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May 6, 1993

U.S. Environmental Protection Agency
Attn: Ms. Allison Drew
345 Courtland Street, N.E.
Atlanta, Georgia 30365

RE: Response to comments for Draft Work Plans: Sites 40, 41, and 42, NAS-Pensacola, Contract # N62467-89-D-0318/036

Dear Ms. Drew:

Please find enclosed a copy of the response to comments for the Work Plans on Site 40, 41, and 42: Naval Air Station Pensacola in Pensacola, Florida. We look forward to discussing them further at the meeting on May 12th and 13th in Atlanta. For the record, FDER did not have any comments on these Work Plans for Sites 40, 41, and 42.

If you should have any questions or need any additional information regarding the plans, please do not hesitate to call me.

Sincerely,
EnSafe\Allen & Hoshall

Henry H. Beiro
Task Order Manager

Enclosure
Response to Comments

cc: 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 "**Pensawla** 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 length 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 11 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. Cont minants 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 Gmnde) so that work can commence on at least a portion of the Operable Unit? An adequate schedule for this "re-evaluation" process must be 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 forjoint 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 contaminants 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 contaminants 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 surface 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 Operatine 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 (Le., 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 theadjacent surface water level of Bayou Grande...". **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.

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 I.

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 11 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 Pensacola to the City of Pensacola Main Street sewage treatment plant.

Response:

The City of Pensacola Main Street sewage treatment plant is approximately 3 miles northeast of NAS Pensacola. 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. "Sheman **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 side 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."