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NAS PENSACOLA
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DRAFT SAMPLING AND ANALYSIS PLAN ADDENDUM SITE 41 WITH TRANSMITTAL NAS
PENSACOLA FL
3/17/1998
ENSAFE/ALLEN AND HOSHALL



ENSAFE INC.

ENVIRONMENTAL AND MANAGEMENT CONSULTANTS

5724 Summer Trees Drive • Memphis, Tennessee 38134 • Telephone 901-372-7962 • Facsimile 901-372-2454 • www.ensafe.com

March 17, 1998

Commanding Officer
Attn: Mr. Bill Hill, Code 1851
SOUTHNAVFACENGCOM
P.O. Box 190010
North Charleston, South Carolina 29419-9010

Subject: Delivery of Report
CTO-036, Category IV

Reference: Contract # N62467-89-D-0318, CLEAN II

Dear Mr. Hill:

EnSafe Inc. is pleased to submit two copies of the Draft Sampling and Analysis Plan Addendum for Site 41, NAS Pensacola Wetlands at the Naval Air Station Pensacola in Pensacola, Florida. If you should have any questions or need any additional information regarding the document, please do not hesitate to call me.

Sincerely,

EnSafe Inc.

Allison L. Dennen
Task Order Manager

Enclosure: Draft Sampling and Analysis Plan Addendum, Site 41, NAS Pensacola

cc: Ms. Kimberly Reavis, Code 0233KR SOUTHNAVFACENGCOM without enclosure
EnSafe Inc. CTO 036 file without enclosure
EnSafe Inc. Pensacola file without enclosure
EnSafe Inc. Library without enclosure
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March 17, 1998

Jesse W. Rigby
125 West Romana Street, Suite 800
Pensacola, FL 32501

Re: Draft Sampling and Analysis Plan Addendum
Site 14, Naval Air Station Pensacola Addendum
Pensacola, Florida

Dear Ms. Minshew:

On behalf of the Navy, EnSafe/Allen & Hoshall is pleased to inform you that a copy of the Draft Sampling and Analysis Plan Addendum for Site 41, NAS Pensacola Wetlands has been placed in the RAB library at the Naval Air Station Pensacola. We look forward to hearing any comments you may have at the next RAB meeting. Please let me know if you have any questions or comments regarding the document.

Sincerely,

EnSafe Inc.

Allison L. Dennen
Task Order Manager

Enclosure

cc: Commander James Cruz without enclosure
Mr. Bill Hill, Code 1851 SOUTHNAVFACENGCOM without enclosure
Mr. Harry White, NAS Pensacola without enclosure
Mr. John Early without enclosure
Mr. Jerry Westmoreland without enclosure
Ms. Lisa Minshew without enclosure
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March 17, 1998

Florida Department of Environmental Protection
Attn: John Mitchell
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Draft Sampling and Analysis Plan Addendum,
Site 41, NAS Pensacola Wetlands, NAS Pensacola
Contract # N62467-89-D-0318/036

Dear Mr. Mitchell:

On behalf of the Navy, EnSafe Inc. is pleased to submit two copies of the Draft Sampling and Analysis Plan Addendum for Site 41, NAS Pensacola Wetlands at the Naval Air Station Pensacola in Pensacola, Florida. If you should have any questions or need any additional information regarding the document, please do not hesitate to call me.

Sincerely,

EnSafe Inc.

Allison L. Dennen
Task Order Manager

Enclosure

cc: Patricia Kingcade, FDEP without enclosure
Tom Moody, FDEP – NW District without enclosure
Bill Hill, Code 1851 SOUTHNAVFACENGCOM without enclosure
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March 17, 1998

NAS Pensacola
Attn: Ms. Judeth Walker
Building 633
190 Radford Blvd.
Pensacola, Florida 32508-5217

Re: Draft Sampling and Analysis Plan Addendum
Site 41, NAS Penacola Wetlands
Pensacola, Florida

Dear Ms. Walker:

On behalf of the Navy, EnSafe Inc. is pleased to submit the Draft Sampling and Analysis Plan Addendum for Site 41, NAS Pensacola Wetlands for the NAS Pensacola Restoration Advisory Board library. Please let me know if you have any questions or comments regarding the report.

Sincerely,

EnSafe Inc.

Allison L. Dennen
Task Order Manager

Enclosure

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5724 Summer Trees Drive • Memphis, Tennessee 38134 • Telephone 901-372-7962 • Facsimile 901-372-2454 • www.ensafe.com

March 17, 1998

U.S. Environmental Protection Agency
Attn: Ms. Gena Townsend
Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, Georgia 30303-3104

Re: Draft Sampling and Analysis Plan Addendum
Site 41, NAS Pensacola Wetlands, NAS Pensacola
Contract # N62467-89-D-0318/036

Dear Ms. Townsend:

On behalf of the Navy, EnSafe Inc. is pleased to submit three copies of the Draft Sampling and Analysis Plan Addendum for Site 41, NAS Pensacola Wetlands at the Naval Air Station Pensacola in Pensacola, Florida. If you should have any questions or need any additional information regarding the document, please do not hesitate to call me.

Sincerely,

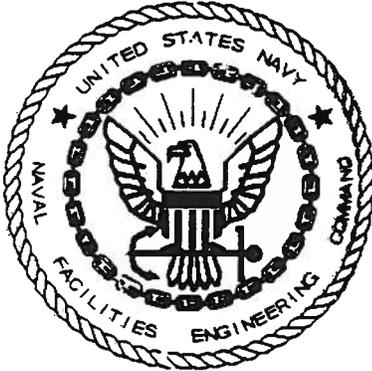
EnSafe Inc.

Allison L. Dennen
Task Order Manager

Enclosure

cc: Bill Hill, Code 1851 SOUTHNAVFACENGCOM without enclosure
Ron Joyner, NAS Pensacola – 2 copies
Tom Dillon, NOAA – 1 copy
EnSafe Inc. CTO 036 file without enclosure
EnSafe Inc. file – 1 copy
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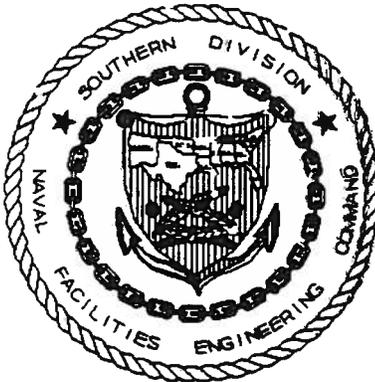
**COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY
SAMPLING AND ANALYSIS PLAN FOR
SITE 41 (Wetlands, 3, 5A, 18, and 64) SEDIMENT CORING
NAVAL AIR STATION PENSACOLA, FLORIDA**



**SOUTHNAVFACENGCOM
CONTRACT NUMBER:
N62467-89-D-0318
CTO-0036**

Prepared for:

**COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN)
NAVAL SUPPORT ACTIVITY
NAVAL AIR STATION
PENSACOLA, FLORIDA**



Prepared by:

**EnSafe Inc.
5724 Summer Trees Drive
Memphis Tennessee 38134
(901) 372-7962**

March 18, 1998

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Field	Group	Sub-Group											

19. Abstract

This sampling and analysis plan describes the objectives and scope of sediment coring for specific wetlands in the Site 41 investigation. Wetlands 3, 5A, 18, and 64 contained contamination in surficial sediment samples collected from 0 to 6 inches depth. The purpose of the sediment coring is to support the volume estimates in the feasibility study by documenting the depth of contaminated sediment. The objective will be to assess the thickness of contaminated sediment. Field activities to be performed during the site investigation include locating core sampling locations via a global positioning system, advancing soil cores, collecting sediment samples for laboratory analysis, and describing the sediment lithology encountered. Additional sediment will be sampled at lateral locations during the coring process for visual description to determine fine-grained sediment thickness. Chemical analysis will be performed by a Naval Facilities Engineering Service Center-approved laboratory using Contract Laboratory Program protocol. This plan, in conjunction with the comprehensive sampling and analysis plan, will provide guidelines for sampling and analytical techniques to be used during the investigation and outline proper documentation procedures for the investigation.

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<p>22a. Name of Responsible Individual William Hill</p>	<p>22b. Telephone (Include Area Code) (803) 820-7324</p>	<p>22c. Office Symbol</p>

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List of Abbreviations

The following list contains many of the acronyms, abbreviations, and units of measure used in this report.

CLEAN	Comprehensive Long-Term Environmental Action Navy
CLP	Contract Laboratory Program
CSAP	Comprehensive Sampling and Analysis Plan
E/A&H	EnSafe/Allen & Hoshall
FDEP	Florida Department of Environmental Protection
GPS	global positioning system
NAS Pensacola	Naval Air Station Pensacola
SAP	Sampling and Analysis Plan
SOP/QAM	Standard Operating Procedures and Quality Assurance Manual
SOUTHFAVFACENCOM	Southern Division, U.S. Navy, Naval Facilities Engineering Command
TAL	Target Analyte List
TCL	Target Compound List
USEPA	United States Environmental Protection Agency

EXECUTIVE SUMMARY

This sampling and analysis plan describes the objectives and scope of sediment coring for specific wetlands in the Site 41 investigation. Wetlands 3, 5A, 18, and 64 contained contamination in surficial sediment samples collected from 0 to 6 inches depth. The purpose of the sediment coring is to support the volume estimates in the feasibility study by documenting the depth of contaminated sediment. The objective will be to assess the thickness of contaminated sediment. Field activities to be performed during the site investigation include locating core sampling locations via a global positioning system, advancing soil cores, collecting sediment samples for laboratory analysis, and describing the sediment lithology encountered. Additional sediment will be sampled at lateral locations during the coring process for visual description to determine the fine-grained sediment thickness. Chemical analysis will be performed by a Naval Facilities Engineering Service Center-approved laboratory using Contract Laboratory Program protocol. This plan, in conjunction with the comprehensive sampling and analysis plan, will provide guidelines for sampling and analytical techniques to be used during the investigation and outline proper documentation procedures for the investigation.

1.0 INTRODUCTION

As part of the U.S. Navy Comprehensive Long-Term Environmental Action Navy Program, a site investigation is underway by EnSafe Inc. at Site 41 (Wetlands) at NAS Pensacola. This site is described under the remedial investigation/feasibility study Category IV of the *1998 Site Management Plan of the Installation Restoration Program for the Naval Air Station Pensacola, Pensacola, Florida* (Southern Division, U.S. Navy, Naval Facilities Engineering Command [SOUTHNAVFACENCOM] 1997). Site 41 includes all wetlands on NAS Pensacola. This Sampling and Analysis Plan has been developed by EnSafe, as directed by SOUTHNAVFACENCOM under Contract No. N62467-89-D-0318/0036.

Primary references for this SAP include the *Comprehensive Sampling and Analysis Plan for Naval Air Station Pensacola* (CSAP [E/A&H 1995]) and the United States Environmental Protection Agency (USEPA) Region IV *Standard Operating Procedures and Quality Assurance Manual* (SOP/QAM), 1996. This field work will be conducted in accordance with the SOP/QAM and CSAP to assess the depth of sediment contamination within selected wetlands. Field investigations will include collecting sediment cores, locating cores via global positioning system (GPS), and collecting sediment samples for chemical analysis. Additional sediment sampling and mapping will be performed to evaluate the thickness of the fine-grained sediment.

Chemical analysis will be performed by a laboratory approved by the Naval Facilities Engineering Service Center using Contract Laboratory Program (CLP) protocol. Field sampling, analytical methods, and reporting will be conducted at USEPA CLP Level IV protocol. Upon completion of the field sampling and laboratory analysis, the activities and results of the investigation will be summarized for the Navy, USEPA, and Florida Department of Environmental Protection (FDEP).

2.0 BACKGROUND INFORMATION

2.1 Physical Setting

Site 41 encompasses approximately 81 wetlands or wetland complexes, throughout the base. Palustrine forested wetlands, palustrine scrub-shrub wetlands, palustrine emergent wetlands, and combinations grow inland at NAS Pensacola. Shoreline estuarine emergent wetlands and estuarine aquatic beds are in shoreline areas.

2.2 Wetlands at NAS Pensacola

Most of the NAS Pensacola wetlands are in the activity's western portion. Heavily forested undeveloped or marginally altered zones are west of Sherman Field in an area characterized as palustrine forested wetlands, or forested wetlands mixed with scrub-shrub vegetation. Also west of Forrest Sherman Field, heavily altered areas have been cleared of trees and are dominated solely by scrub-shrub vegetation, particularly along runway over-run areas. Many of these altered areas appear to be dry, but contain common wetland plant species. Portions of the forested and scrub-shrub areas have standing water, saturated soil, and accommodate wetland plant species. Standing water or saturated soil in these areas support emergent wetland plant species; some are considered threatened. Several drainage ditches in the area that support wetland species drain surface runoff from the airfield area into either Bayou Grande or the Intracoastal Waterway/Pensacola Bay.

Additional palustrine wetlands, as well as estuarine wetlands and aquatic beds, are present in the shoreline areas south and southwest of Forrest Sherman Field. Estuarine emergent wetlands are present in the inlets off the Intercoastal Waterway/Pensacola Bay, with palustrine emergent species in the more brackish upper-water reaches. Beds of estuarine submerged aquatic plants grow in the larger coves and immediate offshore areas. Areas of saturated soil inland from the shoreline accommodate palustrine forested and scrub-shrub wetlands, sometimes mixed with emergent plants. Standing water in the same area supports trees, shrubs, and emergent/floating leaf

vegetation. Small inlets to Bayou Grande north of Forrest Sherman Field support estuarine emergent wetlands. Many of the estuarine emergent wetlands are fed by palustrine wetlands, especially where the inlet is fed by drainage ditches or intermittent streams.

The wetlands to be cored are 3, 5A, 18, and 64. Wetland 3 is a palustrine emergent complex spring-fed by drainage and seeps from Site 1. Wetland 5A is palustrine emergent complex receiving drainage from the golf course and groundwater from springs and seeps. Wetland 18 begins as a narrow freshwater seep emerging from easterly adjacent Site 1. To the west, Wetland 18 widens and transitions into an estuarine wetland influenced by westwardly adjacent Bayou Grande. Wetland 64 is a tributary to the Bayou Grande estuary fed by a channelized drainage stream with emergent wetland plants. Surface runoff from the area surrounding Chevalier Field flow into the Yacht Basin and Wetland 64. The depth of fine-grained sedimentation in each of these wetlands is unknown.

As presented in the approved *Site 41 Sampling and Analysis Plan Addendum* dated September 18, 1997, wetlands at NAS Pensacola have been grouped based on similar physical characteristics. Contaminated sediment volumes for these four wetlands will be used to estimate volumes for other wetlands of similar type.

3.0 FIELD SAMPLING PLAN

3.1 Sampling Objectives

The objectives of the sediment coring are to:

- Locate selected previous surface sediment sample locations for coring
- Assess the depth of contaminated sediments

- Provide data to determine the contaminated sediment volume for use in the feasibility study
- Provide data to determine the approximate thickness of fine-grained sediment in each subject wetland

3.2 Sampling and Analytical Requirements

Cores samples will be collected at previous surface sediment sampling locations where recent RI analytical results indicate impact. The sampling and analytical requirements for the sediment coring are summarized in Table 3-1. Previous results indicate volatile organic compounds (VOCs) are not a significant contributor to toxicity. Therefore, the full scan of analysis, less VOCs, is recommended for the core samples. The field investigation also proposes to generally determine the thickness of fine-grained sedimentation in these wetlands by visual observation of samples and/or bottom probing to firm sandy substrate.

Table 3-1
Sediment Coring Analytical Requirements

Wetland Number	Sampling Location	Estimated Samples*	Sample Suite
Wetland 3	01, 02, 07, 04	12	SVOC, Pest/PCB, Metals, TOC, Grain Size
Wetland 5A	A01, A02, A04, A05	12	SVOC, Pest/PCB, Metals, TOC, Grain Size
Wetland 18	A1, A2, B1	9	SVOC, Pest/PCB, Metals, TOC, Grain Size
Wetland 64	02, 06, 08, 11, 16, 20, 22	21	SVOC, Pest/PCB, Metals, TOC, Grain Size

Notes:

- * = Samples number estimates do not include QA/QC samples. Duplicates and matrix spike/matrix spike duplicates will be collected at a frequency of 5 percent.
- SVOC = TCL Semivolatile organic compounds
- Pest/PCB = TCL Pesticide and polychlorinated biphenyls
- Metals = TAL inorganics
- TOC = Total organic carbon
- Grain size = Grain size to include a sieve analysis and a hydrometer test (two tests).

Changes to the field sampling plan requires authorization from the Navy via submission of a field change request form, with notification to the USEPA and FDEP.

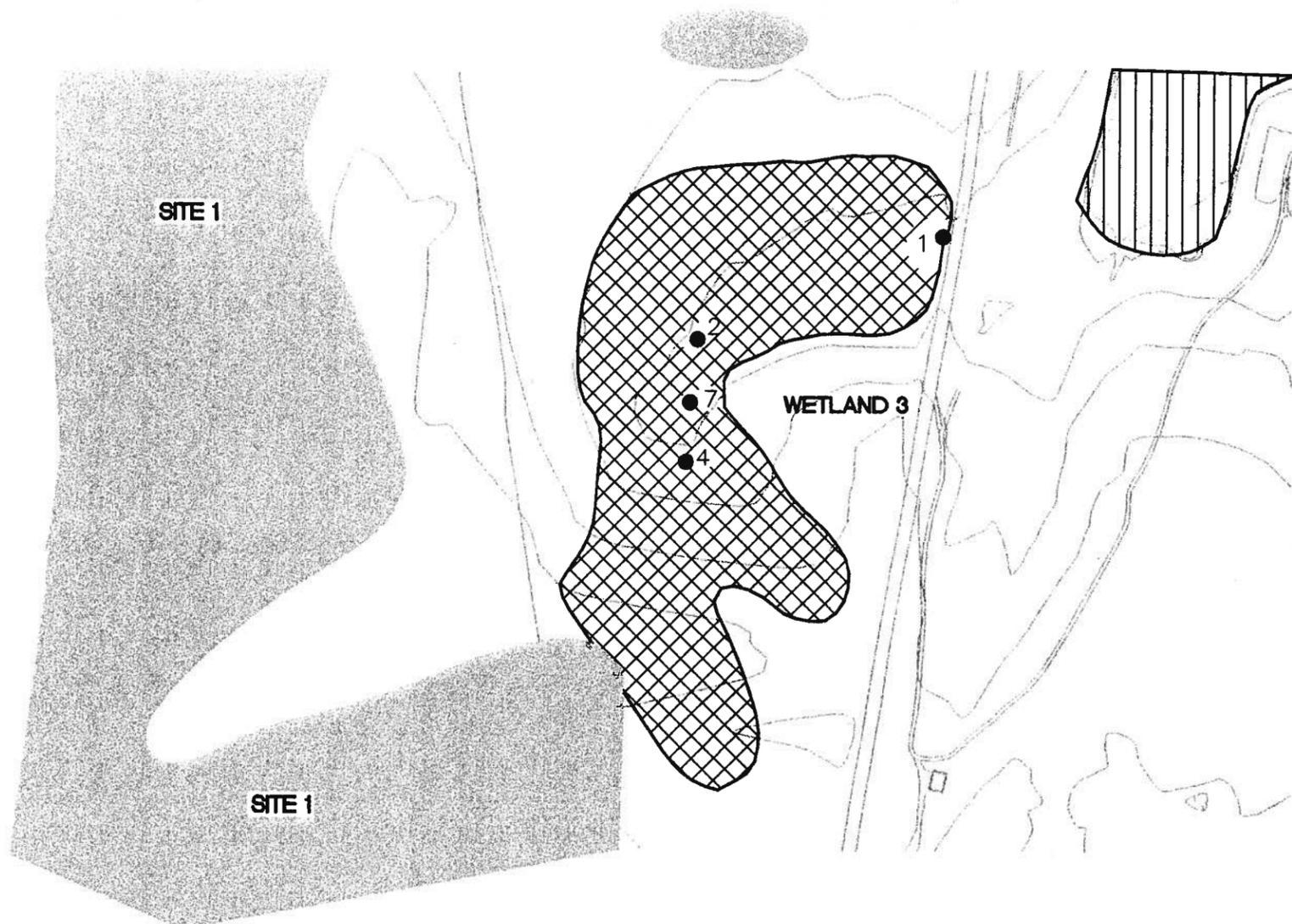
The USEPA CLP Target Analyte List (TAL) and Target Compound List (TCL), less VOCs, will be used to provide a full spectrum of legally defensible contaminant analysis. As specified in the CSAP, field quality control samples will include matrix spike/matrix spike duplicates, field blanks, and field duplicate samples.

3.3 Sample Locations and Rationale

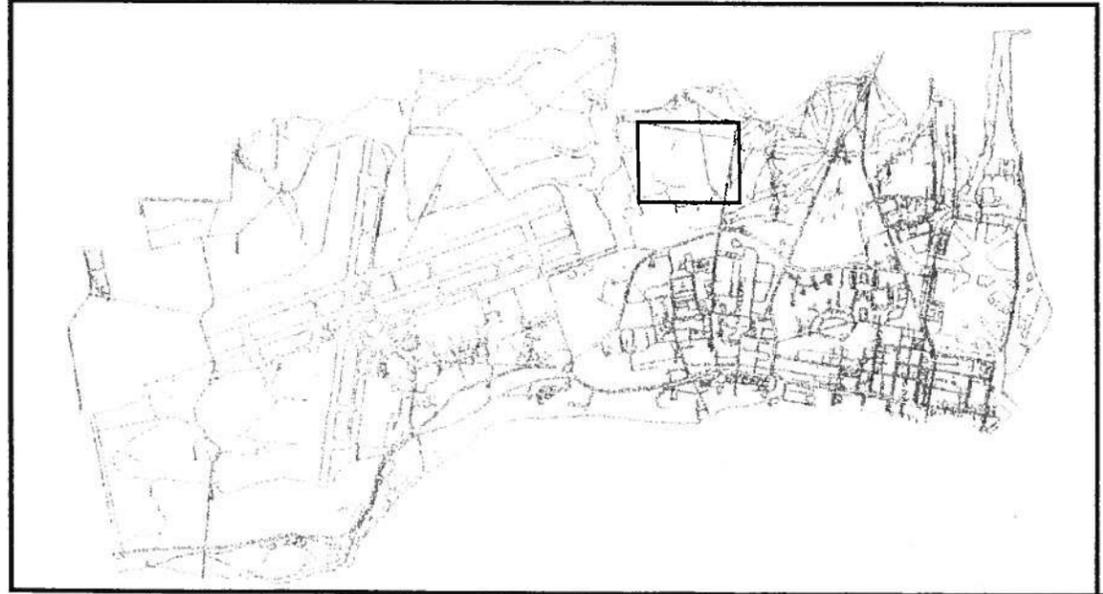
The sampling program and any proposed modifications to the CSAP are described in this section. Cores samples will be collected at previous surface sediment sampling locations where recent RI analytical results indicate impact. Previous sample locations will be relocated via the surveying techniques described in Section 3.5. Figures 3-1 through 3-4 depict the proposed coring locations for each wetland. The coring's objective is to assess the vertical extent of sediment contamination previously detected. The fine-grained sediment column will be sampled to firm sandy substrate, or a maximum depth of 6 feet below top of sediment, to determine the contaminated sediment volume.

3.4 Sampling Procedures

Sampling procedures are presented in Sections 4 through 7 of the CSAP; however to collect soft sediment cores, the sampling procedures used may be modified to ensure the best core recovery. All sediment cores will be collected by either a piston corer, vibracore, or other coring device that can capture a continuous, undisturbed sediment column six feet long. The full vertical column of fine-grained sediment will be collected at each location to the depth of firm sandy substrate or to a maximum thickness of 6 feet, whichever is less. Each core will be divided into two to three samples depending upon core length. The uppermost 0 to 1-foot interval will be collected as a distinct sample at all locations. Cores 2 feet or less in length will be divided into two samples; the upper 1 foot and the remaining lower interval. Cores between 2 feet and 6 feet long will be divided into three samples. The first sample will be the upper 1-foot interval; the remaining core length will be divided into equal halves and represent the middle and lower interval. All sample

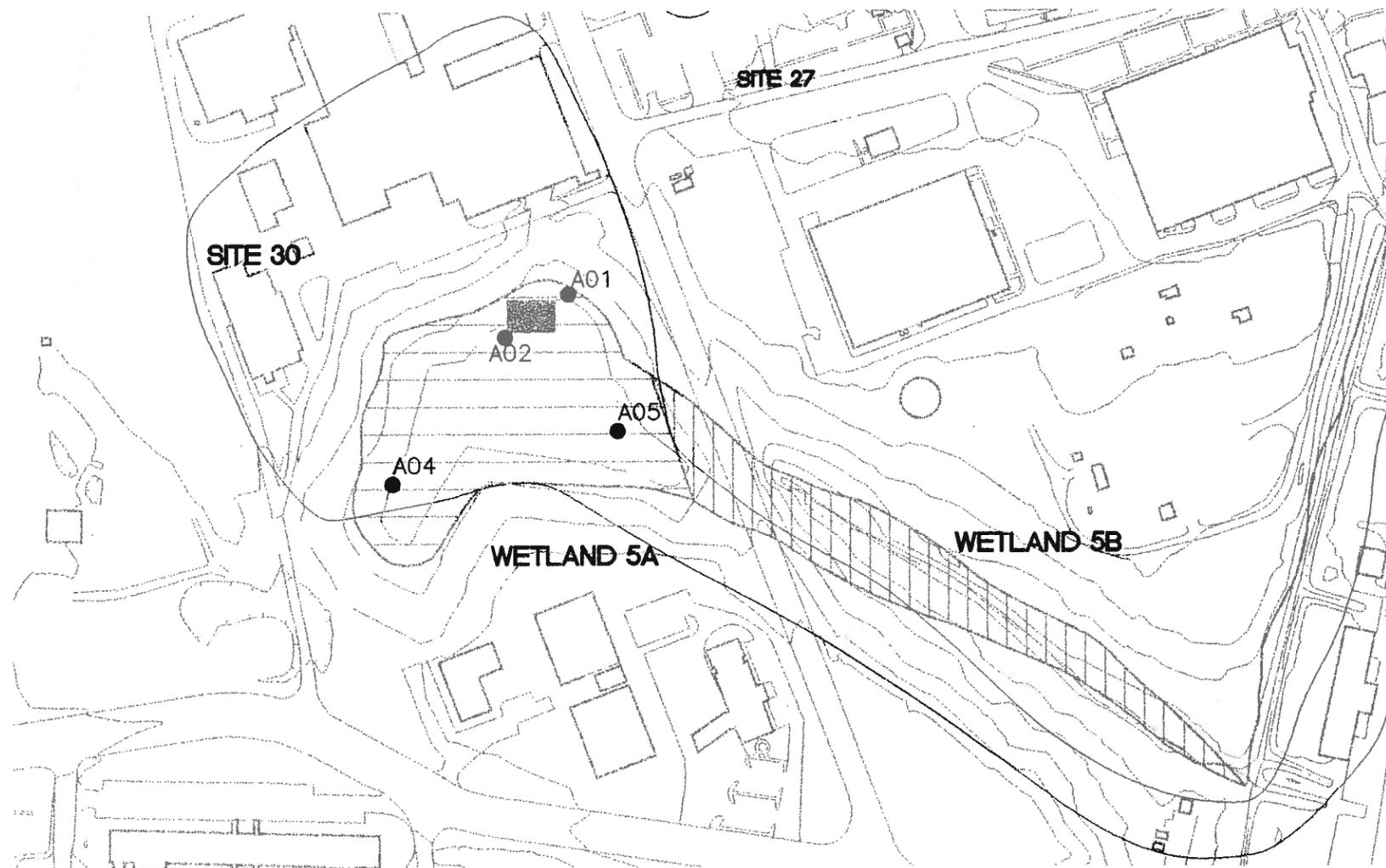


- LEGEND
- - SAMPLE LOCATION
 - ▣ (cross-hatched) - PALUSTRINE SCRUB SHRUB/EMERGENT
 - ▣ (vertical lines) - PALUSTRINE EMERGENT
 - ▣ (stippled) - SITE AREA
 - - SHORELINE
 - == - ROADS



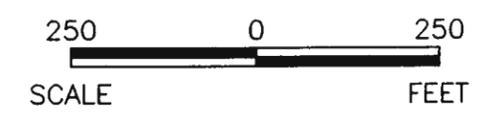

 SITE 41
 SEDIMENT CORING SAP
 NAVAL AIR STATION
 PENSACOLA
 PENSACOLA, FLORIDA

FIGURE 3-1
 PROPOSED CORE
 SAMPLING LOCATIONS
 WETLAND 3
 DWG DATE:03/17/98 DWG NAME:0036M006



LEGEND

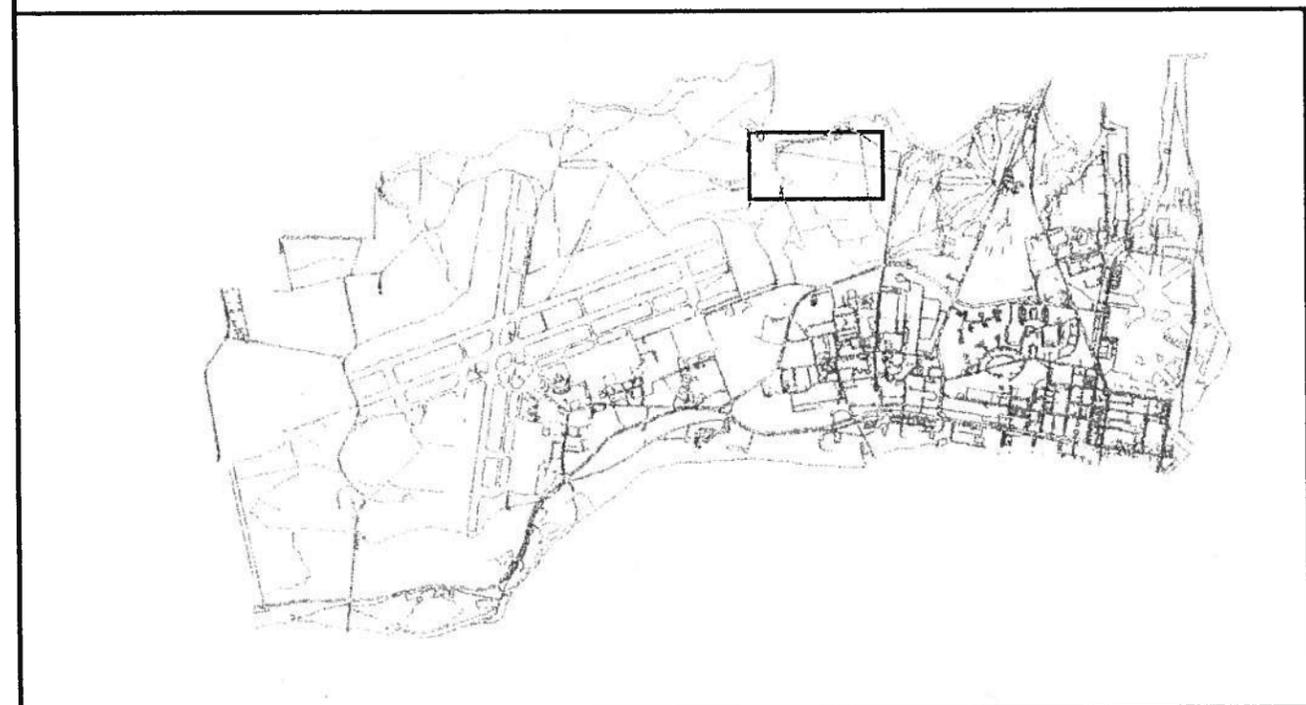
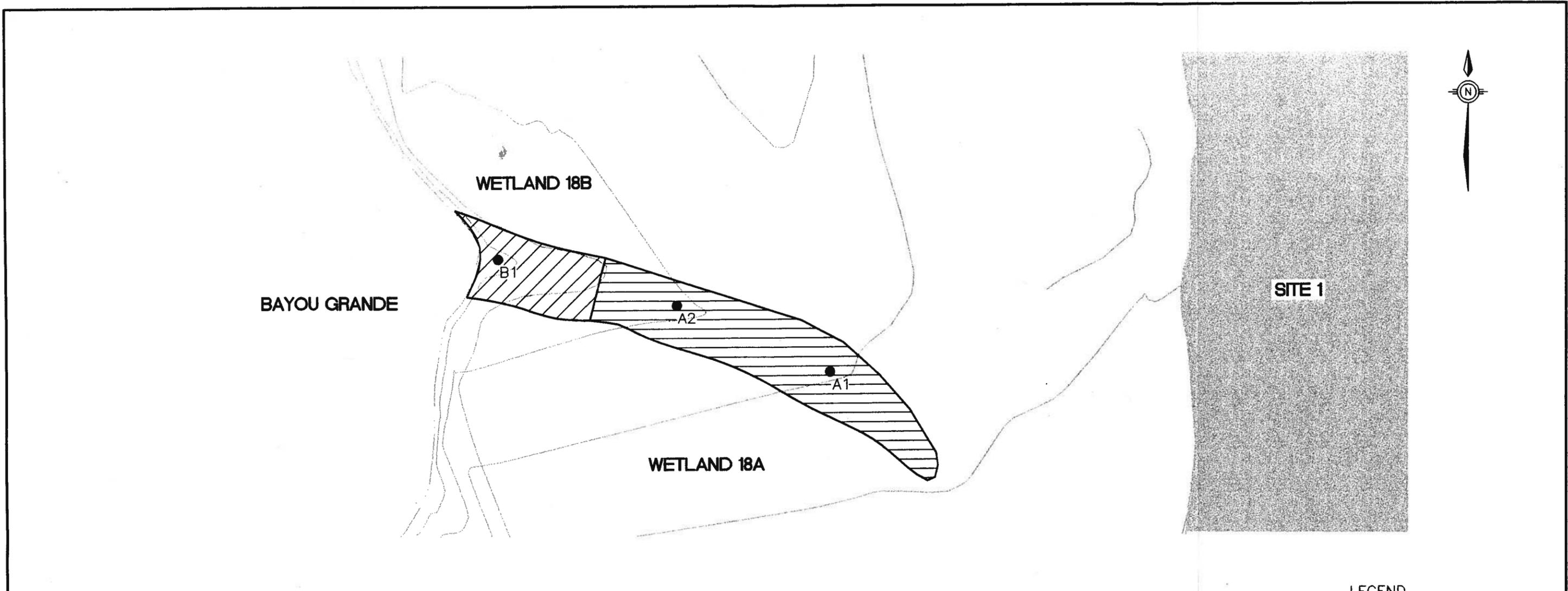
- - SAMPLE LOCATIONS
-  - PALUSTRINE FORESTED
-  - PALUSTRINE EMERGENT
-  - APPROXIMATE LOCATION OF FORMER WASTE-RECEIVING STRUCTURE
- - SHORELINE
- == - ROADS



SITE 41
SEDIMENT CORING SAP
NAVAL AIR STATION
PENSACOLA
PENSACOLA, FLORIDA

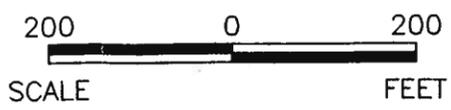
FIGURE 3-2
PROPOSED CORE
SAMPLING LOCATIONS
WETLAND 5A

DWG DATE:03/16/98 DWG NAME:0036M005



LEGEND

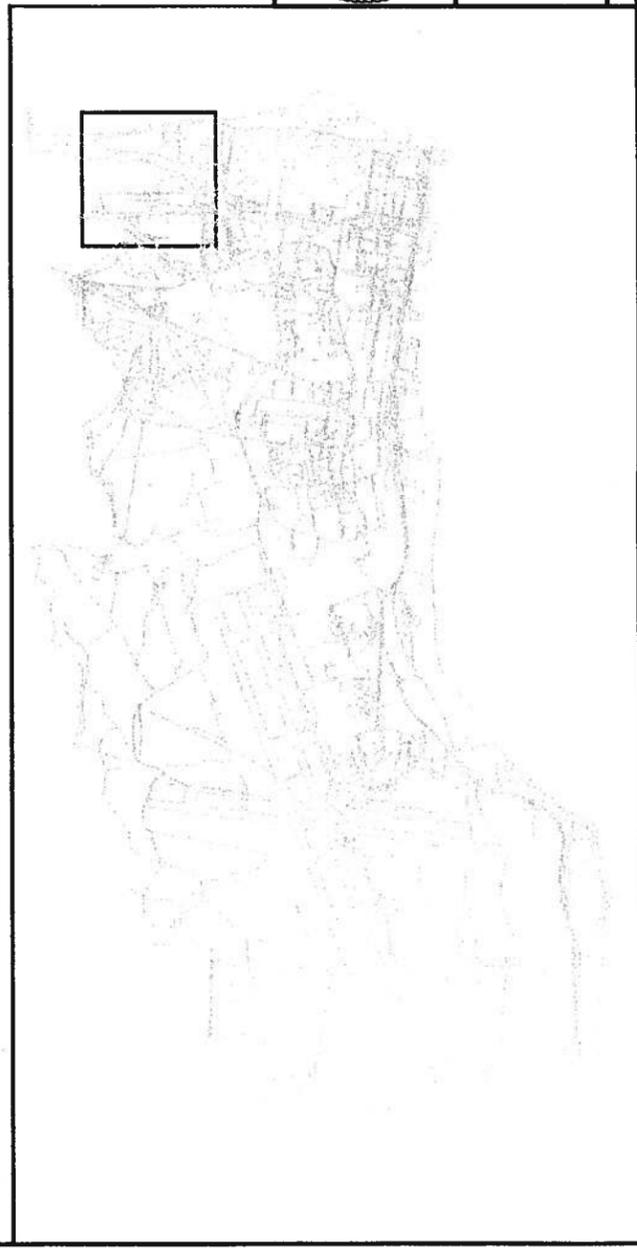
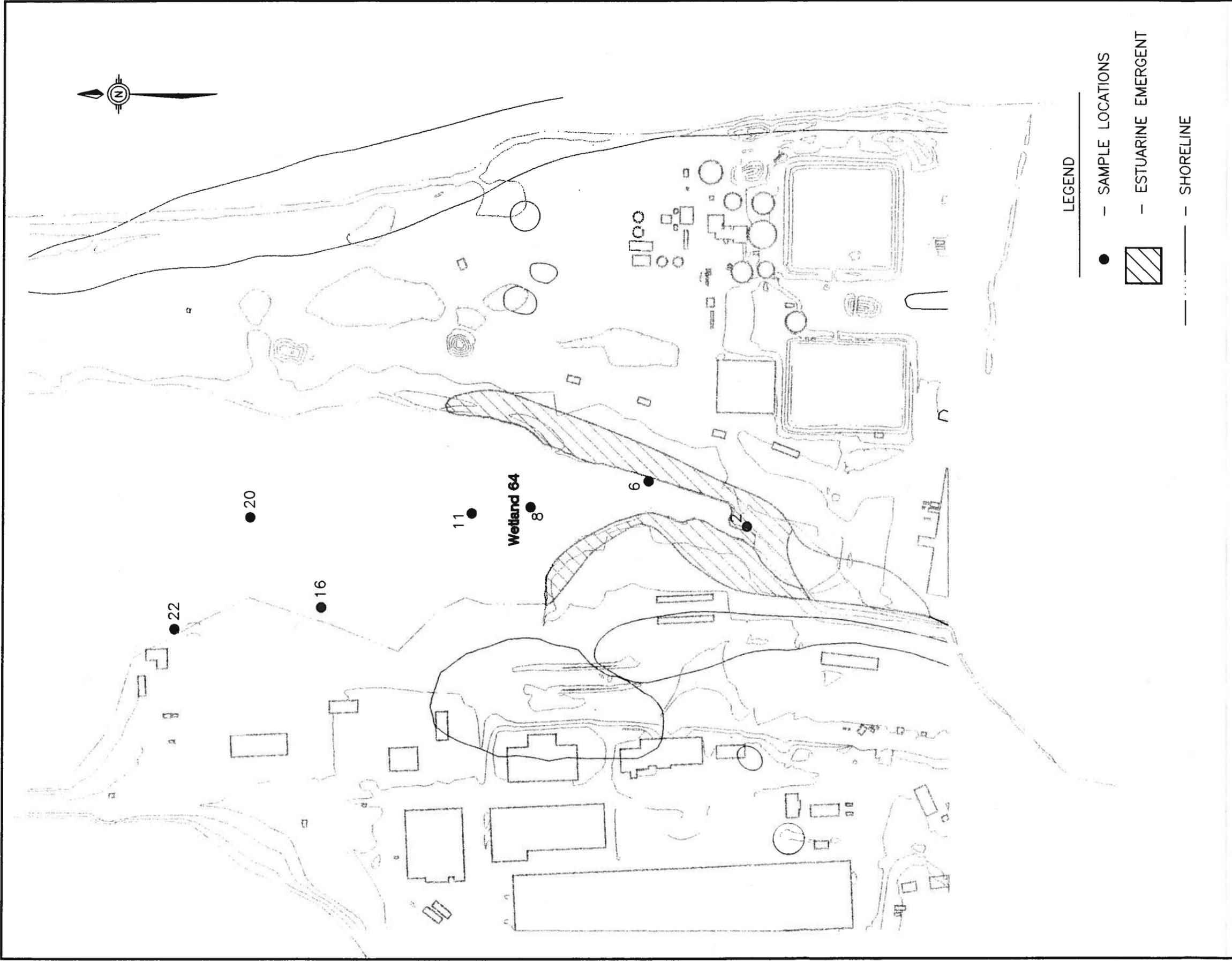
- - SAMPLE LOCATIONS
-  - ESTUARINE EMERGENT
-  - PALUSTRINE FORESTED
-  - SITE AREA
- — — — — - SHORELINE
- — — — — - ROADS



SITE 41
SEDIMENT CORING SAP
NAVAL AIR STATION
PENSACOLA
PENSACOLA, FLORIDA

FIGURE 3-3
PROPOSED CORE
SAMPLING LOCATIONS
WETLAND 18

DWG DATE: 03/17/98 DWG NAME: 0036M004





 SITE 41
 SEDIMENT CORING SAP
 NAVAL AIR STATION
 PENSACOLA, FLORIDA

FIGURE 3-4
 PROPOSED CORE
 SAMPLING LOCATIONS
 WETLAND 64

intervals will be composited for laboratory analysis. Upon successful retrieval, the core will be described by the site geologist in accordance with Section 4 of the CSAP.

Additional sampling and/or bottom probing will be performed to generally determine thickness of the fine-grained sediment thickness across each wetland. Samples collected for this purpose will only be visually described and will not be submitted for analysis. Sampling and/or probing will be performed with sufficient frequency and areal coverage for interpolation and development of a general soft-sediment thickness profile in each respective wetland. The resolution of sediment thickness measurements will be rounded to the closest .5 foot.

3.5 Geodetic Survey

A geodetic survey will be performed using GPS surveying equipment, in accordance with manufacturer's specifications. The GPS survey measurements will be collected to relocate the previous sediment sample locations and document the coring locations, and to reference the sediment thickness information for soft-sediment profiling.

3.6 Decontamination

Decontamination procedures will be performed in accordance with Section 11 of the CSAP with one exception; no isopropyl alcohol will be used.

3.7 Investigation-Derived Wastes

No investigation-derived wastes are anticipated. However should investigation-derived wastes be generated, handling will be in accordance with Section 13 of the CSAP.

3.8 Field Quality Assurance/Quality Control

Field quality assurance/quality control samples will be collected in accordance with the frequency presented in Table 15-1 of the CSAP. Procedures will follow Section 15.2 of the CSAP.

4.0 REPORTING

Upon completion of the field sampling and laboratory analysis, the activities and results of sediment coring will be summarized for the Navy, USEPA, and FDEP. In addition, this information will be provided in the Site 41 feasibility study.

5.0 QUALITY ASSURANCE PLAN

The quality assurance plan presented in Section 15 of the CSAP will be followed during the field investigation with one exception. The USEPA Standard Operating Procedures and Quality Assurance Manual has been updated since 1991. The most current edition is USEPA (1996).

6.0 DATA MANAGEMENT PLAN

The data management plan presented in Section 14 of the CSAP will be followed during the field investigation.

7.0 REFERENCES

EnSafe/Allen & Hoshall. (1995). *Comprehensive Sampling and Analysis Plan For Naval Air Station Pensacola, Pensacola, Florida — Final*. EnSafe/Allen & Hoshall: Memphis, Tennessee.

Southern Division Engineering Command Installation Restoration. (1997) *Laboratory Quality Assurance Guide*, Southern Division Engineering Command, Charleston, SC.

U.S. Environmental Protection Agency. (1996). *Environmental Investigations Standard Operating Procedures and Quality Assurance Manual*, U.S. Environmental Protection Agency, Region IV: Athens, Georgia.

8.0 FLORIDA PROFESSIONAL GEOLOGIST SEAL

I have read and approved this sampling and analysis plan for the Site 41 (Wetlands 3, 5A, 18, and 64) sediment coring and seal it in accordance with Chapter 492 of the Florida Statutes. In sealing this document, I certify the geological information contained in it is true to the best of my knowledge and the geological methods and procedures included in this plan are consistent with currently accepted geological practices.

Name: Jeffrey B. Lunceford
License Number: 1932
State: Florida
Expiration Date: July 31, 1998

Signature

Date