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FINAL REMOVAL ACTION W ____ ____.
FOR NAVAL AIR STATION PENSACOLA
SITE 30, WETLAND 5A
PENSACOLA, FLORIDA

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NAS PENSACOLA
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Prepared for:

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

CONTRACT N62467-89-0318/CTO-072

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19. Abstract

This work plan details the removal of e steel waste-receiving structure in Wetland 5A, which ir located south and downgradient of Buildings 649 and 755 (Site 30). Wetland 5A is the headwater of a small creek flowing southeast, crossing under Murray Road, and intersecting Wetland 6 (a north-south oriented drainage ditch). The drainage then flowr north past Chevalier Field to Bayou Grande, where it discharges into the Yacht Basin via Wetland 7. The waste-receiving structure is cylindrical, approximately 60 inches in diameter, at least 7 feet deep, and is situated in the northcentral portion of the wetland approximately 20 feet oouth of the north shoreline. Several pipes run along the ground surface from the north toward the structure.

According to historical information, the waste-receiving structure may have received plating wastes generated from Buildings 649 and 755 during the 1940s through the 1970s. Tanks containing solutions of tin, cadmium, cyanide, chromate, nickel, silver, lead, tin, and other metals; 1,1,1-trichloroethylene (TCE), phosphoric acid, caustics, potassium permanganate, and degreasers were reportedly dumped monthly or less frequently into a "ditch" east of the buildings (which would have drained into the wetland). Pleting operations in both buildings ceased in the 1970s.

Two previous studies by Geraghty and Miller (G&M) and Ecology and Environment, Inc. (E&E) indicated elevated metal concentrations in soil, groundwater, sediment, and surface water samples collected at various locations in Wetland 5A. Total recoverable petroleum hydrocarbons (TRPHs), polyaromatic hydrocarbons (PAHs), 1,1,1 trichloroethane, and phenols were detected in select sediment and soil samples. Groundwater samples indicated elevated metals concentrations. Neither the G&M or the E&E study identified the waste-receiving structure.

The United States Environmental Protection Agency (USEPA), Region IV, Environmentel Services Division (ESD), Environmental Compliance Branch (ECB), Hazardous Waste Section (HWS) identified the waste-receiving structure's presence during their July 1992 field investigation. USEPA collected one sediment sample and one surface water sample adjacent to the structura, and one sediment samples from within it. USEPA described the sediment sample (SD-004-05) from within the structure as "heavily contaminated", with high metals concentrations, semivolatiles, and volatiles (including vinyl chloride) identified. The sediment sample next to the structure had elevated metals, and detections of various inorganics, pesticides, PCBs, and chloroform. The sediment sample had an indeterminate amount of "oil". The surface water sample had metals detected at relatively low concentrations.

E/A&H conducted field activities in Wetland 5A during the later half of 1993. This included preliminary reconnaissance, a habitat and biota survey. and sediment sampling in and surrounding the waste-receiving structure. The habitat and biota survey found that the wetland's hydrology is controlled by two active beaver dams, resulting in the majority of the wetland being submerged. Several broken pipes (metal and terra cotta) appeared to lead from an upslope direction (Buildings 649 and 755) toward the structure. Probing with metal rods did not indicate the presence of any openings within tha structure. The field team noted a petroleum odor and a sheen on the water's surface within the structure. Agitation of the water and sludge within the structure resulted in the formation of a 1/4-inch thick immiscible floating layer. E/A&H collected four sediment oamples; one from inside the structure and three adjacent to it. The sediment samples had elevated metals, semivolatiles, and volatiles (including vinyl chloride); and benzene, toluene, ethylbenzene, and xylenes (BTEX]) concentrations. PCBs as Arochlor 1260 and a trace of pesticides were present.

The removal action goal is to mitigate potential risk to human health and the environment by removing the structure's contents, excavating and disposing the structure, and potentially removing and disposing of contaminated soil in its vicinity. This work plan includes a detailed scope of work for removal activities, a detailed sampling and analysis plan (SAP), and a site-specific health and safety plan (HASP). The Comprehensive Sampling and Analysis Plan (CSAP) provides overall guidance on sampling end analytical techniques to be used during the removal action.

The removal action will consist of the following activities:

1. Planning field activities, scheduling personnel and equipment, and reviewing the applicable portions of the Comprehensive Health and Safety Plan (CHASP), the Comprehensive Sampling and Analysis Plan (CSAP), the site-specific HASP, and the site-specific SAP with field personnel.

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19. Abstract (continued)

2. Collecting three surface water samples from the wetland's southeast portion for analytical testing to provide pre-removal, during removal, and post-removal water quality concentrations (pro-removal).

3. Constructing a temporary road (including clearing brush and saplings), an upper and lower staging platform, a decontamination pad, and a bermed area on which to place the excavated structure and soil.

4. Partially draining the wetland (or a portion of it) and constructing a silt fence between the waste-receiving structure and the beaver lodge and dams.

5. Remove and containerize the liquid and sludge within the Structure for subsequent disposal by the PWC; then remove, destroy, and dispose of the waste-receiving structure.

6. Collect sediment from the excavated area, backfill, and drummed soil for analytical testing and waste-characterization.

7. Backfill the excavated area, remove the temporary road, remove the staging areas, replant vegetation, and reflood the wetland.

8. Assist PWC in coordinating waste disposal (soil, sludge, water, decontamination fluids, etc.) resulting from field activities.

9. Prepare a Removal Action Report including a summary of the field activities and the results of analytical testing.

E/A&H anticipate that the NAS Pensacola Public Works Center (PWC) will provide the manpowar, equipment, and materials necessary to construct road and staging areas, to remove the structure's contents (liquid and sludge), to remova and dispose of the structure, to excavate soil, and to backfill. E/A&H will assist the PWC as necessary in scheduling and implementing field activities, overseeing field activities, obtaining equipment and supplies, and attending to health and safety concerns. E/A&H will administer the HASP to onsite field personnel; provide field monitoring equipment and conduct air monitoring; collect surfaca water samples, composite soil samples, and waste characterization samples; and assist PWC personnel with coordinating the disposal of liquid, sludge, soil, and construction debris field activities generate.

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List of Acronyms

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

µg/kg	Micrograms per kilogram
AR	Administrative Record
ASTM	American Society for Testing and Materials
bls	Below land surface
CHASP	Comprehensive Health and Safety Plan
CLEAN	Comprehensive, Long-Tern Environmental Action Navy
CLP	Contract Laboratory Program
CSAP	Comprehensive Sampling and Analysis Plan
CTO	Contract Task Order
DOT	Department of Transportation
DQO	Data Quality Objective
E/A&H	EnSafe/Allen & Hoshall
E&E	Ecology & Environment, Inc.
FDEP	Florida Department of Environmental protection, formerly FDER
FDER	Florida Department of Environmental Regulation
HASP	Health and Safety Plan
ISDBs	Industrial Sludge Drying Beds
IWTP	Industrial Wastewater Treatment Plant
mg/kg	milligrams per kilogram
NAS	Naval Air Station
ND	Not Detected
NEESA	Naval Energy and Environmental Support Activity
OU	Operable Unit
PAH	Polynuclear Aromatic Hydrocarbon
PID	Photoionization Detector
ppb	Parts per billion
PPE	Personal Protective Equipment
ppm	Parts per million
PWC	Public Works Center
QA	Quality Assurance
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
SAP	Sampling and Analysis Plan
SOP/QAM	standard operating Procedure/Quality Assurance Manual
SOUTHNAVFACENGCOM	Southern Division, Naval Facilities Engineering Command
SSO	Site Safety Officer
TAL	Target Analyte List

TCE	Trichloroethene
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
USEPA	United States Environmental Protection Agency
vocs	Volatile Organic Compounds
WTP	Wastewater Treatment Plant
yd^3	Cubic yards

EXECUTIVE SUMMARY

This work plan details the removal of a steel waste-receiving structure in Wetland 5A, which is located south and downgradient of Buildings 649 and 755 (Site 30). Wetland SA is the headwater of a small creek flowing southeast, crossing under Murray Road, and intersecting Wetland 6 (a north-south oriented drainage ditch). The drainage then flows north past Chevalier Field to Bayou Grande, where it discharges into the Yacht Basin via Wetland 7. The waste-receiving structure is cylindrical, approximately 60 inches in diameter, at least 7 feet deep, and is situated in the northcentral portion of the wetland approximately 20 feet south of the north shoreline. Several pipes run along the ground surface from the north toward the structure.

According to historical information, the waste-receiving structure may have received plating wastes generated from Buildings 649 and 755 during the 1940s through the 1970s. Tanks containing solutions of tin, cadmium, cyanide, chromate, nickel, silver, lead, tin, and other metals; 1,1,1-trichloroethylene (TCE), phosphoric acid, caustics, potassium permanganate, and degreasers were reportedly dumped monthly or less frequently into a "ditch" east of the buildings (which would have drained into the wetland). Plating operations in both buildings ceased in the 1970s.

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The removal action goal is to mitigate potential risk to human health and the environment by removing the structure's contents, excavating and disposing the structure, and potentially removing and disposing of contaminated soil in its vicinity. This work plan includes a detailed scope of work for removal activities, a detailed sampling and analysis plan (SAP), and a site-specific health and safety plan (HASP). The Comprehensive Sampling and Analysis Plan (CSAP) provides overall guidance on sampling and analytical techniques to be used during the removal action.

The removal action will consist of the following activities:

1. Planning field activities, scheduling personnel and equipment, and reviewing the applicable portions of the Comprehensive Health and Safety Plan (CHASP), the Comprehensive Sampling and Analysis Plan (CSAP), the site-specific HASP, and the site-specific SAP with field personnel.
2. Collecting three surface water samples from the wetland's southeast portion for analytical testing to provide pre-removal, during removal, and post-removal water quality concentrations (@re-removal).
3. Constructing a temporary road (including clearing brush and saplings), an upper and lower staging platform, a decontamination pad, and a bermed area on which to place the excavated structure and soil.
4. Partially draining the wetland (or a portion of it) and constructing a silt fence between the waste-receiving structure and the beaver lodge and dams.
5. Remove and containerize the liquid and sludge within the structure for subsequent disposal by the PWC; then remove, destroy, and dispose of the waste-receiving structure.
6. Collect sediment from the excavated area, backfill, and drummed soil for analytical testing and waste-characterization.
7. Backfill the excavated area, remove the temporary road, remove the staging areas, replant vegetation, and reflood the wetland.
8. Assist PWC in coordinating waste disposal (soil, sludge, water, decontamination fluids, etc.) resulting from field activities.
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field monitoring equipment and conduct air monitoring; collect surface water samples, composite soil samples, and waste characterization samples; and assist PWC personnel with coordinating the disposal of liquid, sludge, soil, and construction debris field activities generate.

1.0 INTRODUCTION

The Department of the Navy, Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) has placed a Contract Task Order (CTO-072) for a Removal Action Work Plan prepared by EnSafe/Allen & Hoshall (E/A&H) for Site 30 at the Naval Air Station (NAS) Pensacola in Pensacola, Escambia County, Florida. This work plan details the [time critical] removal of a steel waste-receiving structure in a wetland south of Buildings 649 and 755 (Site 30).

The waste-receiving structure is cylindrical, approximately 60 inches in diameter, at least 7 feet deep, and is situated in the northcentral portion of the wetland approximately 20 feet south of the north shoreline. Several pipes run along the ground surface from the north toward the structure.

The removal action goal is to mitigate potential risk to human health and the environment by removing the structure's contents, excavating and disposing the structure, and removing and disposing the contaminated soil in its vicinity. This work plan has been developed based on information and documentation provided by the SOUTHNAVFACENGCOM, the United States Environmental Protection Agency (USEPA), and on information gathered by E/A&H during assessment and reconnaissance conducted during the latter half of 1993. This work plan includes a detailed scope of work for removal activities, a detailed sampling and analysis plan (SAP), and a site-specific health and safety plan (HASP).

E/A&H anticipate that the NAS Pensacola Public Works Center (PWC) will provide the manpower, equipment, and materials necessary to construct road and staging areas, to remove the structure's contents (liquid and sludge), to remove and dispose of the structure, to excavate soil, and to backfill. E/A&H will assist the PWC as necessary in scheduling and implementing

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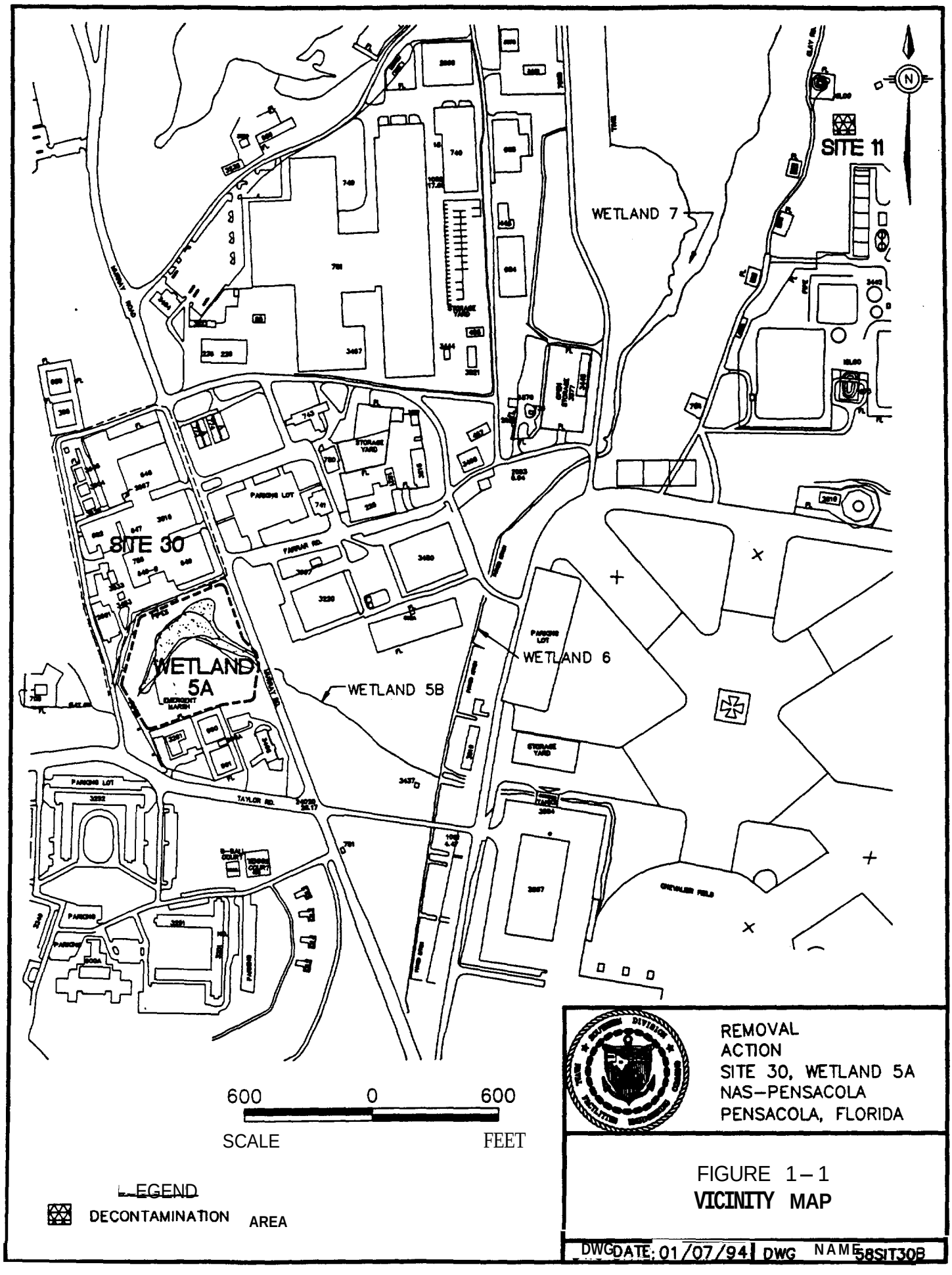
1.1 Site Description

NAS Pensacola is located on the Gulf Coast lowlands of a peninsula bounded by Pensacola Bay to the south and east and Bayou Grande to the north. Site 30 is on the facility's eastern portion between Murray Road and the golf course (see Vicinity Map, Figure 1-1). Site 30 comprises several buildings (some of which formerly were metal-plating facilities) bounded by an adjacent wetland to the south, designated Wetland 5A. The wetland is the headwater of a small creek flowing southeast, crossing under Murray Road, and intersecting Wetland 6 (a north-south oriented drainage ditch). The drainage then flows north past Chevalier Field to Bayou Grande, where it discharges into the Yacht Basin via Wetland 7.

Sandy soil typifies the NAS Pensacola area. Consequently, most rainfall infiltrates directly into the subsurface, resulting in few natural streams. Typically, the higher elevations at NAS Pensacola are zones of groundwater infiltration, and low-lying elevations are areas of groundwater discharge. Several natural wetlands are present in the facility's low-lying areas. Wetland 5A is likely fed by groundwater discharge.

1.2 Site Background and Previous Studies

The following sections provide a site history and summarize past studies of Site 30 and Wetland 5A.


SITE 11
WETLAND 7
SITE 30
WETLAND 5A
WETLAND 5B
WETLAND 6
600 0 600
SCALE FEET
LEGEND
DECONTAMINATION AREA
REMOVAL ACTION
SITE 30, WETLAND 5A
NAS-PENSACOLA
PENSACOLA, FLORIDA
FIGURE 1-1
VICINITY MAP
DWG DATE: 01/07/94
DWG NAME 58SIT30B

121 Historical Land Use

Buildings 649 and 755 are north and upgradient of Wetland No. 5A, separated from it by a service mad and a driveway/parking lot. Building 649 was used from the 1940s to the 1950s as a tin-cadmium plating operation. Fifteen tanks in the vicinity of Building 649, ranging from 200 to 500 gallons, contained solutions of tin, cadmium, and cyanide. Additionally, a 250-gallon tank stored 1,1,1-trichloroethene (TCE). The contents of these tanks reportedly were dumped monthly into a "ditch" east of the building. Based on current topography and historical data, this "ditch" was either the wetland itself, or a topographical low draining it. During the 1960s and 1970s, a magnesium treatment line replaced the tin-cadmium operation, and the 15 tanks then stored phosphoric acid, caustics, potassium permanganate, degreasers, and chromate solutions. The tanks were drained monthly or less frequently into the "ditch." According to historical data, the concentrated cyanide solutions either were drummed or drained into a tank truck, transported to Building 709's plating shop, and disposed of in the sanitary sewer. Plating operations in Building 649 ceased in the 1970s (Naval Energy and Environmental Support Activity [NEESA] 1983).

Building 755 also operated as a plating shop during the 1960s and 1970s. It contained approximately 50 tanks, ranging between 50 and 200 gallons, containing plating solutions of nickel, silver, lead, tin, chromium, and other metals. These tanks reportedly also were drained into the "ditch" east of Building 649. Building 755's plating operations ceased in the 1970s.

Aerial photographs from January 1951 through October 1989 indicate the wetland appeared much as it does today. In 1951, Wetland 5A was covered with low-lying vegetation near several streams. Two of these streams discharged into the wetland fmm the southwest, and thick vegetation was in and around the area. Surface drainage from the wetland generally seemed directed toward the east into a creek discharging to the drainage ditch along Chevalier Field.

The creek looked wider in a March 1981 photograph than previously. No other obvious changes in the wetland were noted.

1.2.2 Geraghty and Miller Study

In 1984, Geraghty and Miller, Inc. (G&M), collected four sediment samples from Site 30 for Extraction Procedure (EP) toxicity testing. Analyses of two samples from Wetland No, 5A's north side, and two from the creek east of Murray Road (Wetland 5A drains into this creek) indicated cadmium's presence at concentrations of 10 to 20 micrograms per liter (µg/L), magnesium at 500 to 1,700 µg/L, and copper at less than 10 to 20 µg/L. The samples were not analyzed for TCE. The G&M report concluded the plating wastes either were immobilized in sediments or had discharged into Bayou Grand, and recommended no further study (G&M 1984, in Ecology and Environment [E&E] 1992).

1.2.3 Ecology and Environment Study

E&E conducted a Phase I Contamination Assessment/Remedial Activities Investigation at Site 30 during 1991. The investigation included reviewing historical data, site reconnaissance, a habitat/biota survey, a volatile surface emissions survey, particulate air sampling, a radiation survey, a geophysical survey, a utilities survey, and the collection and analyses of surface water, sediment, soil, and groundwater samples. No sampling point was located in the immediate vicinity of the waste-receiving structure; however, three soil sampling stations were upslope northwest, north, and northeast of it. Tables 1-1 and 1-2 summarize E&E's analytical data. Figure 1-2 shows the locations of the surface water, sediment, soil, and groundwater samples E&E collected.

Zinc was the only inorganic parameter detected in the surface water samples collected. Surface water samples SW017 and SW021 had zinc concentrations of 110 and 280 ppb respectively.

Table 1-1
Analytical Summary (Detections **Only**)
Sediment Samples
Ecology and Environment, Inc. Investigation
NAS Pensacola — Site 30, Wetland 5A

Parameter	Sediment Sample Designation						
	SD015	SD016	SD017	SD018	SD019	SD020	SD021
Chromium	17 mg/kg	10 mg/kg	1.6 mg/kg	6.3 mg/kg	82 mg/kg	13 mg/kg	18 mg/kg
Zinc	86 mg/kg	100 mg/kg	34 mg/kg	69 mg/kg	100 mg/kg	240 mg/kg	44 mg/kg
Lead	130 mg/kg	100 mg/kg	37 mg/kg	87 mg/kg	61 mg/kg	91 mg/kg	32 mg/kg
Cadmium	1.7 mg/kg	1.4 mg/kg	—	—	1.7 mg/kg	1.3 mg/kg	1.1 mg/kg
Nickel	—	—	—	—	13 mg/kg	4.4 mg/kg	—
Copper	**93** mgkg	**93** mg/kg	10 mg/kg	68 mg/kg	36 mg/kg	21 mg/kg	10 mgkg
TRPHs	140 mgkg	170 mg/kg	52 mg/kg	64 mgkg	100 mgkg	**36** mg/kg	44 mgkg
1,1,1 Trichloroethane	1100 µg/kg	—	—	—	—	—	—
Phenols as Trichlorophenol	—	(L)	—	(L)	—	*2800 µg/kg*	—
Dieldrin/4,4 DDE	(L)	(L)	—	(L)	—	—	—
Total PCBs	—	—	—	—	—	—	—

Note:
(L) = Denotes compound present below detection limit
— = Not detected or analyzed
µg/kg = Micrograms per kilogram or parts per billion (ppb)
mg/kg = Milligrams per kilogram or parts per million (ppm)

[Bold items enclosed in brackets denote changes to the first draft of document.]

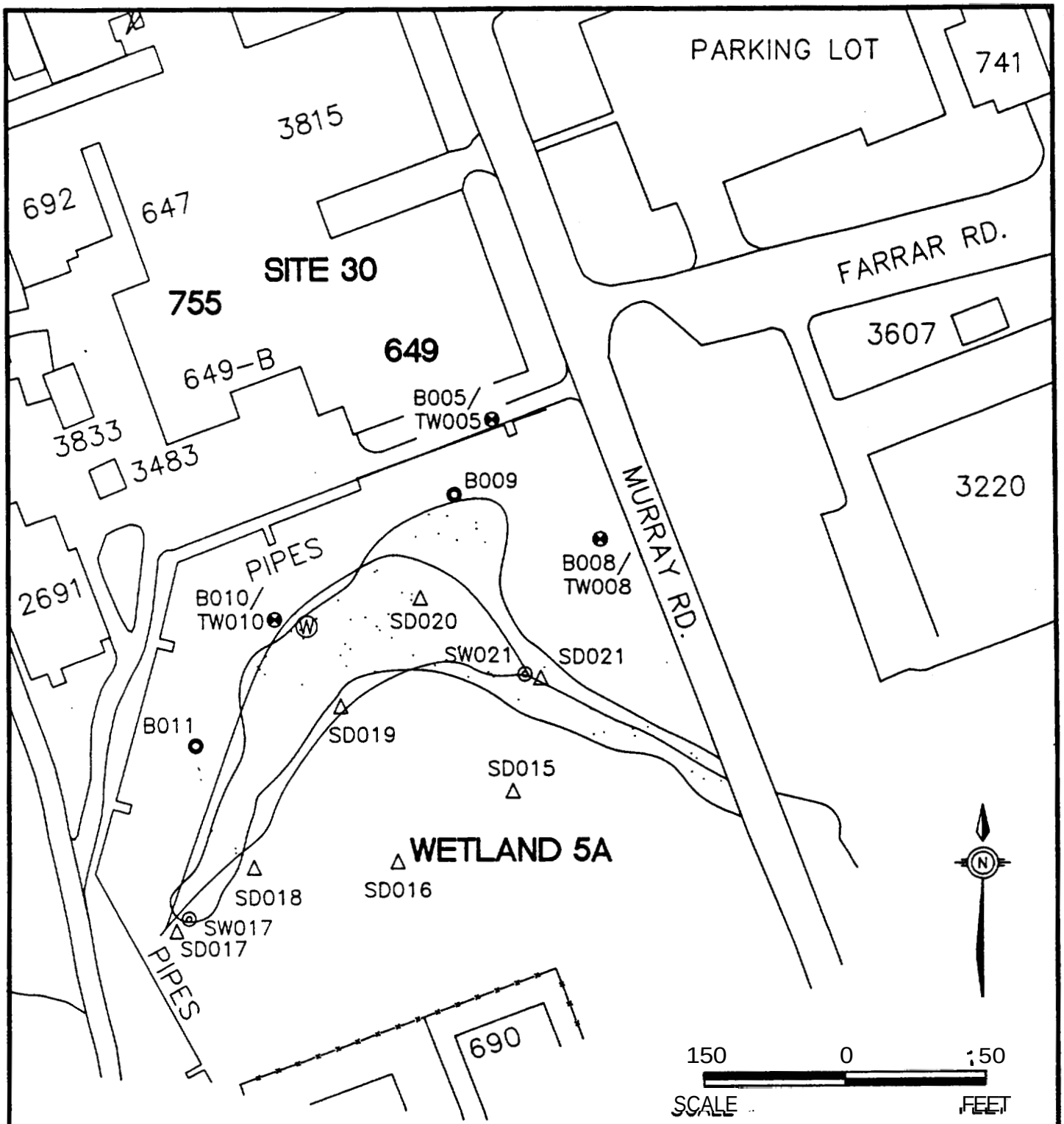
Table 1-2
Analytical Summary (Detections Only)
Soil Samples
Ecology and Environment, Inc. Investigation
NAS Pensacola — Site 30, Wetland 5A

Parameter	Soil Sample Designation								
	B005A (0 - 5')	B005B (5 - 10')	B005C (10-15')	B008A (0-5')	B008B (5-10')	B008C (10-15")	B009A (0-5')	B010A (0-5')	B011A (0-5')
Chromium	2.7 rnglkg	9.5 mglkg	5.9 mglkg	1.8 rnglkg	18 mglkg	1.0 mg/kg	71 mg/kg	2.6 mg/kg	2.0 rngkg
Zinc	3.4 mg/kg	6.0 mglkg	4.8 mglkg	4.0 mg/kg	3.4 mglkg	2.6 mgkg	4.2 mg/kg	—	5.9 mglkg
Cadmium	—	—	—	—	—	—	—	—	0.60 mglkg
Copper	—	—	—	—	—	—	—	—	—
TRPHs	65 rngkg	42 mglkg	17 mg/kg	12 mg/kg	11 mglkg	12 rnglkg	360 mg/kg	11 mg/kg	300 mgkg
1,1 Dichloroethene	—	—	—	—	—	—	—	—	—
Total PAHs as Benzo(a)pyrene	3800 µg/kg	—	—	—	—	(L)	2000 µg/kg	(L)	1200 µg/kg
Phenols as Trichlorophenol	—	—	—	15000 µg/kg	16000 µg/kg	—	47000 µg/kg	3500 µg/kg	—

Note:

(L) = Denotes compound present below detection limit
— = Not detected or analyzed

[Bold items enclosed in brackets denote changes to the first draft of document.]



LEGEND

- O – E&E SOIL BORING
- ⊗ – E&E SOIL BORING/ TEMPORARY WELL
- A – E&E SEDIMENT SAMPLE
- ◎ – E&E SURFACE WATER SAMPLE
- Ⓦ – WASTE RECEIVING STRUCTURE (TO BE REMOVED)
- ——— FENCE

SOURCE: E.M INC.

REMOVAL ACTION
SITE 30, WETLAND 5A
NAS–PENSACOLA
PENSACOLA, FLORIDA

FIGURE 1–2
ECOLOGY AND ENVIRONMENT, INC.
INVESTIGATION SOIL BORING, TEMPORAR MONITORING WELL, SEDIMENT, AND SURFACE WATER SAMPLE LOCATIONS

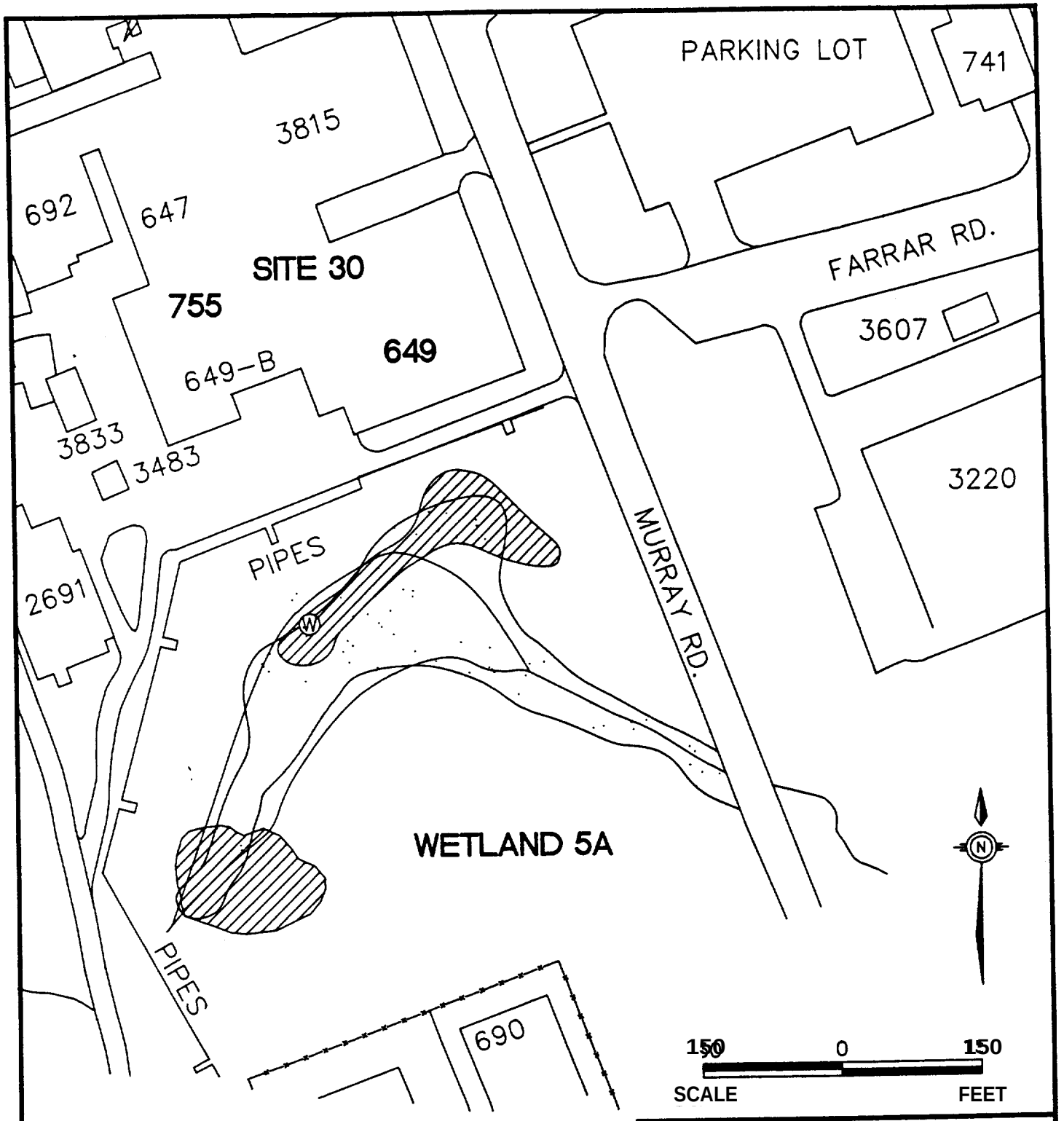
DWG DATE 01/19/94 DWG NAME: 58SIT30C

E&E conducted the surface emissions survey using an organic vapor analyzer (OVA) that detected organic vapor concentrations ranging from 0 to 100 parts per million (ppm). Two distinct areas of Wetland 5A yielded positive OVA responses. Elevated readings were detected along the wetland's southwestern portion near a storm water outfall, and elevated readings (up to 40 ppm) were detected along its north boundary (near the waste-receiving structure) (E&E 1991).

Figure 1-3 provides a site map showing the areas of positive OVA responses. As it shows, the waste-receiving structure is within an area of elevated organic vapor readings detexmined by E&E. The utilities survey showed buried metal at various locations in Site 30 and Wetland 5A; however, none was detected in the general vicinity of the waste-receiving structure. The geophysical survey did not indicate any anomalies in the waste-receiving structure's vicinity, and the results of the radiation survey did not indicate a significant radiation problem at Site 30 (E&E 1991).

No surface water sample was collected by E&E in the waste-receiving structure's immediate vicinity. However, zinc was indicated in analytical testing of surface water samples from other areas of Wetland SA. No polyaromatic hydrocarbons (PAHs), phenols, pesticides, polychlorinated biphenyls (PCBs), or total recoverable petroleum hydrocarbons (TRPHs) were detected in the surface water samples collected in Wetland 5A (E&E 1991).

No sediment sample was collected in the waste-receiving structure's immediate vicinity. However, sediment samples from other areas of Wetland 5A indicated the presence of various metals, including chromium, zinc, lead, cadmium, nickel, copper, and silver. TRPHs were detected at concentrations ranging from 36 milligrams per kilogram (mg/kg) to 170 mg/kg.



LEGEND

- ORGANIC VAPOR ANALYZER (OVA) READINGS ABOVE BACKGROUND LEVELS
- WASTE RECEIVING STRUCTURE (TO BE REMOVED)
- FENCE

SOURCE: E&E INC.

REMOVAL ACTION
SITE 30, WETLAND 5A
NAS-PENSACOLA
PENSACOLA, FLORIDA

FIGURE 1-3
ECOLOGY AND ENVIRONMENT, INC.
INVESTIGATION OVA READINGS GREATER THAN BACKGROUND LEVELS

DWG DATE: 01/14/94 DWG NAME: 58SIT30D

[The compound] 1,1,1trichloroethane (1,100 micrograms per kilogram [µg/kg], just above the detection limit) was in one sediment sample (SD015) from the wetland's south portion. Phenols at a concentration of **2,800** µg/kg were detected in one sediment sample (SD020) from approximately 150 feet east of the waste-receiving structure. Pesticides and PCBs were in several sediment samples, but at concentrations below the method detection limit (E&E 1991).

Four soil samples were collected upslope (northwest, north, and northeast), and one soil sample was collected southwest of the waste-receiving structure. E&E designated these samples **as** B005, B008, B009, B010, and B011, respectively. In general, the **soil** samples from 0 to **5** feet below land surface (bls) exhibited the highest contaminant concentrations **(see** Table 1-2). The samples indicated low to moderate concentrations of metals (in particular, chromium and lead) and **TRPHs,** PAHs, and phenols **(E&E,** 1991). Table 1-2 provides an **analytical** summary of the soil samples collected by E&E.

E&E collected three groundwater samples from temporary monitor wells upslope (northwest, northeast, and east) of the waste-receiving structure. E&E designated these samples **as** TW005, TW008, and TW010. Groundwater collected from **all** three wells indicated elevated (present at least one order of magnitude above detection limits) chromium **concentrations** and moderate to elevated cadmium and nickel concentrations. Low **to** moderate concentrations of **zinc** and copper were **also** detected. No **TRPHs,** PAHs, phenols, 1,1-dichloroethane, 1,1,1-trichloroethane, benzene, toluene, ethylbenzene, or xylenes were **detected** in these groundwater samples.

1.2.4 USEPA Study

The USEPA, Region IV, Environmental Services Division (ESD), Environmental Compliance Branch (ECB), **Hazardous** Waste Section (HWS) **conducted** a field investigation with sampling

during the week of July 13, 1992. The investigation revealed the waste-receiving structure's presence, which had not been identified in previous investigations. **No** leachate **staining** was noted during sampling. One sediment/soil sample and one surface water sample were **collected** adjacent to the structure, and one sediment sample **was collected** from within it.

Samples SD-002-05 (soil/sediment sample) and SW-002-05 (surface water sample), **collected** adjacent to the waste-receiving structure, showed concentrations of inorganics, pesticides, PCBs, and chloroform. The surface water sample had low concentrations of beryllium, cadmium, cobalt, chromium, copper, and lead. The sediment sample contained elevated concentrations of various inorganics, including 130 mg/kg barium, 26 mg/kg cadmium, **45** mg/kg cobalt, 290J mg/kg chromium, and 760 mg/kg lead. The sediment sample **also** contained 27 μg/kg **4,4'-**DDE, 120 μg/kg PCB-1260, and an indeterminate amount of **"oil."**

USEPA described sediment sample **SD-004-05** from within the structure as "heavily contaminated." It contained 260 mg/kg silver, 1,400 mg/kg arsenic, 2,600 mg/kg chromium, 7,100 mg/kg lead, 24 mg/kg vinyl chloride; semivolatiles including fluoranthene, 2-methylnapthalene, and naphthalene; and volatiles including **24** mg/kg vinyl chloride **(USEPA** 1992). Table 1-3 summarizes the analyses of the USEPA sediment samples from the waste-receiving structure's vicinity.

1.2.5 E/A&H Assessment Activities and Site Reconnaissance

In August **1993,** E/A&H conducted **a** habitat and biota survey at Site **30** and Wetland **5A.** Additional site **reconnaissance** was performed in November **1993.** Currently, the **wetland** comprises vegetated areas that *can* **be** classified as emergent wetland, forested wetland, **and** mixed hardwood and pine upland. Several drainage **areas** which convey surface water from the

Table 1-3
Analytical Summary (Detections Only)
Soil/Sediment Samples
USEPA and E/A&H Investigations
NAS Pensacola — Site 30, Wetland 5A

Parameter	EPA Study SD-004-45 Within Structure	E/A&H Study 30M01 Within Structure	EPA Study SD-002-05 Beside Structure	E/A&H Study 30M02 Beside Structure	E/A&H Study 30M03 Beside Structure	E/A&H Study 30M04 Beside Structure
Inorganics						
Arsenic	2.2 rngkg	—	—	2.0 mg/kg	5.6 mg/kg	—
Cadmium	1400 rngkg	189 mg/kg	26 mglkg	132 rnglkg	157 rnglkg	132 rnglkg
Chromium	2600 rngkg	1610 rngkg	290 J rngkg	2160 rngkg	507 mg/kg	952 mgkg
Lead	7100 rngkg	2760 mgkg	760 mgkg	4720 rngkg	1190 mglkg	1930 mglkg
Mercury	1.8 rngkg	0.73 rngkg	1.2 rnglkg	2.1 rnglkg	1.2 mg/kg	1.5 rnglkg
Silver	160 J rngkg	97.3 rngkg	—	5.7 J mg/kg	43.8 J mglkg	87.8 J rnglkg
Pesticides/PCBs						
Arochlor-1260	—	840 J µg/kg	120 µg/kg	450 J µg/kg	—	220 J pgkg
alpha-Chlordane	—	—	—	—	—	10 J pgkg
gamma-Chlordane	—	—	—	4.4 J µg/kg	—	9 J µg/kg
Dieldrin	—	—	—	—	—	25 J µg/kg
4,4'-DDD	—	100 J µg/kg	—	65 J µg/kg	69 J pgkg	150 J µg/kg
4.4'-DDE	—	35 µg/kg	27 µg/kg	21 µg/kg	30 J µg/kg	92 J pgkg
Heptachlor	—	20 J µg/kg	—	11 J µg/kg	—	—

[Bold items *enclosed* in brackets denote changes to the first draft of document,]

Table 1-3
Analytical Summary (Detections Only)
Soil/Sediment Samples
USEPA and E/A&H Investigations
NAS Pensacola — Site 30, Wetland 5A

Parameter	EPA Study SD-004-45 Within Structure	E/A&H Study 30M01 Within Structure	EPA Study SD-002-05 Beside Structure	E/A&H Study 30M02 Beside Structure	E/A&H Study 30M03 Beside Structure	E/A&H Study 30M04 Beside Structure
Semivolatiles						
Benzo(a)anthracene	—	—	—	3800 J pgkg	—	—
Benzo(a)pyrene	—	—	—	3200 J µg/kg	—	—
Benzo(b)fluoranthene	—	—	—	2900 J µg/kg	—	—
Benzo(k)fluoranthene	—	—	—	3300 J µg/kg	—	—
Biphenyl	300 JN mgkg	—	—	—	—	—
Chrysene	—	—	—	3500 J µg/kg		—
Dimethylnapthalene (3 isomers)	800 JN mgkg	—	—	—	—	—
Phosphoric Acid, Ethylhexyldiphenyl ester	100 JN mgkg	—	—	—	—	—
bis(2-Ethlyhexy)phthalate	—	1000000 J µg/kg	—	440000 pgkg	1300 J pgkg	2600 J µg/kg
Fluoranthens	77 J	58000 J µg/kg	1500 pgkg	16000 J µg/kg	1800 J µg/kg	4000 J µg/kg
Hexadecanoic Acid	—	—	10000 JN pgkg	—	—	—
1-Methylnaphthalene	600 JN mgkg	—	—	—	—	—
2-Methylnaphthalene	330 mg/kg	220000 pgkg	—	9000 J µg/kg	1200 J µg/kg	2500 J µg/kg

[Bold items enclosed in brackets denote changes to the first draft of document.]

Table 1-3
Analytical Summary (Detections Only)
Soil/Sediment Samples
USEPA and E/A&H Investigations
NAS Pensacola — Site 30, Wetland 5A

Parameter	EPA Study SD-004-45 Within Structure	E/A&H Study 30M01 Within Structure	EPA Study SD-002-05 Beside Structure	E/A&H Study 30M02 Beside Structure	E/A&H Study 30M03 Beside Structure	E/A&H Study 30M04 Beside Structure
Methylpropylcyclohexane	—	—	30 JN µg/kg	—	—	—
Naphthalene	44 J mg/kg	35000 J µg/kg	—	—	—	—
Petroleum Product	N	—	N	—	—	—
Phenanthrene	—	—	320 J µg/kg	—	—	—
Pyrene	—	—	420 J µg/kg	4000 J µg/kg—	—	600 J µg/kg
Trimethylnaphthalene (3 isomers)	600 JN mg/kg	—	—	—	—	—
Unidentified Compounds (19)	—	—	100000 J µg/kg	—	—	—
Volatiles						
Benzene	—	—	—	—	36 J µg/kg	—
Chlorobenzene	—	170 J µg/kg	—	17 J µg/kg	82 J µg/kg	—
Decane	—	—	50 JN µg/kg	—	—	—
1,2-Dichloroethane	—	—	—	—	28 J µg/kg	—
Cis-1,2-Dichloroethene	27 mg/kg	—	—	—	—	—
Trans-1,2-Dichloroethene	0.98 J mglkg	—	—	—	—	—

[**Bold** items enclosed in brackets denote changes to the first draft of document.]

Table 1-3
Analytical Summary (Detections Only)
Soil/Sediment Samples
USEPA and E/A&H Investigations
NAS Pensacola — Site 30, Wetland 5A

Parameter	EPA Study SD-004-45 Within Structure	E/A&H Study 30M01 Within Structure	EPA Study SD-002-05 Beside Structure	E/A&H Study 30M02 Beside Structure	E/A&H Study 30M03 Beside Structure	E/A&H Study 30M04 Beside Structure
1,2-Dichloroethene (total)	27.98 J mg/kg	360 µg/kg	—	—	2100 µg/kg	—
Dimethyloctane	—	—	40 JN µg/kg	—	—	—
(Dimethylpropyl)benzene (2 isomers)	100 JN mg/kg	—	—	—	—	—
Ethylbenzene	1.7 J mgkg	140 J µg/kg	—	—	—	22 J µg/kg
Ethyldimethylbenzene (2 isomers)	400 JN mgkg	—	—	—	—	—
Ethylmethylbenzene	70 JN mgkg	—	—	—	—	—
Ethylmethylheptane	—	—	50 JN µg/kg	—		—
Methylnonane	—	—	80 JN µg/kg	—	—	—
4-Methyl-2-Pentanone	—	56 J µg/kg	—	70 J µg/kg	110 J µg/kg	1S0 µg/kg
Tetramethylbenzene	100 JN mgkg	—	—	—	—	—
Toluene (µg/kg)	12 mgkg	70 J µg/kg	—	11 J µg/kg	60 J µg/kg	15 J µg/kg
1,1,1-Trichloroethane	2.6 J mgkg	—	—	—	—	—
Trimethylbenzene (4 isomers)	300 JN mgkg	—	—	—	—	—
Vinyl Chloride (µg/kg)	24 mgkg	990 µg/kg	—	—	6500 µg/kg	—

[Bold items enclosed in **brackets** denote **changes** to the first draft of **document.**]

Table 1-3
Analytical Summary (Detections Only)
Soil/Sediment Samples
USEPA and E/A&H Investigations
NAS Pensacola — Site 30, Wetland 5A

Parameter	EPA Study SD-004-45 Within Structure	E/A&H Study 30M01 Within Structure	EPA Study SD-002-05 Beside Structure	E/A&H Study 30M02 Beside Structure	E/A&H Study 30M03 Beside Structure	E/A&H Study 30M04 Beside Structure
Xylenes (total)	7.81 mg/kg	400 µg/kg	—	—	120 J µg/kg	—
Unidentified Compounds (5)	—	—	300 J	—	—	—

Note:

J = Oenotes the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
JN Denotes the analyses indicate the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration
N = Denotes presumptive evidence of material
— = Not detected or analyzed

[Bold items enclosed in brackets denote **changes** to the first draft of **document.**]

site under Murray Road into a creek which ultimately discharges **into** Bayou Grande **are** present. The wetland's hydrology appears to be controlled **by** two active beaver **dams (see** Figure 1-4). Consequently, the majority of it is submerged; in some **areas** the water is [up **to 5 feet deep].**

On August **4,** 1993, E/A&H conducted site reconnaissance and sediment sampling near the waste-receiving structure. The field team measured the vertical dimensions of the structure's above-ground portion and determined it was at least **6** feet deep. The field **team** noted a petroleum odor and a sheen on the [interior] water's surface.

E/A&H collected four sediment samples—designated **as** 30M01, 30M02, 30M03, and 30M04—near the waste-receiving structure. One sample was collected from the sediment within it, and three samples were collected with a hand auger from surrounding sediments. Sediment sample 30M01, **from** within the structure, exhibited elevated metals, semivolatiles, and volatiles concentrations. Elevated metal concentrations detected include 189 mg/kg cadmium, 1,610 mg/kg chromium, and 2,760 mg/kg lead. PCBs **as** 840J μg/kg Arochlor 1260 were detected, and traces of pesticides were present. Semivolatiles detected included **2-methylnaphthalene,** fluoranthene, naphthalene, and bis(2-ethlyhexyphthalate).

Elevated volatiles concentrations included chlorobenzene at 170J μg/kg, **1,2-dichloroethene** at 360 μg/kg, and vinyl chloride at 990 μg/kg. Other volatiles detected included ethylbenzene, toluene, **and** total xylenes. Table 1-4 summarizes the **detected** parameter concentrations for sediment sample 30M01.

[Bold items enclosed in brackets denote changes to the first draft of document.]

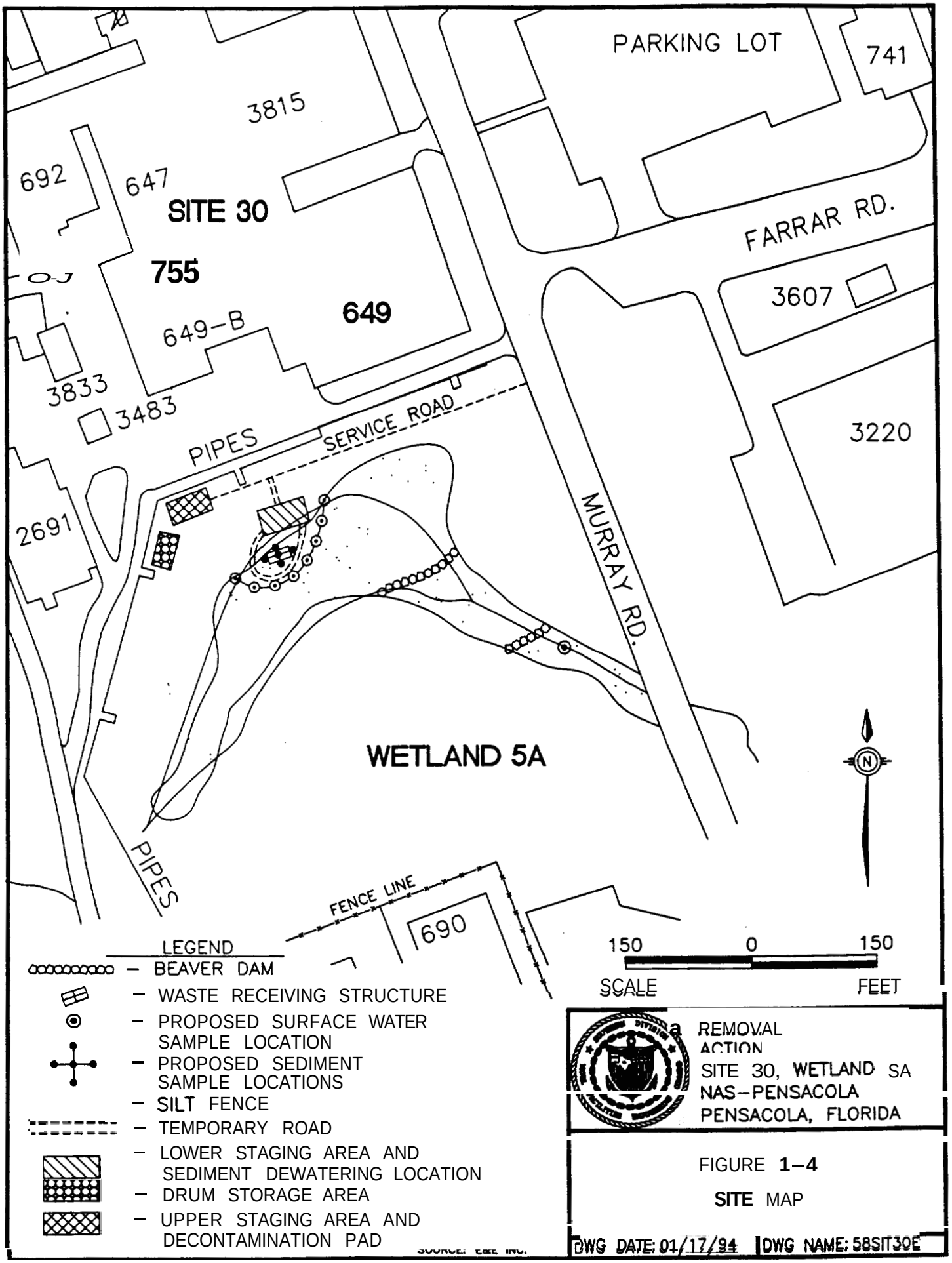

PARKING LOT
741
3815
692
647
SITE 30
755
649
649-B
FARRAR RD.
3607
3833
3483
SERVICE ROAD
PIPES
3220
2691
MURRAY RD.
WETLAND 5A
PIPES
FENCE LINE
690
LEGEND
– BEAVER DAM
– WASTE RECEIVING STRUCTURE
– PROPOSED SURFACE WATER SAMPLE LOCATION
– PROPOSED SEDIMENT SAMPLE LOCATIONS
– SILT FENCE
– TEMPORARY ROAD
– LOWER STAGING AREA AND SEDIMENT DEWATERING LOCATION
– DRUM STORAGE AREA
– UPPER STAGING AREA AND DECONTAMINATION PAD
150 0 150
SCALE FEET
REMOVAL ACTION
SITE 30, WETLAND SA
NAS-PENSACOLA
PENSACOLA, FLORIDA
FIGURE 1-4
SITE MAP
DWG DATE: 01/17/94
DWG NAME: 58SIT30E

Table 1 4
Analytical Summary (Detections Only)
Groundwater Samples
Ecology and Environment, Inc. Investigation
NAS Pensacola — Site 30, Wetland 5A

Parameter	TW005	TW008	TW010
Chromium	6,300 µg/L	8,300 µg/L	500 µg/L
Zinc	250 µg/L	290 µg/L	88 µg/L
Cadmium	360 µg/L	80 µg/L	19 µg/L
Nickel	2,200 µg/L	2,200 µg/L	72 µg/L
Copper	74 µg/L	74 µg/L	44 µg/L

[**Bold** items enclosed in brackets denote changes to the first draft of document.]

Three sediment samples (30M02, 30M03, and 30M04) were collected with a hand auger within 6 inches to 2 feet lateral distance of the structure at a termination depth of 3 to 4 feet bls. Those samples had appreciable metals concentrations: cadmium from 132 mg/kg to 157 mg/kg; chromium from 507 mg/kg to 2,160 mg/kg; and lead from 1,190 mg/kg to 4,720 mg/kg. Relatively low concentrations of pesticides and PCBs were detected in these sediment samples.

Semivolatiles detected included the following in the low ppm concentration range: 2-methylnapthalene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoroanthene, chrysene, fluoranthene, **bis(2-ethlyhexy)phthalate,** pyrene, and hexadecanoic acid. Volatiles detected in the sediment samples included chlorobenzene, 1,2 dichloroethane, 1,2 dichloroethene (total), **4-methyl-2-pentanone,** benzene, ethylbenzene, toluene, and xylenes. Vinyl chloride was detected at a concentration of 6.5 mg/kg one sample. Table 1-4 summarizes the detected contaminant concentrations for sediment samples 30M01, 30M02, 30M03, and 30M04.

On November 8 and 9, 1993, the field team conducted preliminary reconnaissance activities in the vicinity of the wetland and steel structure, detecting several old pipes appearing to lead from the north (where Buildings 649 and 755 are located) toward the structure. A 12-inch diameter terra-cotta pipe was located and examined; it was broken or crushed in several visible areas. In addition, 1-inch diameter and 2-inch diameter metal pipes were located. They were severed in several places, and were highly deteriorated with numerous visible holes and cracks. No discharge was observed from the pipes.

The E/A&H field team used 10-foot-long metal rods to probe inside the structure in an attempt to determine its depth and contents. The rods indicated refusal at approximately 7 feet below the top edge of the structure. The structure contained water and sludge with various debris,

including leaves, twigs, and metal scraps. E/A&H also probed for any openings that might indicate influent or effluent pipes. The steel probe indicated no openings. The probing action agitated the sludge within the structure, resulting in an oily sheen rising to the water's surface. The contents had a hydrocarbon odor similar to kerosene and a slight solvent odor.

When E/A&H returned to the site the following day, an immiscible floating layer approximately 0.25-inch thick had collected on the water's surface within the structure. Steel probes checked for underground obstructions around the structure that might indicate an underground collection tank's presence. Subsurface obstructions were located between 6 inches and 3 feet bls around the structure for several feet in various directions. However, the depths of obstructions varied and they seemed to be composed of more than one material (a field member indicated that one material "felt like" wood, and the other material, concrete). These subsurface structures could be piping or other material; however, the type and exact configuration of the structures cannot be determined without excavating soil in the waste-receiving structure's vicinity.

E/A&H used a magnetometer to detect anomalies that might indicate the presence of a larger buried structure or pipes entering the visible portion of the structure below the water's surface. The magnetometer readings were inconclusive.

2.0 SCOPE OF WORK

The following sections detail the activities to occur during the removal action. They include:

- Plan field activities, review historical data, and schedule personnel and equipment.
- Review the applicable portions of the Comprehensive Health and Safety Plan (CHASP), the Comprehensive Sampling and Analysis Plan (CSAP), the site-specific HASP, and the site-specific SAP with field personnel.

- Collect one surface water sample from the wetland's southeast portion for analytical testing to provide baseline water quality concentrations @re-removal).
- Construct a road, staging platform, and a bermed **area** on which to place the excavated structure and soil.
- Partially drain the wetland (or **a** portion of it) and construct a silt fence.
- Remove and containerize the liquid and sludge within the **structure** for subsequent disposal by the PWC.
- Remove and destroy the structure.
- Collect one surface water samples during removal activities for analytical testing to provide water quality monitoring information.
- Collect up to five discrete or composite **soil** samples from the excavated **area** for analytical testing.
- Collect one composite soil sample from the backfill material for analytical testing.
- Backfill the excavated area and replant vegetation, if necessary.
- Collect composite soil samples at the **soil** stockpile for waste characterization analysis.
- Remove the temporary road and staging area.
- Reflood the wetland.
- Collect one surface water sample for analytical testing to provide post-construction water quality infomation.
- Assist PWC in coordinating waste **disposal (soil,** sludge, water, decontamination fluids, etc.) resulting from field activities.
- ***Prepare*** a Removal Action **Report** including a summary of the field activities and the results of analytical testing.

E/A&H anticipates PWC will provide the material and manpower **to** construct a **road,** remove the waste-receiving structure, excavate the surrounding **soil,** and **dispose** of investigationderived

waste. E/A&H will provide the **PWC** with technical oversight **as** necessary, collect sediment, surface water, and waste characterization samples, and prepare a **report** documenting the removal activities.

2.1 Pre-Removal Activities

Several activities will be conducted before removing the structure, as **discussed** in the following sections.

2.1.1 Orientation Meeting

Before performing any field activities at NAS Pensacola, E/A&H personnel **will** attend an orientation meeting to summarize general requirements as well as site-specific requirements for sampling and documentation. General discussion topics will include the locations of the Naval **Air** Station in Pensacola, the site **office** trailer, **subject** site, waste-receiving structure, designated decontamination **areas,** and the temporary road and staging area to be constructed. Sampling requirements to be discussed will include general sampling protocol, the **Unified Soil** Classification System (USCS), the petite Ponar sampling device, the sample-numbering system, quality assurance/quality control (QA/QC) sampling requirements, and sample packaging. Documentation requirements to be discussed will include the use of field forms, field logbooks, and photographic documentation. **A** checklist of requirements and an acceptance form indicating that the above items have been reviewed by E/A&H personnel **will** be maintained. Appendix **A** contains a copy of the checklist/acceptance form.

Before beginning any field activities, the site safety officer **(SSO)** will review the **CHASP** and HASP (Appendix B) with the E/A&H personnel who will **be** conducting **them.** In addition, each day the **SSO** will conduct a "tailgate safety meeting" to convey the anticipated hazards that might be encountered. All **E/A&H** employees and SOUTHNAVFACENGCOM personnel who **will**

be working at the site will be required to sign a compliance agreement form acknowledging they are familiar with the plan and agree to abide by its guidelines. The HASP (Appendix B) contains a copy of the compliance agreement form.

2.1.2 Surface Water Sampling

To determine baseline parameter concentrations so that the effect of construction and removal activities on wetland surface waters can be gauged, E/A&H will collect one surface water sample to be submitted to a NEESA-approved laboratory for analyses. The USEPA Contract Laboratory Program (CLP) Target Analyte List/Target Compound List (TAL/TCL) will provide legally defensible contaminant analyses. The TAL/TCL analyses will include volatile organic compounds (VOCs), base-neutral/acid extractable organic compounds (BNAs), PCBs, pesticides, cyanide, and TAL metals (unfiltered). Figure 1-4 shows the proposed sample collection location. It was selected because:

- It is downstream from the waste-receiving structure.
- It is located at the point of discharge for Wetland 5A.

2.1.3 Drain Wetland 5A

Two beaver dams traverse the wetland's southeastern portion (Figure 1-4). These dams effectively block the natural flow of wetland waters into the stream crossing under Murray Road. Due to the blockage, wetland water pools northeast of the beaver dams, causing the wetland water level to rise by several feet, making the waste-receiving structure inaccessible. During site reconnaissance activities on November 8 and 9, 1993, E/A&H formed several breaches in the beaver dams, so that the wetland would partially drain, thus facilitating foot access to the wetlands interior portions, including the structure to be removed.

While the waste-receiving structure is being removed, E/A&H will lower the water level along the wetland's north shore so that equipment and personnel *can* reach it. This will be accomplished by maintaining a breach in the beaver dams during the removal activities. When field activities *are* complete and the suspended sediment load has settled, the breach will be discontinued. Based on E/A&H's previous experience with beaver dam breaches in Wetland 5A, the beaver population will repair them in a matter of days, and the water level will rise to its pre-construction level.

E/A&H will make every attempt to trench around and remove the waste-receiving structure without dewatering surrounding sediments. However, should sediment dewatering be required, E/A&H will install temporary well points as necessary in the vicinity of the waste-receiving structure. In order to temporarily lower the water table, groundwater will be pumped from the well points into nearby NAS Pensacola Industrial Wastewater Treatment Plant (IWTP) manholes. After removing the structure, E/A&H will remove the temporary well points and fill the boreholes with a cement/bentonite grout.

2.1.4 Roadway Construction

Due to the wetland and surrounding forested area's layout, PWC personnel will construct a temporary road to the waste-receiving structure and adjacent staging area. E/A&H will clearly mark the road's location with metal stakes and flagging before construction begins.

Several mature trees are present along the north and northeast shoreline of the wetland, including two magnolias (approximately 16 to 18-inches trunk diameter) and several large oaks. During the November 8 and 9, 1993 site visit, E/A&H selected the best mute for transporting equipment and personnel to the structure's vicinity. This route was chosen in order to minimize disturbance or damage to vegetation and trees while allowing heavy equipment to traverse the

boggy substrate. The proposed temporary road enters the wetland via the service road south of Buildings 649 and 755, and travels south to the lower staging area upgradient from the water-receiving structure (Figure 1-4). The mad location circumvents the two large magnolias and various large oaks, thus minimizing the possibility of equipment damage to the mature trees in the wetland. Portions of the understory along the direct path of the road will be cleared by PWC before road construction. As the road approaches the wetland, corrugated metal (possibly interlocking) will be put over the road so that heavy equipment can reach the structure.

Depending on the height of equipment that will traverse the road, trimming select limbs of the large oaks may be necessary. E/A&H will assist the PWC as necessary to select the limbs to be removed. No pruning is anticipated for the two magnolias.

An upper staging area, as shown on Figure 1-4, will be constructed prior to the structure's removal. Activities to be conducted from this area include construction materials and equipment storage, and the decontamination of small tools and equipment. The established decontamination area for larger equipment is at Site 11 north of Chevalier Field (see Figure 1-1). A lower staging area, as shown on Figure 1-4, will be constructed for sediment dewatering, and for the handling and containerizing (in U.S. Department of Transportation [DOT]-approved 55 gallon drums) sediment, sludge, and possibly water removed from the waste-receiving structure's vicinity.

2.1.5 Silt Fence Construction

E/A&H anticipates removing the structure will agitate the surrounding sediment, which will become suspended in the wetland water. To mitigate the impact of the increased sediment load (and contaminants) to the wetland and to protect the beaver population south of the waste-receiving structure, E/A&H will construct a silt fence between the structure and the north beaver

dam and beaver lodge (Figure 1-4). The silt fence will be constructed by driving 5- or 6-foot long stakes approximately 2 feet into the subsurface. A small trench will be excavated along the north side of the stakes. Polypropylene geotextile fabric intended for silt fence use will be attached to the stakes with heavy-duty construction staples and allowed to rest in the trench. The geotextile fabric will be approximately 4 to 5 feet high and approximately 225 feet long.

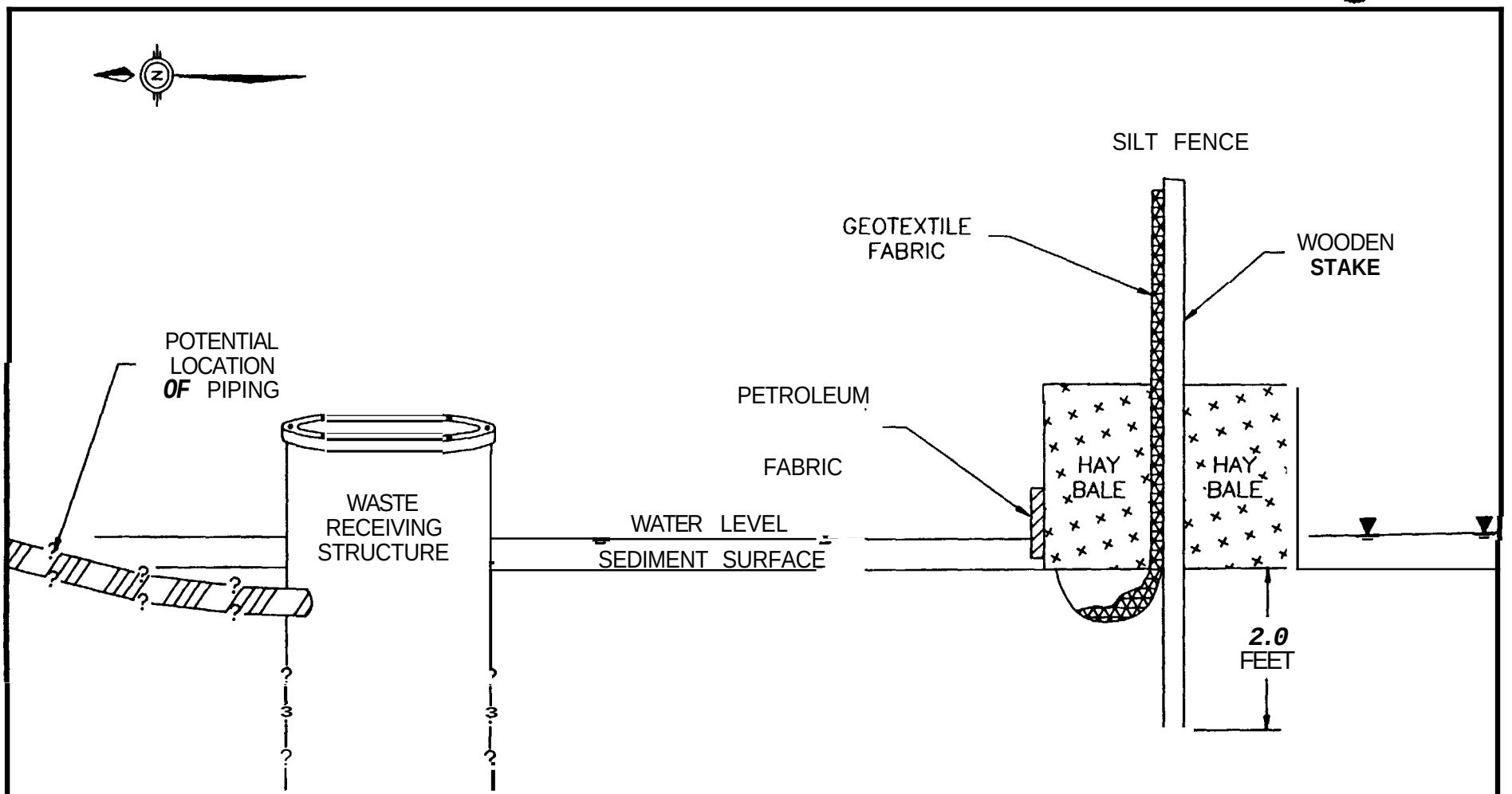
Hay bales will be placed along both sides of the silt fence to augment silt filtration and to support the fence. Petroleum-absorbent socks or fabric will be attached at the water surface with small stakes to the hay bales on the north side of the silt fence to absorb floating hydrocarbons the sediment may release during construction. Figure 2-1 provides a cross-sectional view of the silt fence.

After removal activities are complete, and the sediment load has settled, the silt fence, used petroleum absorbent socks or fabric, and the hay bales will be removed and containerized in 55-gallon drums for disposal by the PWC. The drums will be labeled by site number, collection date, and waste matrix, and will be documented on a drum-tracking log. An example of this log is provided as Appendix C.

2.2 Removal Activities

Removing the waste-receiving structure will consist of the following activities performed by the parties listed below:

- Monitor the air for organic vapors in the work area (E/A&H).
- Remove the contents of the waste-receiving structure (PWC with E/A&H assistance).
- Remove the waste-receiving structure from the wetland (PWC with E/A&H assistance).
- Sample surface waters during removal activities (E/A&H).



SCALE: NOT TO **SCALE**

REMOVAL ACTION
SITE 30, WETLAND 5A
NAS-PENSACOLA
PENSACOLA, FLORIDA

FIGURE 2-1
SILT FENCE
CONSTRUCTION DIAGRAM

DWG DATE 01/14/94 | DWG NAME 058CONDI

These activities are discussed in the following sections.

2.2.1 Air Monitoring

During site reconnaissance, the contents of the waste-receiving structure were agitated and an oily sheen rose to the surface. Field personnel noted a strong hydrocarbon and/or solvent odor. Previous analyses have confirmed the presence of VOCs, including vinyl chloride at detectable concentrations. Therefore, E/A&H will monitor the air during excavation and removal activities. The air monitoring will be conducted by the SSO, who will monitor the breathing zone of onsite personnel with an OVA or a photoionization detector (PID) to check for the presence and concentration of organic vapors. The organic vapor readings and lacations will be recorded in the field logbook. Specific air monitoring procedures are discussed Section 6.2 of the HASP (Appendix B).

2.2.2 Waste-Receiving Structure Evacuation

Prior to excavation, the waste-receiving structure's contents will be removed by either pumping them into DOT-approved 55-gallon drums, or into a holding tank or vacuum truck for subsequent disposal by PWC personnel. All drums (or the holding tank) will be labeled with the site number, collection date, and waste category. The disposal method will be selected by the PWC based on the waste classification. PWC will dispose of the waste in accordance with applicable federal and state guidelines for that waste category. Each drum of waste will be logged on a drum tracking log, which will detail the number of drums, site number, waste type, and date filled. Drums will be temporarily stored on wooden pallets (to aid in transportation) adjacent to the upper staging area. Depending on the structure's volume and contents, the evacuated material may require pretreatment (i.e., dewatering) prior to disposal. This activity, if necessary, will be outlined in a technical memorandum to SOUTHNAVFACENGCOM.

The actual volume of the structure's contents **has** not been estimated due to the lack of information concerning its subsurface dimensions. In the event that holding **tanks** or vacuum trucks **are** required, the **PWC** will arrange for them to **be** on standby during the evacuation process in order to minimize downtime.

2.2.3 Waste-Receiving Structure Removal

A trackhoe will excavate around the waste-receiving **structure in** preparation for its removal. The trackhoe will be operated by PWC personnel and directed by E/A&H personnel. **E/A&H** anticipates the structure *can* be moved by attaching a heavy-gauge steel chain around the 60-inch diameter steel portion, attaching the chain to the trackhoe bucket, and **lifting** the structure from the wetland sediment. The excavated structure will **be** placed on bermed heavy-duty plastic sheeting in preparation for thorough steam cleaning, destruction, and disposal. Should the trackhoe be unable to remove the structure, a heavier piece of equipment, such as a construction crane, may be used.

2.2.4 Surface Water Sampling During Field Activities

To provide surface water quality information during removal activities, one surface water sample will be collected from the wetland's southeast portion where it discharges into a stream crossing under Murray Road. The surface water sample will **be** submitted to a NEESA-approved analytical laboratory for TAL/TCL analytical testing. **Details** on sample collection and analytical testing procedures **are outlined** in Section **4.**

2.3 Post-removal Activities

The following activities will be performed by E/A&H and the PWC after removing the structure and excavating any **soil:**

- Dewater the excavated soil and containerize the soil and water for treatment and/or disposal by PWC personnel.
- Collect up to five post-excavation discrete or composite sediment samples for field screening and analytical testing.
- Collect one composite soil sample from the excavation backfill material (sand).
- Backfill the excavated area with clean sand, and reintroduce plant species as necessary.
- Remove the silt fence, hay bales, temporary mad, and equipment; clean the road materials; and containerize the silt fence construction materials and hay bales for subsequent disposal by the PWC.
- Discontinue beaver dam breaching, and allow the water in the wetland to rise to pre-construction levels.
- Conduct post-excavation surface water sampling.
- Collect composite soil samples for waste characterization analyses of the excavated soil stockpile.
- Clean and dispose of the excavated structure.
- Drum used PPE and used disposable sampling equipment for subsequent disposal by the PWC.
- Prepare and submit a report documenting the results of the excavation and sampling.

The following sections detail the above activities.

2.3.1 Dewater and Drum Excavated Soils

A limited dewatering process will be performed on excavated soil associated with the waste-receiving structure. The process will consist of placing the excavated soil on bermed, heavy-duty plastic sheeting which will be situated on an incline so fluids trapped in the sediment will flow downhill. The soil stockpile will be covered with plastic sheeting to prevent additional

water from collecting in the soil during rain events. These fluids will pass through a screen (the geotextile fabric used for silt fence construction) to filter out particulates, and will then be caught and containerized in properly labeled, 55-gallon DOT-approved drums (Type 6B, 6C, 6J, 17C, or 17H). The dewatered soils will be placed in properly labeled 55-gallon DOT-approved drums. The drums will be stored temporarily on wooden pallets (to aid in future transportation) adjacent to the upper staging area.

PWC will select the disposal method based on the waste classification, and will dispose of the waste in accordance with the applicable guidelines for each waste category. All drums will be labeled with the site number, collection date, and waste category. Each drum will be logged on a drum-tracking log, detailing the number of drums,. site number, waste type, and date filled. E/A&H anticipates that liquid waste *can* be disposed of in the NAS Pensacola IWTP.

2.3.2 Sediment Sampling and Field Screening

After removing the structure and conducting any necessary excavation, E/A&H will collect up to five discrete or composite sediment samples from the structure's vicinity for laboratory analysis. In addition, samples will be subjected to a field screening procedure to govern the amount of soil to be excavated. The number of samples collected will be determined in the field based upon the excavation's dimensions. The samples will be submitted to a NEESA-approved laboratory for TAL/TCL analyses. The samples will be collected with a petite Ponar grab sampler. Operating procedures for the petite Ponar sampler are detailed in Section 4. Composite samples will consist of approximately five sampling points each from the 0- to 1-foot interval below the sediment/surface water interface. Figure 1-4 shows the approximate sediment sample locations. Composite sediment will be homogenized in a stainless-steel bowl. One portion of the homogenized sample will be used for analytical testing. The other will be field screened with an OVA, and the results will be recorded in the field logbook. [To avoid false

positives caused by methane, sediments with elevated readings will be screened again using a charcoal filter to screen out compounds other than methane. This reading will be compared to the original to determine the amount attributable to methane. A PID will also be available as a secondary screening device if the OVA proves unreliable.]

The purpose of collecting the sediment samples for analytical testing is to provide additional sediment sampling points in the waste-receiving structure's vicinity. The analytical data, along with recent site assessment data, will be used to formulate remedial action alternatives (to be submitted under separate cover) for Wetland No. 5A. Sediment samples collected are NOT intended to confirm if USEPA and Florida Department of Environmental Protection (FDEP) soil cleanup standards have been obtained through removing the structure and surrounding soil. As indicated in the Historical Land Use section, the wetland has been receiving a multitude of waste streams over the past several decades from multiple outfalls. Removing the structure alone may not provide the remediation required by USEPA or FDEP.

Additional sediment samples will be collected for field screening purposes only. These samples will be collected after the structure's removal and before the excavated area is backfiied. The petite Ponar grab sampler will collect approximately 15 to 20 sediment samples from a grid pattern around the excavated area. Each sample will be placed in a quart size glass jar, covered with aluminum foil and sealed with a lid, allowed to equilibrate for at least 20 minutes, and field screened with an OVA for the presence and concentration of organic vapors. A filtered and an unfiltered field screening reading will be obtained for each sample to correct for the presence of methane. **[A PID will be available to be used as a secondary screening device if the OVA proves unreliable.]** The field screening results, along with a visual observation of each sediment sample, will be recorded in the field logbook. Based on the organic vapor readings, the E/A&H site manager may direct select areas of excavation to remove soil containing

significant amounts of volatile constituents. The excavated soil will be stockpiled on plastic sheeting, allowed to dewater, and then containerized in drums for subsequent disposal.

2.3.3 Collect a Composite Backf'ii Soil Sample and Backfill the Excavation

The excavated area will be backfilled with clean sandy soil. Prior to backfilling, E/A&H will collect one composite soil sample from the backfill material for submittal to the NEESA-approved laboratory. The laboratory will analyze the sample for TAL/TCL parameters. The sample is being collected to verify that the sand backfill does not contain excessive contaminant concentrations that could be detrimental to the Wetland 5A's ecology. The excavation then will be backfilled, and the area may be seeded or planted as necessary to restore the wetland.

2.3.4 Remove the Construction Materials, and Reflood the Wetland

After the excavation has been backfilled and the suspended sediment load has settled, E/A&H will remove the silt fence, hay bales, roadway material, and any debris or trash associated with the field activities. The silt fence materials (geotextile material, stakes, staples, and petroleum-absorbent socks or fabric) will be containerized in labeled 55-gallon drums for subsequent disposal by PWC personnel. The corrugated metal sheeting will be steam-cleaned and transferred to the PWC for storage and reuse. E/A&H will discontinue breaching the beaver dams, allowing the beaver population to repair them, and the wetland water level to rise to pre-construction levels.

2.3.5 Clean and Dispose of Excavated Structure

To prepare for disposal, the excavated structure will be steam-cleaned or pressure-washed on a decontamination pad consisting of bermed, heavy-duty plastic sheeting. The fluids generated during the steam-cleaning process will be collected for subsequent disposal at the NAS Pensacola IWTP. Large metal portions of the structure will be cut into pieces by PWC personnel to

facilitate handling and disposal (or scrap-metal recycling). Concrete portions of the structure will be broken into manageable pieces with the trackhoe's bucket. Depending on the structure's size, at least one roll-off box may be **required** for temporary storage and transportation of the construction debris. E/A&H anticipates that metal portions of the structure *can* be recycled, and that both its metal and concrete portions of the structure *can* be **disposed** of **at** a municipal landfill as construction waste.

2.3.6 Post-excavation Surface Water Sampling

E/A&H will collect one surface water sample within one week following the completion of field activities. The sample will be submitted to a NEESA-approved analytical laboratory for TAL/TCL parameter analyses, and concentrations will be compared with the pre-excavation surface water sample results to determine if construction **affected** the wetland water chemistry. E/A&H is anticipating minimal impact due **to** the precautions (draining the wetland, constructing the silt fence) taken before removing the waste-receiving structure.

2.3.7 Waste Characterization Sampling

After the structure **has** been removed and the excavated sediments have been dewatered, E/A&H will collect at least one composite soil sample for waste characterization analyses. The composite soil sample(s) will be analyzed for full Toxicity Characteristics Leaching **Procedures (TCLP)** parameters in preparation of offsite landfill disposal. After the waste characterization sample has been obtained, the **soil** will **be** placed in DOT 55-gallon drums. The drums will **be** labeled with the site number, **date** of collection, and waste **category,** and will be documented on the drum-tracking log.

2.3.8 Dispose of PPE and Disposable Sampling Equipment

Used PPE and used disposable sampling equipment (such as plastic sheeting) will be placed in 55-gallon DOT-approved drums for disposal by the Navy. Each drum will be labeled with the site number, waste category, and collection date. Navy personnel will transport the drums to a waste storage facility until they *can* be disposed of properly. Information pertaining to these drums will be entered on a drum-tracking log.

2.3.9 Prepare an Removal Action Report

After field activities *are* complete and analytical results have been received, E/A&H will prepare a Removal Action Report. This report will include the following:

- Background information.
- A detailed description of the field activities.
- Analytical test results for sediment, surface water, and waste characterization samples.
- A site diagram showing the features of the site during the removal action. This will include the location of the beaver dams and lodge, the lateral extent of the structure and any overexcavation, the sediment and surface water sampling locations, the temporary road and staging areas, decontamination area, sediment dewatering area, and silt fence.
- Disposal manifests (if available at the time of the report) for soil and sludge disposal, and a description of the fate of water resulting from removal action.
- Copies of the signed Orientation Meeting Agreement Form and the Health and Safety Plan Compliance Agreement Form.

3.0 HEALTH AND SAFETY PLAN

A site-specific Health and Safety Plan for the Removal Action field operations has been prepared and is included as Appendix B. This site-specific plan is to be used in conjunction with the

approved NAS Pensacola CHASP. Copies of both plans will be onsite during all field operations.

4.0 SAMPLING AND ANALYSIS PLAN

The following SAP outlines the specific protocols to be followed in completing the removal action, as well as quality goals for each field screening and analytical method. Descriptions of sample collection, handling, preparation, and shipping methods to be followed also are discussed.

4.1 Project Description

Sediment sampling will be conducted after the waste-receiving structure's removal to determine what contaminant concentrations will be present after the structure and surrounding soil have been removed. Surface water samples will provide background data, monitor the surface water quality during removal activities, and provide post-removal water quality data. Waste characterization sampling will provide the analytical data the PWC requires for the disposal of excavated soil, sludge, water, and decontamination fluids.

4.2 Field Sampling Plan

This section describes the sampling and field measurement procedures to be used during the removal action. The sampling procedures will be in accordance with the CSAP for NAS Pensacola (E/A&H 1993) and the USEPA Region IV Standard Operating *Procedures and Quality Assurance Manual (SOP/QAM)* (USEPA 1991).

For planning, the number of sediment, surface water, and waste characterization samples are provided in Table 4-1.

Table 4-1
Wetland No. 5A Sampling Analytical Requirements

Medium	No. of Samples	Analytical Parameter	DQO[b] Level
Surface Water	3	TAL/TCL[a]	IV
Surface Water - Duplicate Sample	1	TAL/TCL	IV
Sediment	1 - 5	TAL/TCL; discrete or composite sample(s)	IV
Sediment - Duplicate Sample	1	TAL/TCL; discrete or composite sample	IV
Backfill Material (Sand)	1	TAL/TCL; Composite sample	
Waste Characterization - Soil	1	TAL/TCL; Composite sample	

Notes:

[a] – TAL/TCL parameter analyses will include volatile organic compounds (VOCs); base-neutral/acid extractable organic compounds (BNAs); pesticides and polychlorinated biphenyls (PCBs); metals (total [i.e. unfiltered], water only); and cyanide.

[b] – Data Quality Objective (DQO)

The number of samples may be modified based on field screening readings and field observations. USEPA and FDEP will be apprised of any changes in the number collected. Figure 1-4 shows the sample locations.

The preferred order of sample collection will be as follows (on a parameter basis): VOCs, extractable organics (including pesticides, herbicides, and PCBs), total metals, cyanide, and inorganics.

4.2.1 Surface Water Samples

Surface water samples will be collected before, during, and after removal activities in accordance with Section 4.8 of the USEPA's SOP/QAM and the CSAP. The samples will be

submitted to a NEESA-approved laboratory for TAL/TCL parameter analyses, and the analytical results will be contained in the Removal Action Report.

The samples will be collected downstream from the waste-receiving structure where wetland waters discharge into a small stream crossing under Murray Road. These waters ultimately enter Bayou Grande and Pensacola Bay. Although the USEPA SOP/QAM suggests collecting additional samples from upstream for comparison, this is not feasible or possible since the wetland is a recharge area, and the waste-receiving structure is located at or near the upgradient extent.

Three surface water samples will be collected for laboratory analyses and field parameter measurements. The surface water sample location will be approached from the downstream (i.e., from the east) direction so as to minimize sediment disturbance. One surface water sample will be collected before removal activities, one sample will be collected during removal activities, and one sample will be collected within one week after field activities are complete.

The surface water samples will be collected using the submerged bottle technique, because the sample location is accessible by wading. Water samples will be collected as follows:

1. Don PPE as required in the site-specific HASP.
2. Point the open end of the vials upstream (to the northwest). Slowly submerge unpreserved volatile organic analysis (VOA) vials completely into the water and fill, without disturbing the bottom sediments. Cap the VOA vials under water. Be sure to have zero headspace before sealing the vial.
3. If pre-preserved VOA vials are used, collect the surface water sample using a decontaminated glass or stainless-steel device and carefully decant into the VOA vials, making sure there is no headspace.

4. Slowly submerge the other unpreserved bottles into the surface water and fill, without disturbing the bottom sediments. If the sample is to be collected at depth, uncap the containers at the required depth and allow to fill. Recap the containers before returning the sample to the surface.
5. Chemically preserve the samples as needed and seal with a Teflon-lined cap.
6. Collect additional surface water in unpreserved sample containers for field measurement of pH, temperature, conductivity, and turbidity.
7. Place the bottles in a cooler and preserve to 4 degrees Centigrade (°C).
8. Note pertinent sampling information in the field logbook.
9. Decontaminate any sampling equipment utilized in accordance with Section 4.6.

Each time the surface water is sampled for analytical testing, E/A&H personnel will collect one sample for field measurements of pH, temperature, specific conductance, and turbidity. Section 10 of the CSAP contains the quality assurance objectives for field parameters.

4.2.2 Sediment Samples

After removing the waste-receiving structure, E/A&H will collect between one and five composite or discrete sediment samples for TAL/TCL parameter analyses. The sediment will be collected from 0 to 1 foot below the sediment/surface water interface with a petite Ponar grab sampler. The petite Ponar sampling device, designed to collect dredge samples underwater, is a stainless-steel, clamshell-type scoop activated by a [cantilever] system. Procedures for operating the petite Ponar grab sampler follow.

1. Don PPE as required in the site-specific HASP (Appendix B).
2. Lock open the jaws of the decontaminated sampler.
3. Lower it into the sediment.
4. Release the tension on the rope and close the sampler's jaws.

5. Retrieve the sampler and open the jaws to collect the sediment sample.
6. The VOC sample will be collected immediately from the petite Ponar sampler and placed into the appropriate sample container. Fill to capacity to leave no headspace. Toxicity samples will be collected in the same manner as the VOC samples.
7. Place any remaining sample into a stainless-steel bowl.
8. Repeat the process until enough volume has been collected to make the necessary composite samples. Homogenize the samples and place in the appropriate containers using stainless-steel implements.
9. Describe lithology of sample and the depth from which it was collected in the field logbook.
10. Upon completion of the sampling, decontaminate all equipment in accordance with Section 4.6.

[Other sampling devices *such* as a hand auger will be available for use if the Ponar dredge proves unreliable in collecting representative samples.]

4.3 Sample Identification, Containers, and Preservatives

The following sections detail the sample identification system, sample containers, and sample preservation.

4.3.1 Sample Identification

Sample designations will follow the guidelines established in Section 12 of the CSAP. Sediment and surface water sample collection points will be labeled according to site, media sampled, and unique number. Each sample designation will be composed of five to eight characters, the first two of which will represent the site identification number at NAS Pensacola (for this project, the first two characters will be "30", representing Site 30). The third character represents the sample matrix. The letter "M" will represent a sediment sample, and the letter "W" will

represent a surface water sample. The fourth and fifth numbers represent the matrix serial identification number, which is a unique location number assigned to the sample. The sixth, seventh, and eighth characters represent the sample-specific identification number, which will be the deepest sample depth rounded to the nearest foot. For example, if a sediment sample were collected from the 0- to 1-foot interval below grade at location 06 at Site 30, the location would be labeled as 30M06001. The sixth, seventh, and eighth characters also will designate quality assurance (QA) samples with sixth digit designating the type of quality assurance sample or material blank (such as "E" for "equipment rinsate blank," and the seventh and eighth digit differentiating between QA samples.

Waste characterization sample designations will have eight characters. The first two characters will represent the site number (30), and the third will represent the media sampled ("S" for soil, "W" for water). The fourth and fifth characters, however, differ from the CSAP in that they will designate the sample as a waste characterization sample ("WC" for waste characterization). The next three characters will be the waste characterization sample identification number, which will be sequentially numbered. For example, a waste characterization composite soil sample from the soil stockpile associated with the waste-receiving structure's removal could be designated as 30SWC001, assuming this is the first soil sample collected at Site 30 for waste characterization.

4.3.2 Sample Containers and Preservatives

The appropriate number of pre-cleaned sample containers, preservatives, and trip blank samples will be obtained from a NEESA-approved CLP laboratory pnor to sampling. All glass containers must have Teflon-lined caps.

Samples will be chemically preserved in accordance with guidelines presented in Section 4.2.7 of the USEPA SOP/QAM and Section 12.2 of the CSAP. All samples requiring chemical preservation shall be preserved immediately upon collection in the field. In general, the soil simple jars will be pre-preserved at the analytical laboratory before shipment to E/A&H field personnel. E/A&H will use unpreserved containers for the surface water samples and add proper preservatives immediately upon sample collection. Unpreserved sample containers will be used for field parameter measurements.

4.4 Field and Laboratory Quality Control (QC) Checks

QC checks to be followed are contained in the Quality Assurance Plan (QAP) in Section 15 of the CSAP. Field QC checks will include the following:

- Submit one trip blank (provided by the testing laboratory) with each shipment of samples submitted for VOA.
- Submit one field blank per week during the waste receiving structure's removal. The field blank will consist of the American Society for Testing and Materials (ASTM) Type III water used for decontamination, and will be collected in the field at the staging area.
- Submit one equipment rinsate blank per day (note: this will only occur during sediment sampling as no equipment will be used during surface water sampling).
- Submit one temperature blank per cooler.
- Submit one duplicate surface water sample during the removal activities to be collected during the excavation at the same time as the second surface water sample is collected.
- Collect a sufficient volume of surface water for matrix spike analyses when collecting the second surface water sample by doubling the volume.
- Submit one duplicate sediment sample for sediment collected near the waste receiving structure.

- For sediment samples collected near the waste-receiving structure, collect a sufficient volume for matrix spike analyses by doubling the volume collected at a sample point to be determined in the field.

4.5 Sample Packaging, Labeling, and Chain-of-Custody Forms

Sample packaging, labeling, and custody documentation will proceed as outlined in Section 12 of the *CSAP*.

4.6 Decontamination Procedures

Decontamination procedures for sampling equipment will be performed in accordance with Appendix B, Section B-8 of the USEPA SOP/QAM and Section 11 of the *CSAP* with the following exceptions. The detergent used for this project will be Liquinox, which contains powerful chelating agents to bind and remove trace metals from sampling equipment. When available, hot water will be used for field decontamination. A stainless-steel bowl or bucket, sink, or glass bowl will be used to contain the clean water wash solution. Field reagent grade water will meet the specifications of ASTM Type III water (D 1193-77 re-approved 1983, federal test method number: 7916), which provides deionized, filtered, and organic free water for field use. The steam cleaner and/or high pressure hot water washer will be capable of generating adequate pressure and producing hot water and/or steam.

Large equipment will be decontaminated at the established pad at Site 11, north of Chevalier Field. Cleaning and decontaminating small tools and sampling equipment will be conducted on a decontamination pad to be located adjacent to the staging arm on the service road north of the wetland. The decontamination pad will be located downgradient and downwind from the clean equipment storage area. The decontamination arm will be lined with heavyduty plastic sheeting and will be designed to promote surface runoff into a catch basin. The catch basin will be

constructed of wood and lined with plastic to contain the waste/rinse water until it *can* be containerized in 55-gallon drums. All equipment will be cleaned on saw horses or auger racks above the plastic sheeting. Decontamination fluids will be pumped from the catch basin into labeled **55-gallon** DOT-approved storage drums. The PWC will be responsible for transporting and disposing drummed decontamination fluids **this** project generates. E/A&H anticipate the decontamination fluids *can* be processed through **NAS** Pensacola's **IWTP.**

The following procedures will be followed to **reduce** cross-contamination risk during decontamination. **A** new pair of disposable outer gloves will be donned before handling sampling equipment during decontamination. Only Teflon, glass, or stainless-steel spray bottles/pressurized containers will be **used** to apply decontamination rinsates.

Non-sampling equipment such as the trackhoe will be decontaminated with high-pressure **steam.** If necessary, the equipment **will** be scrubbed with a laboratory-grade detergent **and** clean water wash solution. The equipment will be rinsed with clean water as necessary.

Sampling equipment to be decontaminated includes the petite Ponar sampling device, a hand auger, and stainless-steel bowls and utensils used to homogenize samples. Sampling equipment will be decontaminated as follows:

1. Don protective gloves prior to decontaminating equipment.
2. Wash and scrub with a laboratory-grade detergent and clean water wash solution or decontaminate with high-pressure steam.
3. Rinse with clean water.
4. Rinse with **ASTM** Type III water.
5. Rinse twice with pesticide-grade isopropyl alcohol.
6. Rinse with **ASTM** Type III water.

[Bold items *enclosed* in brackets denote changes to the first draft of document.]

7. Air dry. If adverse weather prohibits air drying, repeat the isopropyl alcohol rinse twice and final ASTM Type III water rinse.
8. Wrap in aluminum foil or plastic sheeting for storage if the equipment is to be stored or transported.

Personal decontamination procedures are outlined in the site-specific HASP in Appendix B.

4.7 Calibration Procedures and Frequency

The instrument(s) used for measuring field parameters will be calibrated at least twice daily when surface water samples are collected. Calibration and standardizing procedures are in Section 10 of the *CSAP*.

5.0 QUALITY ASSURANCE PLAN

The *QAP* in Section 15 of the *CSAP* will be used during this removal action.

6.0 DATA MANAGEMENT PLAN

Data management includes documenting field activities, validating analytical data, preparing reports, and other data related to this project such as meeting summaries, telephone conversation logs, illustrations, computations, and engineering data. Section 14 of the *CSAP* contains the data management guidelines to be followed during this project.

7.0 COMMUNITY RELATIONS PLAN

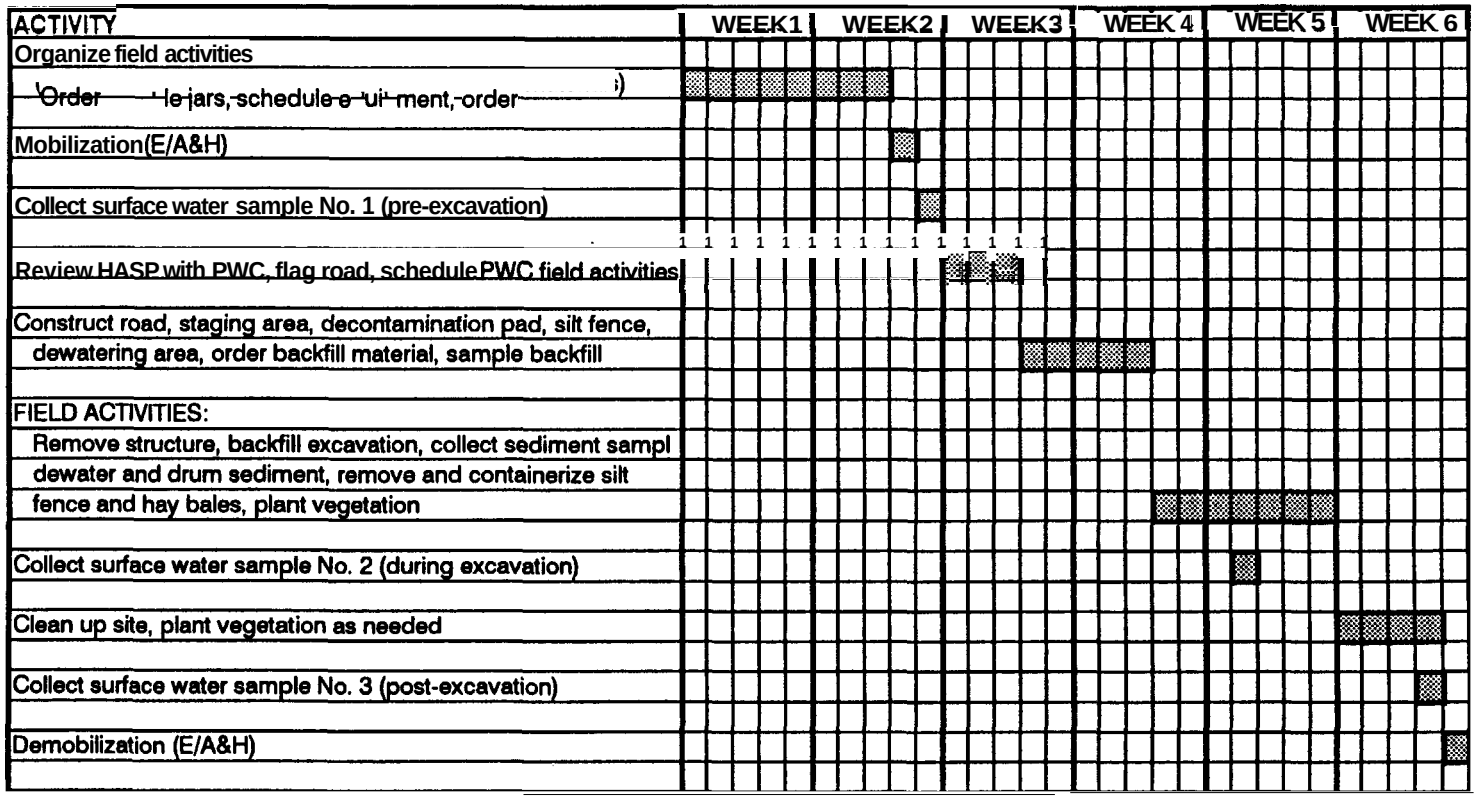
The Navy shall comply with the community relations aspects of this removal action as applicable. The designated spokesperson shall be the Public Affairs Officer for NAS Pensacola. SOUTHNAWACENGCOM, with the assistance of and in coordination with NAS Pensacola, shall develop and generate an Administrative Record *(AR)*, publish a notice of availability of the

AR within 60 days of the start of this removal action. After providing a 45-day comment period, a written response to significant comments for inclusion in the record will be generated.

8.0 SCHEDULE

E/A&H estimate that the proposed removal action activities outlined in this document *can* be performed in approximately eight weeks from authorization to proceed. An itemized time schedule is presented as Figure 8-1.

FIGURE 8-1 - SCHEDULE OF ACTIVITIES
REMOVAL ACTION WORK PIAN
WASTE-RECEIVING STRUCTURE
SITE 30, WETLAND NO. 5A
NAS PENSACOIA



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U.S. Environmental Protection Agency. (1992). ***Field Investigation, Naval Air Station Pensacoh, Pensacoh, Florida*** U.S. Environmental Protection Agency, Region IV: Athens, Georgia.

10.0 FLORIDA PROFESSIONAL GEOLOGIST SEAL

I have read and approve of the Removal Action Work Plan for the waste-receiving structure in Wetland 5A of Site 30 and seal it in accordance with Chapter 492 of the Florida Statutes. In sealing this document, I certify that the geological information contained in it is true to the best of my knowledge and that the geological methods and procedures included in this plan are consistent with currently accepted geological practices.

Name:	Brian E. Caldwell
License Number:	1330
State:	Florida
Expiration Date:	July 31, 1996

B E Caldwell

Brian E. Caldwell

9-21-94

Date

Appendix A

Orientation Meeting Form

Orientation Meeting

Instructions for Use: Before performing any actions at NAS Pensacola, E/A&H personnel will attend an orientation meeting at which the following requirements will be fully explained. Sign and date this form to indicate you have reviewed these requirements.

General Requirements

- ☐ Map showing locations of NAS Pensacola and selected air-courier office
- ☐ Map of NAS Pensacola showing locations of site office trailer and site
- ☐ Health and Safety Plan (See Site Health and Safety Officer)

Sampling Requirements

- ☐ Ponar Sampler
- ☐ Sample-Numbering System
- ☐ QA/QC Frequency
- ☐ QA/QC Definitions
- ☐ Sample Packaging

Documentation Requirements

- ☐ Field Forms
- ☐ Field Logbooks
- ☐ Photographs

Acceptance

I have reviewed all of the requirements listed above for field activities at NAS Pensacola.

Names	Date Signed

Appendix B

Site-Specific Health and Safety Plan

HEALTH AND SAFETY PLAN
REMOVAL ACTION
WASTE-RECEIVING STRUCTURE
SITE 30, WETLAND NO. 5
NAVAL AIR STATION, PENSACOLA, FLORIDA

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1.0 INTRODUCTION

This Health and Safety Plan (HASP) is written for the Removal Action field operations to be conducted at Wetland No. 5 (Site 30) at the Naval Air Station (NAS) Pensacola in Pensacola, Florida. This plan is to be used in conjunction with the approved NAS Pensacola Comprehensive Health and Safety Plan (CHASP). Copies of both plans should be onsite during all field operations. The Navy project contract number with EnSafe/Allen & Hoshall (E/A&H) is N62467-89-D-0318 CTO-072.

The purpose of the action is to remove a steel waste-receiving structure south of Buildings 649 and 755. The structure is cylindrical, approximately 60 inches in diameter, at least 7 feet deep, and situated in the northcentral portion of the wetland approximately 20 feet from the north shoreline. Several pipes run along the ground surface from the north toward the structure. The structure formerly may have been utilized to collect liquid waste from metal-plating operations that occurred in Buildings 649 and 755 from the 1940s through the 1970s. A site map has been provided as Figure 1-4 in the Removal Action Work Plan.

The removal action's goal is to mitigate potential risk to human health and the environment by removal of the structure's contents, excavating and disposing of the structure, and potentially removing and disposing of contaminated soil near it.

Applicability

The plan's provisions are mandatory for all E/A&H personnel, personnel under contract to E/A&H, Department of Defense (DOD) personnel, and contractors and subcontractors to DOD engaged in the removal action who will be exposed or have the potential to be exposed to onsite hazardous substances. All personnel will operate in accordance with the most current requirements of 29 Code of Federal Regulations (CFR) 1910.120, *Standards for Hazardous Waste Workers and Emergency Responders*. These regulations include the following provisions for employees exposed to hazardous substances, health hazards or safety hazards: training as

described in 120(e), medical surveillance as described in 120(f), and personal protective equipment (PPE) described in 120(g). All field personnel assigned to field activities for the project must read this plan and sign the acceptance form before site activities start. At a minimum, all provisions of the E/A&H corporate health and safety plan will be followed.

E/A&H will suspend the site work and will instruct personnel to evacuate the area under the following conditions: If inadequate safety precautions are taken by the subcontractor, visitors, or NAS Pensacola Public Works Commission (PWC) personnel and contractors/subcontractors, or if it is believed that the subcontractor, visitors, or PWC oversight personnel are or may be exposed to an immediate health hazard.

Health and safety training certificates for all E/A&H employees who visit the site will be on file and available for review in the field trailer. Current Occupational Safety and Health Administration (OSHA) refresher training certificates will be available onsite for all employees involved in field activities whose refresher course requirements come up for renewal before the project begins. All subcontractors, Navy personnel, and any other site visitors must provide health and safety certification with appropriate refresher course documentation prior to site entry and will comply with the requirements of this HASP.

At least one E/A&H employee certified in cardiopulmonary resuscitation (CPR) and first aid will be onsite during all site activities.

2.0 SITE CHARACTERIZATION

2.1 Work Areas

See CHASP page 2-1.

2.2 Work *Area* Access

See CHASP page 2-2.

23 Site Map and Work Zones

A Vicinity Map (Figure 1-1) and a Site Map (Figure 1-4) showing the base area and subject site, respectively, are contained in the Removal Action Workplan. The exclusion area, decontamination corridor, and support area locations will be based on existing physical conditions, such as utilities, roads, and site security assets.

2.4 Site Description

Site 30 comprises several buildings, including Buildings 649 and 755 (former metal-plating facilities). Wetland 5A is located south of Site 30, separated from it by a driveway and a service road. The waste-receiving structure is located in the north portion of Wetland 5A. The site is on the eastern portion of NAS Pensacola between Murray Road and the golf course. The wetland is a headwater of a small creek that discharges to a paved drainage ditch west of the Chevalier Field complex. The main channel of the paved ditch extends from near the intersections of Moffit and Murray roads and discharges into an outlet to Bayou Grande, north of Chevalier Field.

Building 649 was used from the 1940s to the 1950s as a tin-cadmium plating operation. Fifteen tanks, ranging from 200 to 500 gallons, held solutions containing tin, cadmium, and cyanide. The contents of these tanks were allegedly emptied each month into a former ditch southeast of the building. A 250-gallon tank containing 1,1,1-trichloroethylene also was emptied into the ditch during this period (Naval Energy and Environmental Support Activity [NEESA], 1983).

Building 755 operated as a plating shop during the 1960s and 1970s. Fifty tanks, ranging from 50 to 200 gallons, contained solutions of nickel, silver, lead, tin, chromium, and other metals. These tanks were reportedly drained each month into the ditch southeast of the building (NEESA, 1983).

3.0 SITE ACTIVITIES

The following sections describe in detail the anticipated activities that will occur during the removal action. These activities include:

- Collect one surface water sample from the southeast portion of the wetland for analytical testing to provide baseline water quality concentrations (pre-removal).
- Construct a road, staging platform, and a level area on which to place the excavated structure and soil.
- Drain the wetland (or a portion of the wetland) and construct a silt fence.
- Remove and containerize the liquid and sludge within the structure for subsequent disposal by the PWC.
- Remove and destroy the structure.
- Collect one surface water sample during removal activities for analytical testing to provide water quality monitoring information during the field activities.
- Collect up to five discrete or composite soil samples from the excavated area for analytical testing.
- Collect one composite soil sample from the backfill material for analytical testing.
- Backfill the excavated area, and replant vegetation, if necessary.
- Collect composite soil samples of drummed soil for waste characterization analysis.

- Remove the temporary road and staging areas.

- Collect one surface water sample for analytical testing to provide post-construction water quality information.

- Assist PWC in coordinating the disposal of wastes (soil, sludge, water, decontamination fluids, etc.) the field activities generate.

4.0 CHEMICAL HAZARDS

Previous sampling operations have shown potential for exposure to numerous chemicals. Table 4-1 lists exposure guidelines for expected site chemicals. Material Safety Data Sheets (MSDS) for these materials will be available during all site operations.

Table 4-1
Exposure Guidelines For Expected Site Chemical Hazards

Chemical Name	Odor[a] Threshold (ppm)	OSHA PEL(b)	ACGIH TLV[c]	NIOSH REL[d]	Auto-ignition Temp.(°F)	Flammable range (% by volume)
Cyanide	N.A.	5 mg/m³	5 mg/m³ Skin	4.7 ppm Ceiling	N.A.	N.A.
Cadmium	N.A.	5 mg/m³	0.05 mg/m³	Potential Occupational Carc.	N.A.	N.A.
Lead	N.A.	0.05 mg/m³	0.05 mg/m³	0.1 mg/m³	N.A.	N.A.
Chromium	N.A.	0.5 mg/m³	0.5 mg/m³	0.5 mg/m³	N.A.	N.A.
Ethylhexyl Phthalate	N.A.	5 mg/m³ 10 mg/m³ - Ceiling	5 mg/m³ 10 mg/m³ STEL	Potential Occupational Carcinogen	N.A.	.N.A.
Fluoranthene	N.A.	Not Listed	Not Listed	Not Listed	N.A.	N.A.
Naphthalene	0.03 ppm	10 ppm 15 ppm STEL	10 ppm 15 ppm STEL	Not Listed	1,470	0.9 to 5.9%
1,2-Dichlorobenzene	50 ppm	50 ppm Ceiling	25 ppm 50 ppm STEL	Not Listed	1,690	2.2 to 9.2%
Vinyl Chloride	260	1 ppm 5 ppm Ceiling Confirmed Human Carcinogen	5 ppm Confirmed Human Carcinogen	Potential Occupational Carcinogen	1,373	3.6 to 33%
1,1,1-Trichloroethylene	0.5 to 167	50 ppm 200 STEL	50 ppm 200 STEL	25 ppm	770	11 to 41%

Notes:

a = Odor Thresholds For Chemicals with Established Occupational Health Standards, American Industrial Hygiene Association, 1989, Range of All Reference Values
b = 29 CFR 1910.1000. Table Z-1-A. Limits For Air Contaminants, as amended through 1/15/91.
c = 1990-1991 Threshold Limit Values for Chemical Subrtences and Physical Agents and Biological Exposure Indices, American Council of Governmental and Industrial Hygienists (ACGIH)
d = National Institute of Occupational Safety and Health (NIOSH) Pocket Guide to Chemical Hazards, June 1990.

N.A. = substance information not available, or substance unlistad
mg/m³ = milligrams per cubic meter
STEL = short-term exposure limit
ppm = parts per million

5.0 OPERATIONS AND PHYSICAL HAZARDS

Heavy equipment operations (i.e., backhoe, bulldozer) will be conducted in accordance with the procedures outline in the NAS Pensacola CHASP Appendix B, Drilling *Safety Guide*. PWC personnel, or their designees, will be responsible for the tank removal operations. All E/A&H personnel and subcontractors will be removed from the exclusion zone during tank removal.

When working in areas that support habitat for poisonous snakes, personnel must wear protective chaps made of heavy material designed to prevent bites. Additional care should be taken to avoid fire ants. Benadryl® will be provided in each first-aid kit for fire ant bites.

6.0 EMPLOYEE PROTECTION

See CHASP page 6-1.

6.1 Personal Protective Equipment (PPE)

Field activities associated with the removing the tank or surrounding soils will be conducted in Level B protection. Level B protection consists of positive pressure, full-face, supplied air respirator; full-length chemical-resistant clothing; hard hat; appropriate chemical-resistant latex inner and North Silver Shield outer gloves, eye protection, ear protection (where applicable), snake chaps (where applicable), and chemical-resistant, steel-toed-and-shank boots. This level of protection was chosen because of the strong odors emanating from the tank and the positive identification of vinyl chloride it.

Land clearing, road construction, and site mobilization operations will be performed in Modified Level D. Modified Level D consists of a full-length chemical-resistant clothing, hard hat, appropriate chemical-resistant latex inner and nitrile outer gloves, eye protection, ear protection (where applicable), snake chaps (where applicable), hip or chest waders, and chemical-resistant, steel-toe and shank boots. This level of protection was chosen because contaminant

concentrations detected by previous studies were generally low and free product has not been detected.

Table 6-1 lists the specific criteria for each protection level.

Table 6-1
Level Of Protection And Criteria

Level of Protection	Criteria for Use	Equipment
Level A	• When atmospheres are "immediately dangerous to life and health" (IDLH in the NIOSH/OSHA Pocket Guide to Chemical Hazards or other guides.) • When known atmospheres or potential situations exist that would affect the skin or eyes or be absorbed into the body through these surfaces. Consult standard references to obtain concentrations hazardous to skin, eyes, or mucous membranes. • Potential situations include those where immersion may occur, vapors may be generated or splashing may occur through site activities. • Where atmospheres are oxygen deficient with the conditions above. • When the type(s) and or potential concentration of toxic substances are not known.	• Positive pressure-demand full facepiece, self-contained breathing apparatus {SCBA) or positive pressuredemand supplied air respirator with escape SCBA • Totally encapsulating chemical protective suit • Chemical-resistant inner and outer gloves • Steel-toe-and-shank chemical-resistant boots • Hard hat under suit • Two-way radios worn inside suit • Coveralls, long cotton underwear, disposable protective suit, gloves and boots, work over fully encapsulating suit
Level B	• When work areas contain less than 19.5 percent oxygen • When vinyl chloride is detected in the breathing zone • During receiving structure removal, cleaning, and demolition operations.	• Chemical-resistant clothes, long sleeves, hooded, one or two pieces • Full-faced positive-pressure demand supplied air breathing apparatus or airline system with a 30-minute escape bottle • Hard hat • Inner gloves and chemical-resistant gloves • Steel-toe-and-shank boots • Optional: coveralls and disposable outer boots

Table 6-1
Level Of Protection And Criteria

Level of Protection	Criteria for Use	Equipment
Level C	• When airborne dust particles warrant respiratory protection • When work areas contain at least 19.5 percent oxygen	• Chemical-resistant clothes, long sleeves, hood optional, one or two pieces • Full-facepiece, air-purifying respirator equipped with cartridges suitable for the hazard • Hard hat • Inner gloves and chemical-resistant gloves • Steel-toe-and-shank boots • Coveralls and disposable outer boots
Level D	• When level B or C is not indicated • When airborne particles do not warrant respiratory protection • When work areas contain at least 19.5 percent oxygen	• Inner gloves and chemical-resistant gloves needed to handle soil or water samples • Steel-toe-and-shank boots • Hard hat (ANSI Z891-1969 standard) • Eye protection (ANSI Z87.1-1968) standard • Sunscreen (sun protection factor 15 or greater) • Optional: coveralls and disposable outer boots

Notes:

Level A protection will be selected when the greatest level of respiratory, skin, and eye protection is needed. Level A protection will be required in Area A of the exclusion zone.

Contradictions for use of Level A:

- Environmental measures contiguous to the site indicate that air contaminants do not represent a serious dermal hazard.
- Reliable, accurate historical data do not indicate the presence of severe dermal hazards.
- Open, unconfined areas.
- Minimal probability of vapors or liquids (splash hazards) present that could affect or be absorbed through the skin.
- Total vapor readings indicate 500 ppm to 1,000 ppm.

Level B protection will be selected when the highest level of respiratory protection is needed, but cutaneous exposure to the small unprotected areas of the body, (neck and back of head) is unlikely, or where concentrations are not known to be within acceptable standards. Additionally, the permissible limit for exposure to mixtures of all site gases will be checked using the requirements of 1910.1000(d)(2)(i) to ensure that the permissible exposure limit (PEL) is not exceeded. If the value calculated using this method exceeds 1.0, Level B PPE is required.

Level C protection will be selected when the types and concentrations of inseparable material are known, or reasonably assumed to be no greater than the protection factors associated with air-purifying respirators, and exposure to the unprotected areas of the body is unlikely to cause harm.
Dust concentrations require Level C PPE, where the respirable fractions exceed the PEL of 5 mg/m3 or the total concentrations exceed the PEL of 15 mg/m^3.

Level D protection will be chosen when measurements of atmospheric concentrations are at background levels and work functions preclude splashes, immersion, or the potential for unexpected inhalation or contact with hazardous levels of any chemicals.

Air will be monitored for volatile organic compounds (VOCs) during all sampling activities using continuous-reading instruments. Air-monitoring instrumentation will be continuous reading. Based on previous history, "worst case" contaminated areas will be identified before initiating field activities. An organic vapor analyzer (OVA) will perform the initial screening for VOCs of the proposed tank and soil removal.

Selection of PPE

See CHASP page 6-6.

6.2 Air Monitoring

An OVA and a combustible gas indicator (CGI) will monitor air during the soil and tank removal. The PID will be field calibrated to measure VOCs relative to a 100 ppm isobutylene standard. The CGI will be field calibrated to measure flammable gases relative to a 23% lower explosive limit (LEL) methane standard.

Background (ambient) PID and CGI readings in the breathing zone will be collected before each day's field activities begin (see Section 6-1 above for specific monitoring protocols). PID and CGI readings will be collected continuously during the waste-receiving structure's removal, cleaning, and demolition. These values will be recorded in the field logbook. The air-monitoring measurements will be posted at the office trailer for personnel review.

Field technicians will be instructed to report any unusual odors or soil discolorations. Each instrument will be calibrated daily before site activities begin and checked for proper operation throughout the day. At the end of each work day and before calibration, each instrument will be checked to ensure it is free from surface contamination.

6.3 Procedures and Equipment for Extreme Weather Conditions

See CHASP page 6-8.

Severe Weather Conditions

All field work shall immediately cease at the first sign of thunder or lightning. Field personnel shall perform emergency personal and equipment decontamination (see Section 6.4) and seek immediate shelter.

6.4 Personal Decontamination

See CHASP page 6-11.

6.5 Work Limitations

See CHASP page 6-12.

6.6 Exposure Evaluation

See CHASP page 6-13.

7.0 MEDICAL MONITORING PROGRAM

See CHASP page 7-1.

8.0 AUTHORIZED PERSONNEL

See CHASP page 8-1.

9.0 EMERGENCY INFORMATION

See CHASP page 9-1.

9.1 Site Resources

Cellular telephones will be used for emergencies and communication/coordination with NAS Pensacola. A first-aid kit, eye-wash equipment, and copies of this HASP will be available at each work area.

9.2 Emergency Procedures

See CHASP page 9-2.

Additional information on appropriate chemical exposure treatment methods will be available at the work site through MSDSs. Directions to the nearest medical facility capable of providing general emergency medical assistance and treating chemical bums are provided in Attachment A of this HASP.

10.0 FORMS

The following forms will be used to implement this HASP:

Plan Acceptance Form
Plan Feedback Form
Exposure History Form

The Plan Acceptance Form will be filled out by all employees working on the site before activities begin. The Plan Feedback Form will be filled out by the site health and safety officer and any other onsite employee who wishes to fill one out. The Exposure History Form will be completed by both the field project manager and the individual(s) for whom the form is intended. Examples of each form are provided in Attachment B. **All completed forms must be returned to the Task Order Manager at EnSafe/Allen & Hoshall, Memphis, Tennessee.**

ATTACHMENT A

DIRECTIONS TO EMERGENCY MEDICAL FACILITIES

DIRECTIONS TO TEE NEAREST MEDICAL FACILITIES

The nearest hospital and the nearest facility capable of treating chemical bums are the same facility, which is located in the NAS Pensacola Dispensary Building.

Nearest Hospital
NAS Pensacola Dispensary Building
3600 Turner Street
NAS Pensacola
Pensacola, Florida
Emergency Number: (904) 452-3333

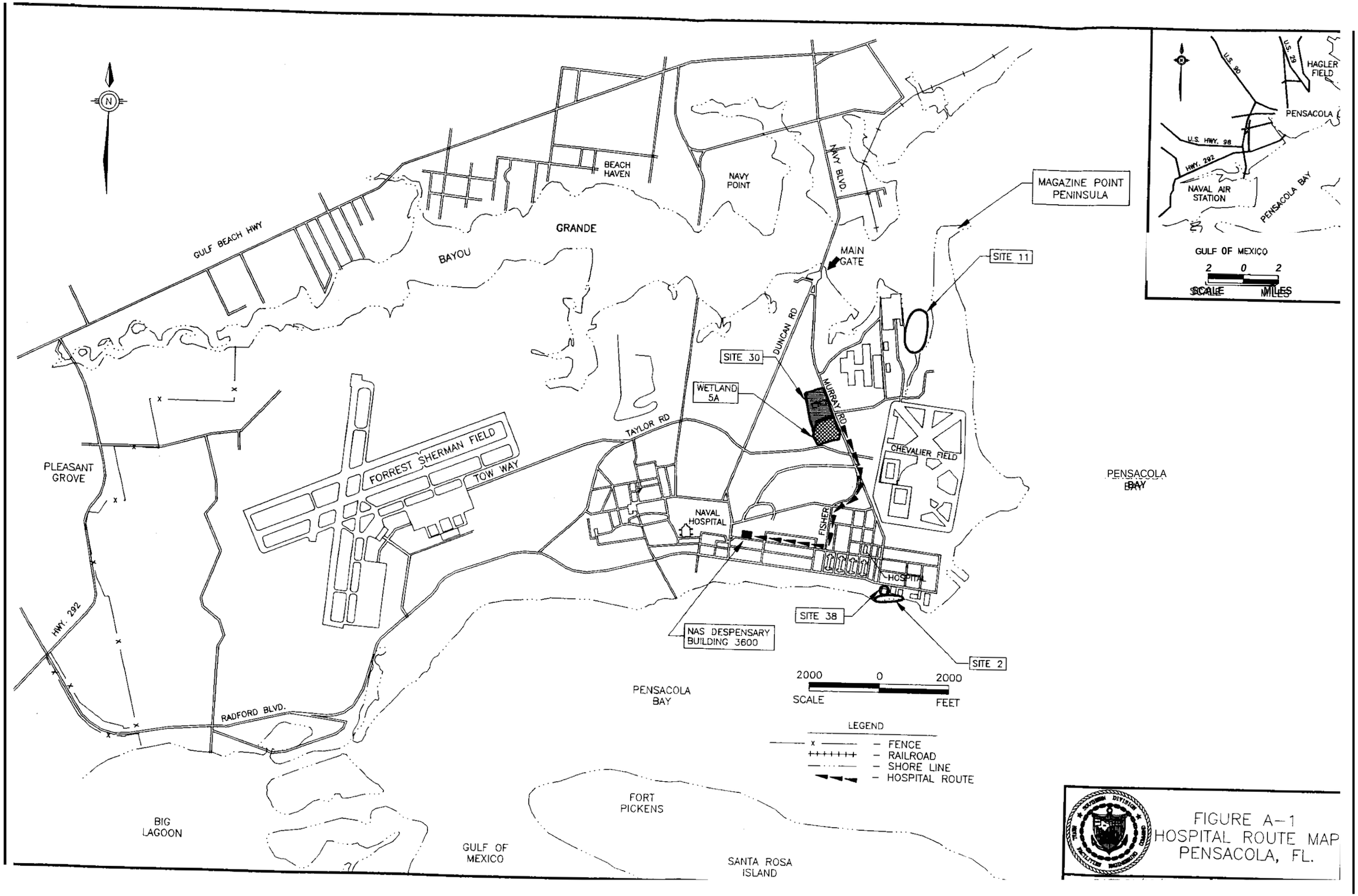

FIGURE A-1
HOSPITAL ROUTE MAP
PENSACOLA, FL.

ATTACHMENT B

HEALTH AND SAFETY PLAN FORMS

PLAN ACCEPTANCE FORM

PROJECT HEALTH AND SAFETY PLAN

INSTRUCTIONS: This form is to be completed by each person working on the project site and returned to: EnSafe/Allen & Hoshall, Memphis, Tennessee.

Job No: 00580020

Contract No: N62467-89-D-0318

Project: Removal Action — Site 30, Wetland 5A

I have read and understand the contents of the above plan and agree to perform my work in accordance with it.

_____

Signature

_____

Print Name

_____

Company

_____

Date

EMPLOYEE EXPOSURE HISTORY FORM

Employee: _____

Job Name: _____

Date(s) From/To: _____

Hours On Site: _____

Contaminants (Suspected/Reported):

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

(See Attached Laboratory Analysis)

PLAN FEEDBACK FORM

Problems with plan requirements:

Unexpected situations encountered:

Recommendations for revisions:

Appendix C

Drum-Tracking Log

EnSafe/Allen & Hoshall

Investigation Derived Waste: Drum Inventory

Project Name:			Project Number:		
Client:			Site No.:		
Survey Date:			Surveyor:		
	Boring/Well No.	Contents	Date Generated	# Drums	Comments
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					