 3-2 through 3-10, Section 3.2 and Table 3-1:

A.' The statement is made that Phase I contamination assessments have not been performed for several sites which could potentially affect the NAS Pensacola wetlands. EPA's Environmental Services Division (ESD) conducted a field investigation at NAS Pensacola in July of 1992 to help to help fill data gaps for some of these sites and wetland areas. This data should be viewed as a valuable resource and must be utilized in the revision and resubmittal of this work plan.

B. The text and table discuss/list sites which have a minimal potential to impact some NAS Pensacola wetlands. The following sites should be added to this discussion unless adequate documentation for their omission can be provided:

Site	Potentially Impacted wetlands
7 (Firefighting School Training Area)	79
25 (Radium Spill Area)	6, 7, 8 & 64
26 (Supply Dept. Storage Area)	7, 8 & 64
27 (Radium Dial Shop Sewer)	6, 7, 8 & 64

Response

A. Since the Navy was not allowed to take split samples during the July 1992 ESD Field Investigation, the data is not acceptable by the Navy for RI work. Additionally, the results of the RI will be used to perform a baseline risk assessment for human and ecological health purposes as recommended in the 1992 ESD investigation.

B. **The Navy agrees "minimal potential to impact" is vague. The sites potential to impact the NAS Pensacola wetlands will be evaluated during Phase I. See the response to Comment 8 in the Common Site 40 and 42 USEPA comments.**

Comment 12. Page 3-3, Figure 3-1:

A. Although Site 36 is an extensive site, it must be included in this figure (perhaps as a blown-up insert)

B. To clarify the relationship between NAS Pensacola wetlands and individual PSCs at NAS Pensacola, the information contained in Figures 2-1 and 3-1 must either be combined into a single figure or overlain as two separate figures. It would also be helpful to *enlarge* these maps. Perhaps a separate map could be prepared for each of the three general contaminant discharge areas mentioned in Section 3.2 *(page* 3-2)

Response

A. Site 36 has been added to Figure 3-1.

B. Figures 2-1 and 3-1 have been combined to show the NAS Pensacola wetlands and the individual PSCs.

Comment 13. Page 3-7, Paragraph 1:

A. The probable contaminant source in wetland 5 which was identified by EPA's Environmental Services Division during the field effort performed during July 1992 must be evaluated to determine whether a removal action is appropriate before initiating further field investigations.

B. The Chevalier Field Pipe Leak Area (Site 23) is one of several UST sites at NAS Pensacola. The UST sites fall under *state* (FDEP) jurisdiction and are not part of EPA's Superfund program. A determination should be made as to how the impacts of these UST sites on the wetlands, and other ecological areas of concern (e.g. the Bay and

Bayou), will be addressed. EPA recommends that the impacts of all sites (UST and non-UST) on ecological areas be addressed in a single investigation. Such an investigation will require the coordination of programmatic issues, schedules and data collection efforts in order to ensure that the requirements of both programs are adequately addressed.

Response

A. The contaminant source identified by the USEPA's Environmental Services Division is currently being evaluated. The USEPA and FDEP will be notified if a removal action is appropriate.

B. Impact on ecological areas will be assessed as part of the Sites 40, 41 and 42 investigations. Investigation of UST sites is being conducted under the jurisdiction of the FDEP UST program.

Comments 14. Pages 3-10 through 3-13, Section 3.3:

This section presents a reasonable preliminary, or conceptual, identification of potential contaminant migration pathways and potential impacts on public health and/or the environment. However, while comprehensive, the information presented is too general to be of extensive use in directing and refining sampling plans. While it is recognized that most of the available data is questionable due to the use of lower DQO analytical levels and less than rigorous QA/QC methods, some focusing of sampling efforts should still be possible through (i) an identification of likely contaminant pathways (GW,SW), (ii) the use of available survey results, site histories and (iii) conservative use of the available chemical data. In addition, given that higher DQO Level data for individual sites will be forthcoming prior to actual implementation of the "Wetlands" work plan, an addendum to this work plan aimed at focusing the proposed sampling scheme should be submitted following receipt and evaluation of this new site-specific data.

Response

The sampling scheme has been revised **into a** three **phased approach, as** discussed **in the meeting on May 12 and 13, 1993. See the *response* to Comment 8 in the Common Site 40 and 42 USEPA comments.**

Comments 15. Pages 3-11 through 3-12, Section 3.3 and Figure 3-2:

If applicable to the estuarine wetlands, also mention adsorption of contaminants onto suspended particulate matter (e.g., suspended organic matter, such as detritus), and include this in the conceptual Model (Figure 3-2).

Response

Agreed. Adsorption of contaminants onto suspended particulate matter in estuarine wetlands has been added.

Comment **16.** Page **3-12,** Figure **3-2:**

Please make the following additional changes to this figure:

A. Under *Primary* Release Mechanisms, change "AST" to "UST"

B. Delete "terrestrial biota" from the "Secondary Sources" heading. Contaminants in NAS Pensacola Wetland would first bioaccumulate in aquatic Organisms, ingestion of these organisms by terrestrial biota could then lead to bioaccumulation in the terrestrial biota.

C. Draw a *direct* line from the "Bioaccumulation" box (Secondary Sources) to "Consumption of Affected Ecological Resources" (Pathways), since wetland plants and many macroinvertebrates (e.g., infauna) are sessile and do not migrate.

Response

A. ***Agreed.*** "AST" has been changed to "UST".

B. ***Agreed.*** "Terrestrial biota" has been deleted.

C. Agreed. A line has been drawn from the "Bioaccumulation" box to "Consumption of Affected Ecological Resources."

Comment **17.** Page **3-13,** Section **3.4:**

Although the wetlands *can* be considered as possible receptors of contaminants that have migrated from other source areas, an area of such contaminants present in the wetlands (e.g., in sediments) could act as a source of contaminants having the potential to migrate elsewhere (e.g., via water movement, food chains, etc.). This is shown in the conceptual model (Figure 3-2). Therefore, where applicable, remedial alternatives should be proposed for the wetlands. (The statement that "Remediation may cause as much damage to biota as the contamination" is valid and should be retained.)

Response

Remedial alternatives will be included for the NAS Pensacola wetlands.

Comment 18. Page 4-1, Section 4.0, Paragraph 3:

Please delete the first two sentences of this paragraph and replace them with more general terminology regarding the biological effects, such as the following:

> "Biological effects will be investigated through the collection and taxonomic analysis of the benthic macroinvertebrate community."

The EMAP approach as contained in the document *Ecological Indicators* (EPA/600/3-90/060) is not appropriate, per se, for this site. The focus of the EMAP program is the ecological health of an area, while the focus of a Superfund investigation is cause and effect (i.e., determining whether ecological effects are related to site contaminants). Although some of the elements contained in this document *can* be applied to the investigation of OU 16, reference to the EMAP program, the *Ecological* Indicators document, and the EMAP terminology should be deleted *to* avoid confusion.

Response

The first two sentences of the paragraph will be replaced with "Biological effects will be investigated through the collection and taxonomic analysis of the benthic macroinvertebrate community."

Agreed, the EMAP approach is not applicable to this investigation. See the response to Comment 8 in the Common Site 40 and 42 USEPA comments.

Comment 19. Pages 4-2 through 4-3, Table 4-1 and Section 4-1:

Change the objectives for Sediment/Soil Chemistry and Surface Water Chemistry in Table 4-1 to be consistent with those given in the text.

Response

Agreed. The objectives for the Sediment/Soil Chemistry and Surface Water Chemistry have been changed to be consistent with the text.

Comment 20. Page 4-3, Section 4.1:

A. "Given the limitations of the previous investigations completed for the NAS Pensacola wetlands, the objectives of this RI/FS are comprehensive." This general field sampling objective must be accompanied by, and supported with, figures and tables illustrating approximate sample locations, numbers of samples/analyses, etc. Without this information, EPA cannot complete an adequate review of this work plan, or consider it for approval. Specifically, the available information (as discussed in comments 8 and 14) must be used to formulate sampling plans, including a statement of, and justification for:

1. Which wetlands require sampling, and
2. Specific sampling plans for each wetland

Response

With the limited knowledge currently available about the wetlands, it is not possible to outline which wetlands will be sampled and the sampling locations. These will be outlined after each Phase of the ecological assessment in a technical memorandum. See the response to Comment 8 in the Common Site 40 and 42 USEPA comments.

Comment 21. Page 4-3, Section 4.1, *Sediment Chemistry Data Quality Objectives*"

A. The term "chronic effects" usually refers to effects on biological receptors, not on sediment/soil. *Clarify* this point.

B. Although sediment standards are currently being developed by the state of Florida and U.S.EPA, they might not yet be available. Therefore, analytical results for sediment samples should be compared to the sediment screening values used by the USEPA Region IV Waste Management Division and to any ecological toxicity infomation available in the literature. (Please see comment 26B).

Response

A. The term "chronic effects" has been deleted.

B. The Navy will be submitting trigger level values for joint approval and subsequent use. If needed, the detection limits of the chemical analysis will be lowered to be commensurate with the trigger levels. However, the added cost should be weighed against the usefulness of the analytical data in determining ecological risk.

Comment 22. Page 4-3, Section 4.1, ***Surface Water Chemistry Data Quality Objectives:***

A. The term "acute effects" usually refers to effects on biological receptors, not on surface water. Clarify this point.

B. Since surface water bodies also have a vertical dimension, the vertical extent of contamination must be determined.

Response

A. The term "acute effects" has been deleted.

B. **See the response to Comment 25 in the Common *Site* 40 and 42 USEPA comments for the surface water sampling approach.**

Comment 23. Page 4-4, Section 4.1 Biological ***Effects Data Quality Objectives:***

A. Some of the activities planned for this portion of the investigation must be performed during a particular season or time of day in order to be accomplished successfully (i.g., the observation of migratory birds). An adequate field investigation schedule must be included in the final work plan in order to assure that the planned objectives are met.

B. This section should also note that additional biological investigations (e.g., sediment toxicity testing, bioaccumulation studies) may be needed at a later point in the investigation in order to provide sufficient infomation for the ecological risk assessment.

Response

A. Migratory birds will no longer be considered during this investigation. However, diversity studies are sensitive to a particular time of year and every effort will be ma& to perform the studies in the appropriate time frame.

B. **Agreed. Additional biological investigations may be necessary to provide sufficient information for the ecological risk assessment and will be performed as necessary during Phase III. See the response to comment 8 in the Common Site 40 and 42 USEPA comments.**

Comment 24. Pages 4-4 through 4-8, Section 4.2:

As mentioned above, this investigation is being conducted under the Superfund program, not the EMAP program. Several of the "indicators" presented in this section and the following subsections are applicable to the proposed investigation, but the terminology is not applicable. Please delete Section 4.2 and the indicated subsections and incorporate applicable portions under Section 5.0 (RI/FS Tasks) subheadings as follows:

Section 4.2 - Delete

Subsection 4.2.1 - As indicated by the final paragraph of this subsection, this task is inappropriate for use in characterizing and delineating wetland contamination. However, given the potential for natural attenuation of contaminants, infomation on sedimentation and subsidence rates may be retained for use in the evaluation of remedial alternatives. Regarding data collection for purposes of completing the RI, analyses for sediment total organic carbon and grain size should be added to Section 5.2.1 The collection of sediment samples from more than one depth may also be appropriate.

Subsection 4.2.2 - Combine this section with Section 5.2.1 (page 5-10). Also while data on the dominant animal species is important, relative abundance information (e.g. common, infrequently, rare) should be collected for the other animal species observed. Finally, clarify the difference between "relative abundance" and "abundance and diversity" (Section 5.2.1: page 5-4). Under which circumstances will each of these sampling methods be performed.

Section 4.2.3 - "changes in vegetative patterns and Species composition to demote ecological impact on a wetland" can be obtained within the scope of this investigation by examining historical aerial photographs (particularly infra-red) in conjunction with current information (species composition, abundance, diversity) collected during this study. Combine appropriate portions of this section with Section 5.2.1.

Section 4.2.4 - Combine appropriate portions of this section with Section 5.2.1 (page 5-4)

Section 4.2.5 - Combine appropriate portions of this Section with Sections 5.1.2 or 5.2.1. Also, the use of staff gauges and piezometers to groundwater discharge/recharge to wetlands during tidal cycles and seasons is good. However, specific locations for collecting this data must be proposed. Rain gauges should also be installed near wetlands, since precipitation data are necessary to determine the extent of recharge to ground water and wetlands.

Section 4.2.6 - Combine appropriate portions of this Section with Section 5.2.1 (pages 5-2 through 5-3).

Section 4.2.7 - Delete. The same basic information is contained in **Sections 4.1** (page **4-3) and 5.2.1** (pages **5-2 and 5-3).**

Section **4.2.8** - Combine **this** section with **Section 5.2.1** (page **5-1.**

Section **4.2.9** - Delete

Response

The EMAP approach has been deleted. See the response to comment 8 in the Common Site 40 and 42 USEPA comments.

Comment **25.** Page **4-11,** Section **4.3:**

The information **contained** in **this** section is overly general. **Please** provide wetland-specific sampling plans and/or strategies.

Response

With the limited knowledge currently available about the wetlands, it is not possible to outline which wetlands will **be sampled and the sampling locations. These** will **be outlined after *each* phase of the ecological assessment in a technical memorandum. See the response to comment 8 in the Common Site 40 and 42 USEPA comments.**

Comments **26.** Page **4-11, Section 4.4:**

A. **DQO** Level IV TCL/TAL **analyses** must **also** be **performed** for **surface** water samples.

B. Whenever possible, **detection limits** used in the chemical analysis of sediment samples **should be** sufficiently low that the **data** *can* be compared **to** the **NOAA** Effects Range-Low **and Effects** Range-Median values **used as** ecological sediment screening values by the **USEPA** Region IV Waste Management Division. Likewise, **detection limits** used in the chemical **analysis** of surface water samples should **be** sufficiently low **that the data** *can* **be** compared to the **Florida** Surface Water Standards and the ecological surface water screening values (including the Ambient Water **Quality** Criteria) **used** by the **USEPA Region** IV **Waste** Management Division.

Response

A. The **1987 manual** for the identification and delineation of jurisdictional wetlands **will** be **used.**

B. **The reassessment of the existing data and filling of the data gaps will be performed as part of Phase I of the ecological assessment. See the response to comment 8 in the Common Site 40 and 42 USEPA comments.**

Comment **29.** Page **4-13,** Section **4.5.2, Paragraph 1:**

As stated in Section **4.5.2,** the first goal of **"Step 2"** is **to perform** "extensive soil and water chemistry **analysis,** to establish background...and **to** identify the nature and magnitude of contamination...". **Step** 3 appears to repeat (and expand **upon) this task. Step** 3 **must** therefore be combined with **this** first ***goal*** of **Step 2.** The second goal of **Step 2,** (i.e., **"to ascertain** overall biological **quality",** should be broken out into **Step** 3, to be **performed** only upon the identification of contamination. **Step** 3, however, should be **performed** in conjunction with the determination of contaminant pathways and extent.

Response

The sampling scheme has been revised **into a three phased approach, as discussed in the meeting on May 12 and 13, 1993. See the response to comment 8 in the Common Site 40 and 42 USEPA** comments.

Comment 30. Pages **4-14** through **4-15, Section 4.5.4:**

A. While it is true that wetlands *can* **act as a sink** for contaminants, and **that** wetland vegetation *can* bioaccumulate **some contaminants,** not **all** dead wetland vegetation becomes **buried** in the wetland sediments. For example, in **an** estuarine wetland, dead vegetation in **the** form of detritus *can* be **transported** out of the wetland into the **estuary via** tidal action, serving **as** a potential food **source** for estuarine **animals. Clarify** this point.

B. The last paragraph contains a **good** observation regarding evaluation of the pros and **cons** of wetland remediation.

Response

A. Agreed. Dead wetland vegetation may be **transported** from the wetland by **tidal action.** The vegetation could **act as a** potential food **source.**

B. **Agreed.**

Comment 31. Page 5-1, Paragraph 1:

A. While it is understood that the "methods and procedures for ...site characterization tasks (will be) described in the SAP", this work plan must include more information on the proposed sampling design. For instance, although detailed field sampling methods and procedures will be contained in the SAP, the appropriate sections of the work plan (e.g. 5.2.1) must still include such information as:

1. the type of sampling equipment to be used

2. the timing of sampling events (e.g. relative to tides, etc.)

3. the coordination of soil/sediment, surface water and biota sampling for individual wetlands

B. Towards the end of this paragraph, please revise the phrase "health risk assessment" to read "human health risk assessment".

Response

A. Agreed. See the response to Comment 8 in the Common Site 40 and 42 USEPA comments for more detailed information on sample collection procedures, timing, and protocols.

B. Agreed. "Health risk assessment" has been changed to "human health risk assessment."

Comment 32. Page 5-2, Paragraph 1:

Please see comment 7.

Response

The 1987 manual for the identification and delineation of jurisdictional wetlands will be used.

Comment 33. Page 5-2, Section 5.1.3:

A. Please check the dictionary definition of *"cadastral"*. Its use in this context appears inappropriate.

B. The establishment of sampling grids or transects must be based upon known migration pathways from source areas into wetlands.

Response

A. Cadastral is defined for the purpose of this work plan as establishment of boundaries. The survey will be used to delineate the boundaries of the wetland and to accurately identify sample locations.

B. The revised three phases sampling approach bases the sampling locations on known or highly suspect migration pathways from source areas. See the response to comment 8 in the Common Site 40 and 42 USEPA comments.

Comment 34. Page 5-2, Section 5.2.1:

A. TCUTAL analyses must also be performed for any soil samples collected.

B. Total organic carbon and grain size analyses must be performed for sediment samples.

C. EPA recommends that sediment samples for chemical analysis be collected at both the 0-0.5 ft. interval and the 0.5-2.0 ft. interval.

Response

A. *Agreed.* TAL/TCL analyses will be performed on soil samples collected during Phase II. See the response to comment 8 in the Common Site 40 and 42 USEPA comments.

B. Physical parameter analysis for grain size and total organic carbon will be performed during Phase I of the investigation. See the response to comment 8 in the Common Site 40 and 42 USEPA comments.

C. As agreed by all parties during the meeting of May 12 and 13, 1993, sediment samples will be collected from 0 to 6 inches depth at all locations. If areas of significant contamination are encountered, additional samples will be collected from 0.5 to 2 feet.

Comment 35. Page 5-4, Paragraph 2:

A. The first line of this paragraph should be revised to read "benthic macroinvertebrate abundance and diversity".

B. How will the presence of "juvenile and adult commercially/recreationally important fish species" be determined? Shellfish species should be noted along with these fish species.

C. Include more information on how the abundance and diversity of plants and aquatic animals will be determined.

Response

A. **Agreed. The first line has been revised to read "benthic macroinvertebrate abundance and diversity."**

B. This **is no longer planned as part of the investigation.**

C. **Abundance and diversity of plants and aquatic animals will be determined in Phase IIB. See the response to comment 8 in the Common Site 40 and 42 USEPA comments.**

Comment 36. Page 5-6, final paragraph:

As discussed previously in this work plan (pages 3-11 through 3-12 the wetlands can serve not only as receptors of contaminants from source areas, but as actual contaminant sources. It is understood that the Feasibility Studies for the individual PSCs will focus on potential remedial alternatives for those sources and their contaminant transport mechanisms. However, please clarify that the FS for NAS Pensacola Wetlands should focus on potential remedial alternatives for the wetlands themselves.

Response

The FS for the NAS Pensacola wetlands will focus on potential remedial alternatives for the wetlands themselves.