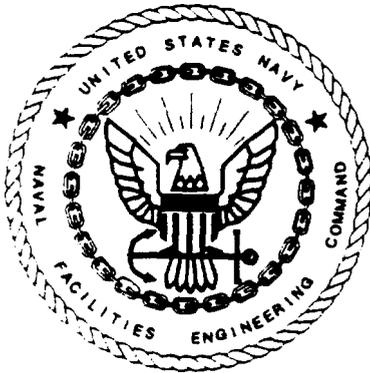


Action Memorandum
Chevalier Field Removal Actions
Naval Air Station Pensacola
Pensacola, Escambia County, Florida

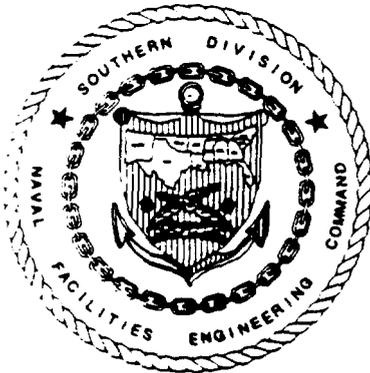
N00204.AR.000952
NAS PENSACOLA
5090.3a



Contract Number: CTO-1084

Prepared for:

Southern Division, U.S. Navy
Naval Facilities Engineering Command
2155 Eagle Drive, P.O. Box 190010
North Charleston, South Carolina 29419-9010



Prepared by:

EnSafe/Allen & Hoshall
5720 Summer Trees Drive, Suite 8
Memphis, Tennessee 38134
(901) 383-9115

July 11, 1995

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ACTION MEMORANDUM

Chevalier Field Removal Actions
Naval Air Station Pensacola, Pensacola, Florida

July 11, 1995

SITE:

Removal at Sites 9, 29, 34, and 36 at Chevalier Field in the southeastern portion of the Naval Air Station Pensacola, Pensacola, Florida *am* included in this Action Memorandum.

STATEMENT OF BASIS AND PURPOSE

This Action Memorandum documents time-critical removal of **contaminated soil** from selected areas of Chevalier Field. It provides background **information** for the decision to proceed with this action, and a public **record** of the factors considered in the removal of contaminants from the environment. This Action Memorandum was developed by EnSafe/Allen & Hoshall (E/A&H) under the Comprehensive Long-Term Environmental Action Navy (CLEAN) contract with the Southern Division Naval Facilities Engineering Command, following the *Superfund Removal Procedures: Action Memorandum Guidance; EPA/540/P-90/004; December 1990*.

DECLARATION:

The decision to initiate removal actions was based upon **initial soil** screening analyses. Critical Base Realignment and Closure Act (BRAC) construction in the **affected area** reduced the time available in which to take action. The BRAC construction **is occurring** on extensive portions of Chevalier Field; the **U.S.** Navy decided to expedite **soil** removals rather than **cause** costly construction delays.

The selected actions provide protection against releases and **minimize** potential exposures to workers on the site. These actions do not constitute a finding that the remedy ensures **adequate** protection of human health or the environment. Further investigations have been scheduled in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) for Sites 9, 29, 34, and 36 in the Chevalier Field area.

The nearest residences **are** located within **1/4** mile, but **are** not downgradient from either groundwater or surface water pathways. Construction fencing limits unauthorized personnel from entering the contaminated sites. The potential **receptors** are therefore **limited** to construction site workers.

I. PURPOSE

This Action Memorandum documents the time-critical removal of **selected** contaminated **soil** **from** Sites **9, 29, 34, and 36**, Chevalier Field, **Naval Air Station (NAS)** Pensacola, Florida. Site locations **are** shown on Figures 1 and 2. **As** the lead agency, the Department of the **Navy**, in accordance with the Comprehensive Environmental **Response**, Compensation, and **Liability** Act (CERCLA) Section **120**, is conducting removal actions of selected contaminated **soil** at these sites through excavation of **soil** **as** shown on Figure 3. **NOTE:** Removals at Sites **29** and **36** have been accomplished and **are** documented **in** this Action Memorandum; work at Sites **9** and **34** remains to be accomplished.

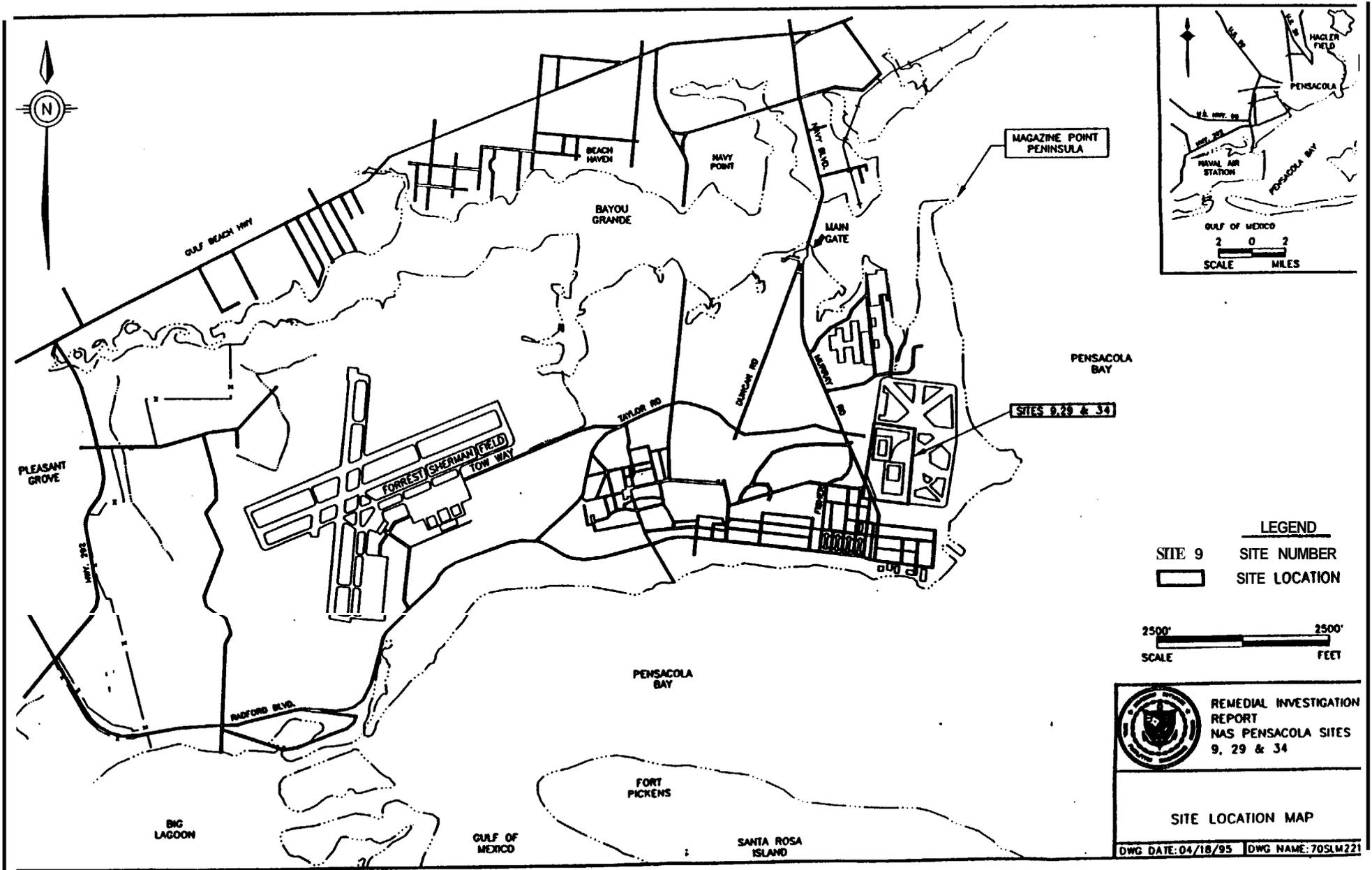
II. SITE CONDITIONS AND BACKGROUND

A. Site Description

1. Removal Site Evaluation

Site 9 (excerpted from Draft Remedial Investigation Report, May 9, 1995): This site, which was used for the **disposal** of trash and refuse between **1917** and the early **1930s**, is shown on several old maps as the Navy **Yard** Dump or the Warrington Village **Dump** (NEESA **1983**). **Part** of Site 9 was excavated in the late **1960s**, during trenching for an industrial wastewater treatment plant sewer. Although glass, scrap metal, and debris were **unearthed**, no unusual **odor** was reported (E&E 1992a).

Site 29 (excerpted from Draft Remedial Investigation Report, May 9, 1995): According to an initial assessment study, workers excavating within the **site in 1981** received minor **skin** burns from contact with a black liquid in the soil. The workers were reportedly burned while **repairing** a 16-inch water main south of Building **3460**. A black liquid **was floating** on water in a trench that had been excavated to **repair** the water main. When the water was pumped out, a residue coated the sides of the trench and pipe, and an odor **similar** to paint remover was noticed by workers. Because the incident occurred at a location approximately 100 feet **from**

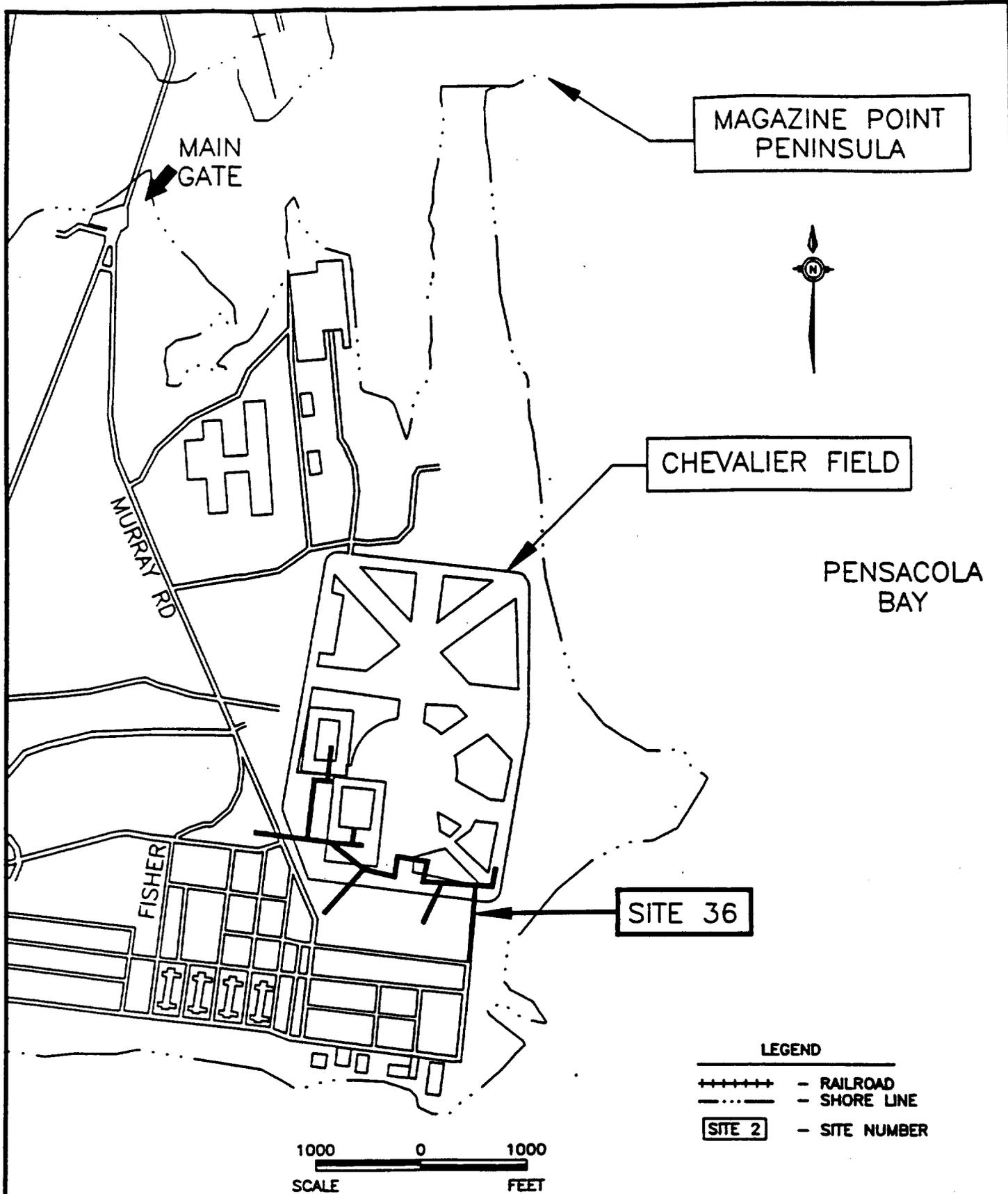



REMEDIAL INVESTIGATION REPORT
NAS PENSACOLA SITES 9, 29 & 34

SITE LOCATION MAP

DWG DATE: 04/18/95 DWG NAME: 70SLM221

FIGURE 1



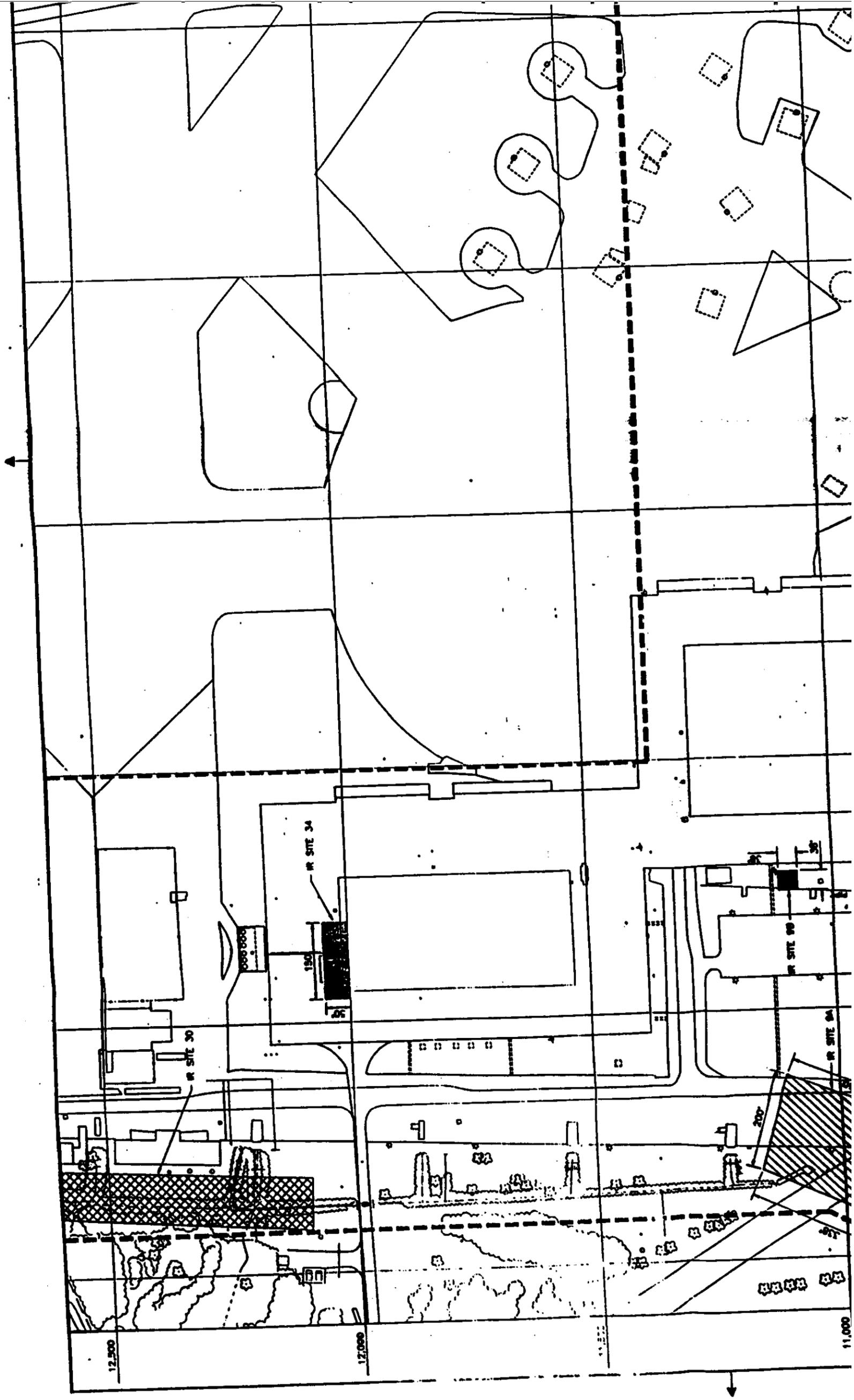
TECHNICAL MEMORANDUM
 SITE 36 - PHASE I
 NAS PENSACOLA

PHASE I SITE 36
 LOCATION MAP

DWG DATE: 08/01/94 | DWG NAME: 63SIT36A

FIGURE 2

**OVERSIZED PAGE
SCANNED IN SECTIONS'
TO FOLLOW
ON SUBSEQUENT IMAGES.**



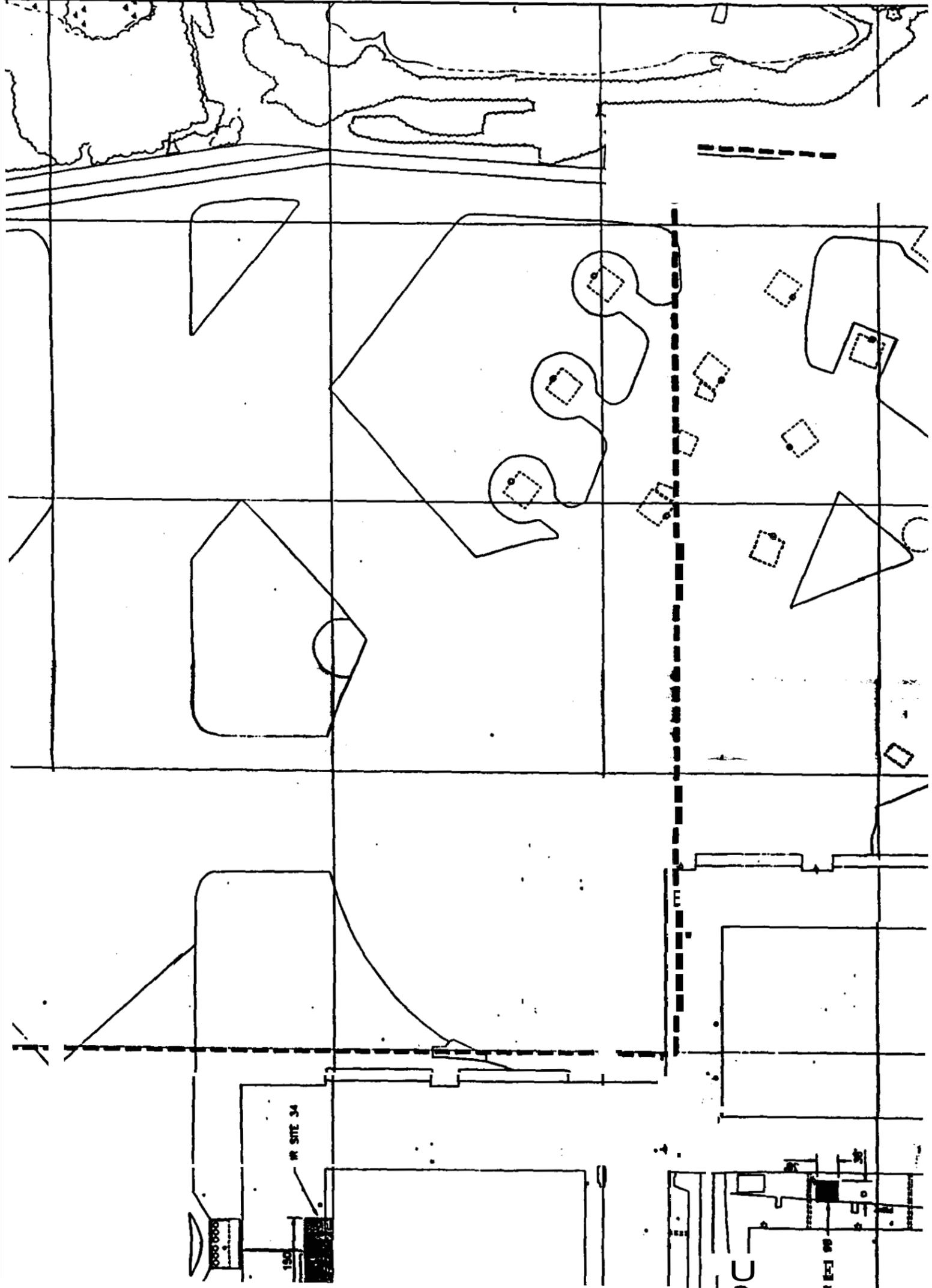
REV. DESCRIPTION PREP BY DATE APPROV		Southern Division Naval Facilities Engineering Command 2155 Fifth Drive P.O. Box 150010 North Charleston, South Carolina 29419-9010	
DATE: 12/11/01 DRAWN BY: J. S. [unclear] CHECKED BY: [unclear] APPROVED BY: [unclear]		TITLE: [unclear]	

KEY

-  HAZARDOUS WASTE CONTAMINATED SOIL TO BE REMOVED AND REPLACED WITH CLEAN BACKFILL.
-  FOLLOW HEALTH AND SAFETY PROCEDURES IN THIS AREA.
-  CONTAMINATED SOIL TO BE REMOVED BY OTHERS AND REPLACED WITH CLEAN BACKFILL BY OTHERS.
-  WHEN EXCAVATION IS NECESSARY IN THIS AREA THE PETROLEUM CONTAMINATED SOIL IS TO BE REMOVED AND REPLACED WITH CLEAN BACKFILL.
-  WHEN GROUNDWATER IS EXTRACTED IN THIS AREA, THE WATER IS TO BE PROCESSED IN THE INDUSTRIAL BLUEWATER TREATMENT PLANT.

NOTES:

1. TESTING LOCATIONS INDICATED HAVE BEEN EXTRACTED FROM VARIOUS SOURCE DOCUMENTS PROVIDED BY THE NAVY AND THE LOCATIONS SHOWN ARE APPROXIMATE.
2. WHEN A MANHOLE IS LOCATED WITHIN AN AREA OF SOIL CONTAMINATION THAT IS TO BE REMOVED, THE MANHOLE SHALL ALSO BE REMOVED COMPLETELY.
3. EXCAVATION AND BACKFILL ACTIVITIES SHALL BE CONDUCTED IN ACCORDANCE WITH SPECIFICATION 02221 AND 02225. SPECIFICATION 02221 LISTS CONTAMINATES, CONSTITUENTS AND CONCENTRATIONS.
4. IR SITES 29 AND 34 REQUIRE GOVERNMENT TESTING AFTER EXCAVATION IN ACCORDANCE WITH SPECIFICATION 02221.

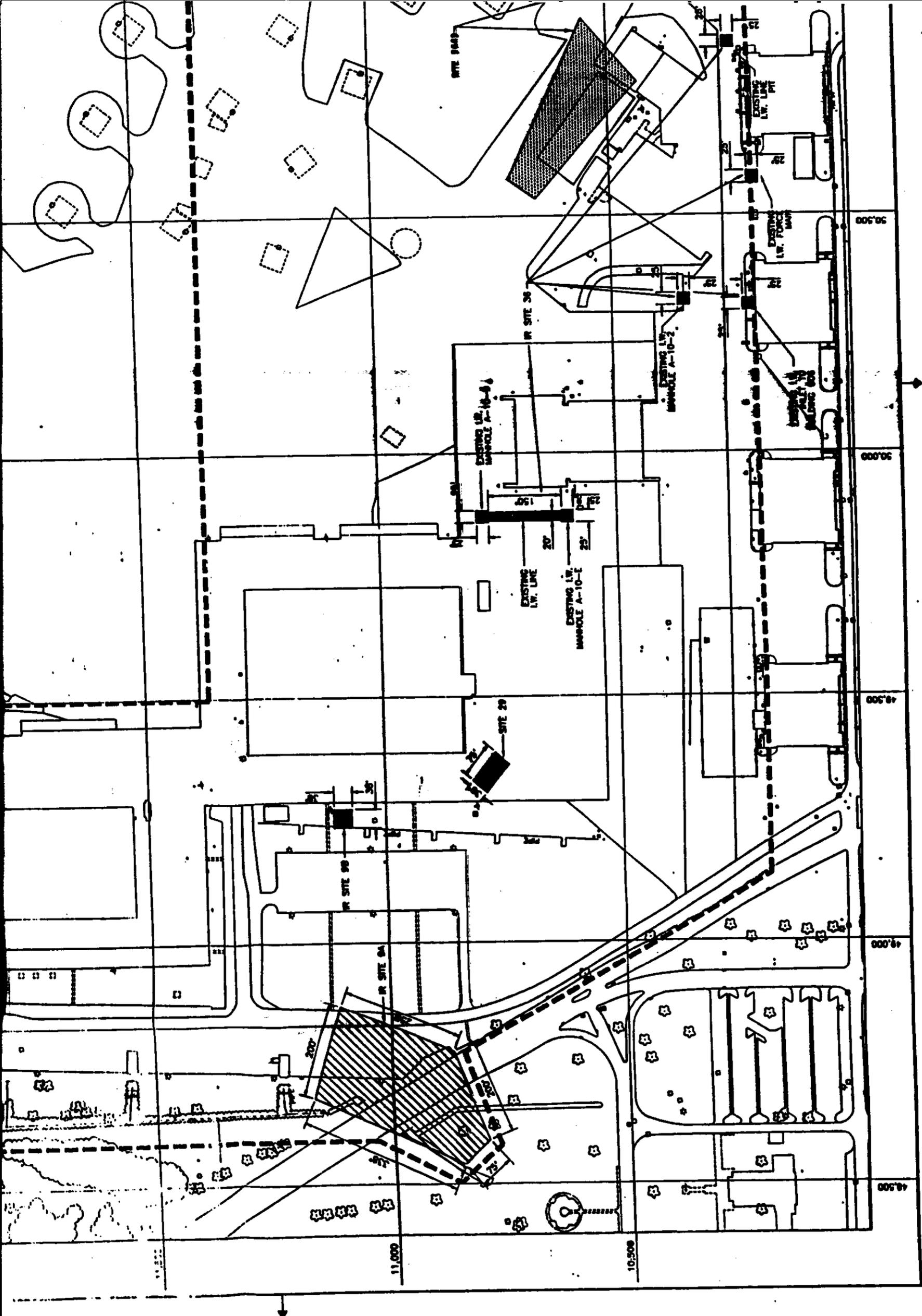


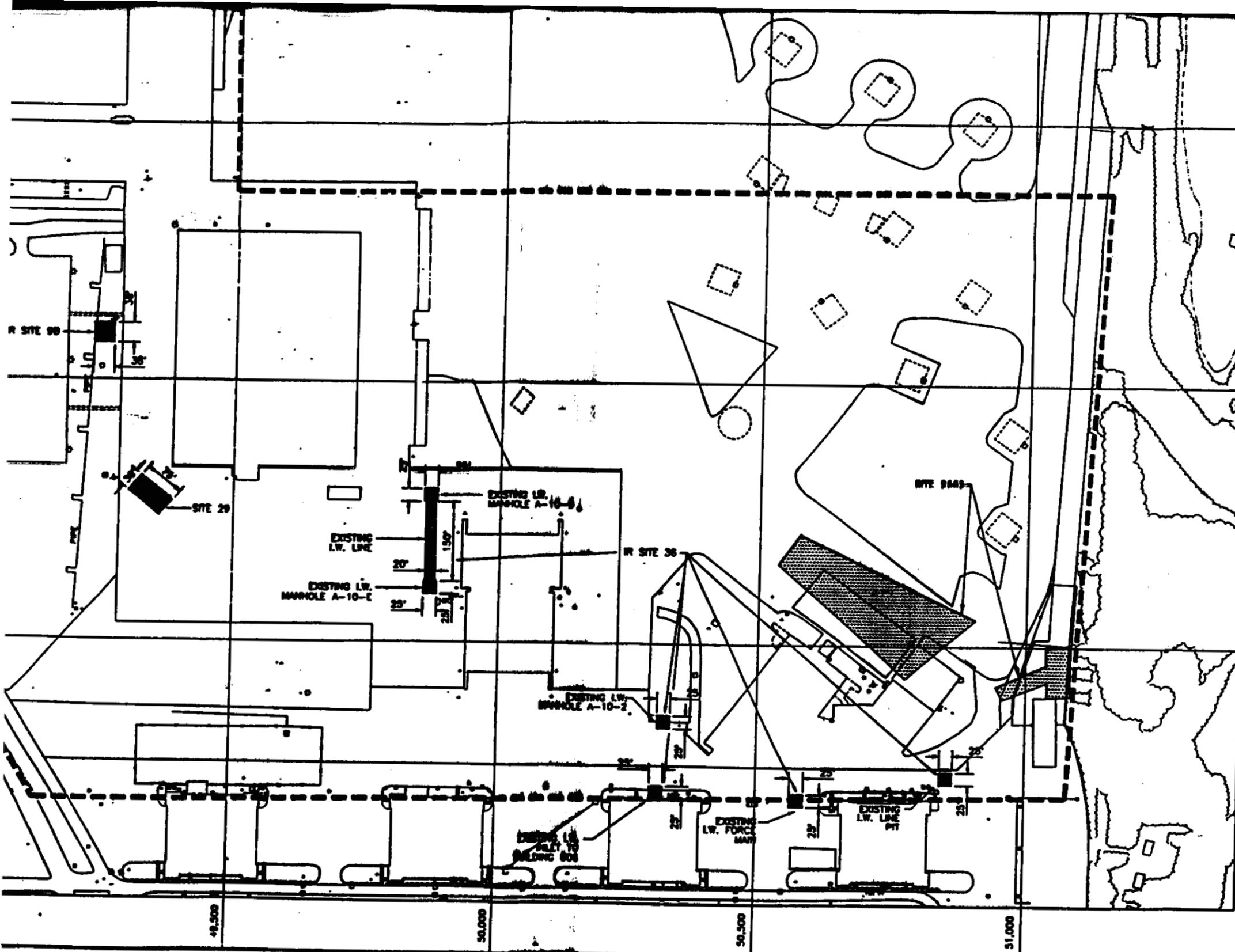
IR SITE 34

10000000

150

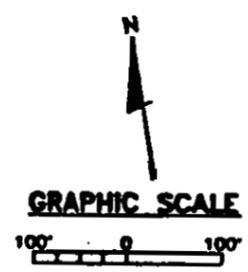
100





- REMOVED COMPLETELY.
3. EXCAVATION AND BACKFILL ACTIVITIES SHALL BE CONDUCTED IN ACCORDANCE WITH SPECIFICATION 02221 AND 02225. SPECIFICATION 02221 LISTS CONTAMINATES, CONSTITUENTS AND CONCENTRATIONS.
 4. IN SITES 90, 29 AND 34 REQUIRE GOVERNMENT TESTING AFTER EXCAVATION IN ACCORDANCE WITH SPECIFICATION 02221.

Southern Division Neal Facilities Engineering Company 2153 Eagle Drive P.O. Box 190010 North Charleston, South Carolina 29419-9010	
CNET TECHNICAL TRAINING COMPLEX <small>FORNACOLA, FLORIDA</small> SITE DEVELOPMENT ENVIRONMENTAL/CONTAMINATION AREAS	
NAME AND STATION DATE DRAWN BY CHECKED BY APPROVED BY	SCALE SHEET NO. TOTAL SHEETS
C426	



REDUCED DRAWING VERIFY SCALE REPRESENTATIONS

the section of the TWTP sewer line crossing the site, it was **suspected** that industrial waste from the line might have leaked into the surrounding **soil** (E&E 1992b). It was not known what chemical caused the burns (NEESA 1983). During the **contaminant source** survey, no physical evidence was identified on the concrete apron at **Site 29** that suggested **repairs** were made to the wastewater sewer line. Also, the **NAS** Pensacola Public Works Center (PWC) **has** no **utility** maps depicting repairs conducted during **this** time period. **A** second leak **in** the wastewater sewer line was **repaired** during September **1986**. **This** leak was under the **grassy** portion of the site immediately west of Building **3460** beneath the aboveground **steam** line system. The leak **occurred** along a portion of the industrial waste sewer line about **7.2** feet below land surface and approximately **3 to 4** feet below the top of the saturated zone. **Information** concerning the amount of leakage was sketchy (**NAS** Pensacola PWC **1994**).

Site 34 (*excerpted from Draft Remedial Investigation Report, May 9, 1995*): In May **1984**, a leak in a pipeline at the north end of Building **3557** reportedly **resulted** in the loss of approximately **45,000** gallons of a solvent detergent used to clean aircraft (**G&M 1986**). The solution contained **1.7** percent chlorinated aromatic **hydrocarbon** solvent, resulting in a calculated total of **750** gallons of solvent released. Local sediment, **soil**, and/or groundwater may have been impacted from the solvent detergent release. Constituents may have **penetrated** beneath the apron via the expansion joints between individual concrete sections. **Escaped** solvent detergent might have run off via the unpaved drainage swale that leads **from** the **tank** farm to the west. **This** pathway discharges via culverts beneath Industrial Road into the paved **drainage** ditch west of Chevalier Field (NAS Pensacola Wetland **6**). It is presumed that contaminants were **carried** offsite via this route (E&E 1992a).

Site 34 includes a **small** **tank farm** at the edge of the concrete apron approximately **150** feet north of the building. **This** **tank farm** consists of **six** large and two smaller cylindrical aboveground storage tanks. The larger **tanks** have an approximate capacity of **20,000** gallons. The contents

of the **six** larger tanks have been identified as: **T-101 (epoxy stripper MIL-R-81924)**, **T-105 (detergent MIL-C-43616)**, **T-106 (Stoddard Solvent PD680 - Type II)**, and **T-107 (unknown)**.

Site **36** includes soil adjacent to and subject to potential releases from the **IWTP** sewer lines. Most of the facilities discharging to the **IWTP** sewer did so without any pretreatment or segregation of the wastes (**NEESA 1983**). The waste stream consisted of discharges from facilities upstream and included, but was not limited to, paint strippers, heavy metals, pesticides, radioactive wastes, fuels, cyanide wastes, solvents, and waste oils. Site **36** was initially investigated by Ecology and Environment, Inc., by drilling along the length of the **IWTP** sewer line to evaluate current soil and groundwater quality. The results of the study indicated contamination requiring additional work to support an assessment of the nature and extent of the contamination.

E/A&H was tasked by the **U.S.** Navy to conduct a screening investigation of the soil along the sewer line. Based on laboratory analysis, areas were identified as containing contamination above soil screening levels in Site 36. Soil exceeding the screening levels was identified as a potential risk to human health and the environment. The screening levels, which were jointly agreed upon by a Tier I Partnering Team consisting of representatives from EPA Region IV, the Florida Department of Environmental Protection, the **U.S.** Navy, and the **U.S.** Navy's contractor, E/A&H, were derived from EPA Region III risk-based concentrations for residential soil and Florida Department of Environmental Protection cleanup goals for soil. These risk-based screening levels offer some indication of the risk to human health or the environment without conducting a complete risk assessment. The Tier I Team agreed that these screening values could be used to expedite soil removals in support of the BRAC construction, with the understanding that additional remedial work may be required at a later date.

2. Physical Location

All four sites in this Action Memorandum are on **NAS Pensacola**. Sites **9, 29, and 34** of Category **V** are near the southwest portion of Chevalier Field (Figure 1). Site **36** includes areas associated with the **IWTP** sewer line piping, and is indicated in Figure 2. **Military** housing is located within 1/4 mile of the sites, but is not downgradient for either surface water or groundwater flow. The sites are in the area set aside as the future home of a consolidated training complex for the **U.S. Navy**.

3. Site Characteristics

The sites are on federally-owned property operated by the Department of Defense (**U.S. Navy**), and the **U.S. Navy** is the lead agency for all actions on these sites. The removals documented under this Action Memorandum are first removals at the site. Subsequent activities will include cleaning of the **IWTP** sewer line and further remedial activities in accordance with **CERCLA**.

4. Release or Threatened Release into the Environment of a Hazardous Substance, or Pollutant, or Contaminant

E&E performed a Phase I investigation of Site **36** to identify areas of potential contamination. The investigation results are detailed in the **E&E IDR (1992b)**. Soil and groundwater samples were collected during the investigation and submitted for laboratory analysis. **Metals, total** recoverable petroleum hydrocarbons (**TRPHs**), volatile organic compounds (**VOCs**), and polynuclear aromatic hydrocarbons (**PAHs**) were detected onsite, but it was not determined if their source was the **IWTP** sewer line. The **E&E data** were collected at Data **Quality Objective Level II** and are therefore suitable for screening only.

E/A&H conducted field investigations for Site **36** and the Category **V** sites (**9, 29, and 34**). Results are summarized below and are detailed in *Technical Memorandum dated September 1, 1994* for Site **36** and Building **3380**, and *Draft Remedial Investigation Report, Sites 9, 29, and 34, dated May 9, 1995*.

Site 9 — Navy Yard Disposal Area: Soil at the site currently contains pesticides, metals such as aluminum, iron, and manganese, as well as other compounds likely associated with a release from an underground storage tank. Concentrations range from below instrument detection limits to values at which risk to human health has been established. The highest concentrations are in the center of the area, and may be associated with material dumped at the site from 1917 to the early 1930s.

Site 29 — Soil South of Building 3460: Surface and subsurface soil contains manganese, semivolatiles, and pesticides. Concentrations range from below instrument detection limits to values at which risk to human health has been established. Pesticides and semivolatiles are thought to represent reworking of soil as the Chevalier Field complex was built.

Site 34 — Solvent North of Building 3557: Subsurface soil contains lead and naphthalene, byproduct of coal tar and petroleum, in the general area of the reported solvent release. Pesticides are present throughout the site at concentrations below instrument detection limits or slightly above the detection limits.

Site 36 — Industrial Wastewater Treatment Plant Sewer Line: Beryllium, lead, and arsenic were the only metals detected at concentrations exceeding the PRGs. The following semivolatiles were detected in soil samples above their respective PRGs: benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and dibenz(a,h)anthracene.

Exceedences of the screening values indicate a human health risk. Based on these results, the Tier I Partnering Team agreed with the U.S. Navy's decision to excavate the areas described in this Action Memorandum.

5. NPL Status

NAS Pensacola is on the National Priorities **List**.

B. Other Actions to Date

1. Previous Actions

No other **soil** removal actions have been taken to **date**. Under a separate project, the **IWTP** sewer lines will be cleaned using **standard** industry procedures (**pressure** washing) to eliminate the lines as a potential source of further contamination.

2. Current Actions

All sites are currently being evaluated in accordance with CERCLA, under the U.S. Navy's Installation Restoration program.

**III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT,
AND STATUTORY AND REGULATORY AGENCIES**

A. Threats to Public Health or Welfare

Although residences exist within **1/4** mile, the construction sites **are** fenced **to** preclude unauthorized access; therefore, onsite workers **are** the only **potentially** exposed population. Because the soil screening values **were** exceeded, the decision was made to **remove** the **soil**. **This** decision was primarily driven by the **BRAC** construction schedule. Rather than delaying construction to conduct further assessment, the **removal** was deemed time-critical. **This** action is considered conservative because further assessment might have proven it to **be unnecessary**.

B. Threats to the Environment

Transfer of contaminants from soil to groundwater may **pose** a **risk** downgradient. The removals reduce this potential by removing the areas of highest contamination. Because the **area** is **fully** developed and paved, there **are** no ecologically sensitive receptors.

IV. **ENDANGERMENT DETERMINATION**

Potential endangerment to human health or the environment **has been** estimated by using the **screening** values. These values empirically protect human **health** from a cancer **risk** of greater than 1:1,000,000 and toxic hazards that would be **chronically** or acutely deleterious **to** human health over an average lifetime. These screening values **are** believed to be a conservative approach to facilitate time-critical removals.

V. **PROPOSED ACTIONS**

1. **Proposed Action Description**

Site 9: Soil removal action locations are limited only to that **necessary** to install underground utilities in support of the BRAC construction. The **affected area is** indicated on Figure 3.

Site **29**: The soil removal action locations **are** as shown in Figure 3, and **as** described in 12 June 1994 memorandum (Attachment A). **This work has** been accomplished.

Site **34**: The removal action consists of excavation and disposal of **soil** exceeding the OSWER action level for lead. **This area** interferes with the expansion of Building 3557 for the BRAC training complex. The removal action locations **are** shown in Figure 3.

Site 36: The **soil** removal action locations **are** as shown in Figure 3, and **as** described in 12 June 1994 memorandum (Attachment A). **This work has** been accomplished.

All removal actions are to be accomplished by the BRAC construction contractor, The George Hyman Construction Company, **in** accordance with construction contract N62467-94-C-0827, "Site Development." No other alternatives were considered to **this** action as The George Hyman Construction Company, the prime contractor **performing** the BRAC construction, is **onsite** and capable of **performing** the removals. Details of the removals **are** outlined in construction specification sections 01560 and 02221 of the construction **contract** (Attachment B). Removal

actions were conducted in accordance with the referenced specifications and the following approved The George Hyman Construction Company plans (maintained at the project office):

- **Soil Contaminated With Hazardous Waste Excavation and Disposal Plan**, dated April 11, 1995
- **Soil Screening Plan**, dated April 19, 1995
- **Stormwater Pollution Prevention Plan**, dated June 11, 1995
- **Project Safety, Health and Environmental Manual**, dated May 22, 1995

Where necessary, areas where contaminated soil is removed will be backfilled with clean material. Under the terms of the BRAC contract, the George Hyman Construction Company is responsible for testing backfill prior to placement.

E/A&H will collect verification samples using procedures previously developed (approved Comprehensive Sampling and Analysis Plan (CSAP), E/A&H, 1995). The verification analysis will follow EPA-Contract Laboratory (CLP) protocol analyzing for target compounds and analytes defined by the CLP. No sample duplicates are necessary since the purpose is to delineate extent and not to verify repeatability. A low detection limit concentration was specified in the statement of work from the laboratory to achieve lower detection limits.

At Sites 29 and 36, since the removals were from generally square pits, one composite sample was collected from the land surface of the excavation to the water table from each wall. The sample was collected by using a trowel or shovel to expose a fresh surface followed by sample collection with a hand auger. Samples for volatile organics analysis were collected first without mixing the multiple zones exposed. Samples for semivolatile compounds and metals analyses

were mixed thoroughly in a stainless steel bowl before transferring the composite sample to the container. Samples from the excavations at Sites 9 and 34 will be collected in a similar manner. **George Hyman Construction Company will be sampling backfill material. All decontamination, sample labeling, and sample handling were conducted in accordance with the CSAP.**

Results of testing will be included in the Remedial Action Reports for **Category V** and **Category VIII**.

2. Contribution to Remedial Performance

The purpose of these removal actions is not primarily remedial in nature. The U.S. Navy elected to remove soil with concentrations above screening values as a conservative measure to eliminate potential risks, rather than to perform further assessment of these areas. This decision was based on the perceived time and cost of further assessment versus removal action, taking into account the potential costs that would be incurred if the BRAC construction were delayed during the assessment process.

The contribution to remedial performance is, therefore, considered minimal. There is some positive benefit, however, as contaminated soil was removed and disposed of that might have remained if further assessment indicated monitoring only or in-place remediation. In addition, the removal actions are not worsening site conditions. Samples collected from the extent of the excavations will support the RI and will be used in the RI report.

3. Applicable or Relevant and Appropriate Requirements (ARARs)

ARARs have been identified in previous stages of the RI/FS process. The actual determination of which requirements are applicable or relevant and appropriate was made by the lead agency (U.S. Navy) in consultation with the support agencies. preliminary remedial goals (PRGs) were used in lieu of ARARs to arrive at the decisions in this Action Memorandum. PRGs for soil have not been promulgated, but are appropriate requirements for screening decisions. For this

action, **soil** contaminant concentrations were compared to PRGs. **These** PRGs include the most recent risk-based concentrations (RBCs) for residential **use**, developed by EPA Region III (currently 3rd quarter **1994** for noncarcinogens, and 1st quarter **1994** using a hazard index of 1 for non-carcinogens, and 1E-6 for carcinogens), and the **risk-based** cleanup **goals** for Florida Department of Defense (DOD) sites (developed by **FDEP**, April **1995**). **As** agreed by the Tier I **Team**, the lowest (most conservative) value was selected from among these criteria or reference concentrations.

All handling, transporting, **disposal** and manifesting of contaminated **soil** shall comply with applicable federal, state, and local law under the **terms** of the BRAC construction contract. Disposal is the responsibility of the George **Hyman** Construction Company (BRAC contractor).

Cultural and historic concerns are to be addressed by the George Hyman Construction Company under the terms of the BRAC construction contract. **An** onsite archeologist is available for consultation at **all** excavations conducted under this contract.

VI. OUTSTANDING POLICY ISSUES

The Tier I Team was acutely aware that because of the short time frame for construction at Chevalier Field, an Action Memorandum was needed to document decisions. There **are** no other outstanding policy issues.

VII. RECOMMENDATIONS

This decision document represents the **selected removal actions** for Chevalier Field (Sites 9, 29, 34, and 36) at **NAS Pensacola**, developed in **accordance with CERCLA** as amended, and not inconsistent with the National Contingency **Plan**. All removals are **as agreed** by the Tier I Partnering **Team**. This decision is based on the **administrative record** for the site. It is recommended EPA Region IV and the Florida **Department of Environmental Protection** approve **this** document signifying acceptance of the removal actions **as** presented.

7/12/95



Date

Commanding officer

Naval Air Station Pensacola, Pensacola, Florida

Attachment A
12 June 1994 Memorandum

MEMORANDUM

Date: 12 June 1994

From: Bill Hill - SouthDiv
Bill Gates - southDiv
Brian Caldwell - EnSafe

The attached information outlines those areas of soil contamination associated with IR sites 9 and 29. The data used to delineate these areas represent the most reliable to data, and have been compared to a set of Preliminary Remediation Goals (PRGs) utilized by the IR program in the site investigation process. These PRGs are those values of specific contaminants detected onsite that represent risk to human health. Consequently, the areas shown on the accompanying maps will require removal prior to construction in those areas. The contaminant groups identified on these two sites are semivolatile organics and pesticides.

It is anticipated that the BRAC construction contractor will be involved in the excavation of the two smaller areas and potentially a portion of the third, larger area. Removals will be to the water table (+4 feet sea level). During removal, the IR program, via EnSafe, will provide technical support in the form of confirmation sampling to determine that the full extent of contamination is removed. The IR program will require five working days notice prior to availability of the excavation for sampling, and the analytical testing will be complete 15 calendar days after availability of the excavation for sampling.

In addition to the removals cited above, several removals along the industrial waste sewer in the southern portion of the field will be conducted. These removals are targeted at specific manholes, and, in one case, removal of an approximately 160 feet section of line. The discrete manhole areas will be executed by removal of a square area, 25 feet per side, centered around each manhole, with removal of both soil media, the manhole and associated piping. The line section will be executed by removal of a 20 foot wide corridor centered around the line. In all cases, removal will be to the water table. Confirmation sampling will be required, and will be conducted by EnSafe. However, these excavations will not need to remain open until receipt of sample results. The parameters of concern in these areas are semivolatile compounds.

The IR program (via EnSafe) will be responsible for abandonment of monitoring wells on Chevalier field prior to construction, with the exception of those that will be decommissioned by the UST program during the removal at Building 2662/3380.

The IR program will provide maps and analytical data illustrating the removal areas cited above, as well as the trace of the industrial sewer along the western side of Chevalier and the trace of the proposed line installation at the wastewater treatment plant.

The IR program further recommends that groundwater extracted in certain areas during construction be emplaced in the industrial wastewater treatment plant sump for treatment at the plant. These areas essentially include the southern and western thirds of the field.

Southern Division will not provide a data volume on previously collected analytical data. Plan drawings C-76 and C-77 included in Greiner's 35th Design Submittals will be deleted in future submittals.

Attachment B
Specifications Sections 01560 and 02221

SECTION 02221

EARTHWORK FOR STRUCTURES AND PAVEMENTS
03/94

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 33	1992 (Rev. A) Concrete Aggregates
ASTM C 136	1992 Sieve Analysis of Fine and Coarse Aggregates
ASTM D 1140	1992 Amount of Material in Soils Finer Than the No. 200 (75-Micrometer) Sieve
ASTM D 1556	1990 Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 1557	1991 Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft ² (2,700 kN-m/m ²))
ASTM D 2487	1992 Classification of Soils for Engineering Purposes
ASTM D 2922	1991 Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D 3017	1988 Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
ASTM D 4318	1984 Liquid Limit, Plastic Limit, and Plasticity Index of Soils

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1910.134	Respiratory Protection
29 CFR 1910.1200	Hazard Communication
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Generators of Hazardous Waste
40 CFR 263	Transporters of Hazardous Waste

40 CFR 264 Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal facilities

40 CFR 265 Interim Status **Standard** for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities

CORPS OF ENGINEERS (COE)

COE EM-38s-1-1 1992 Safety and Health Requirements Manual

STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP)

17-770 F.A.C. Petroleum Contamination Site Cleanup Criteria

STATE OF FLORIDA, DEPARTMENT OF TRANSPORTATION (FDOT)

FDOT SSS-1 Standard Specifications for Road and Bridge Construction; Dated 1991

1.2 DEFINITIONS

1.2.1 Backfill

A specified material used in refilling a cut, trench, or other excavation, placed at a specified degree of compaction.

1.2.2 Certified Industrial Hygienist (CIH)

A Certified Industrial Hygienist (CIH) must be certified in comprehensive practice by the American Board of Industrial Hygiene.

1.2.3 Cohesive Materials

Cohesive materials include materials classified by ASTM D 2487 as GC, SC, ML, CL, MH, and CH. Materials classified as GM and SM will be identified as cohesive *only* when the fines have a plasticity index greater than zero.

1.2.4 Cohesionless Materials

Cohesionless materials include materials classified by ASTM D 2487 as GW, GP, SW, and SP. Materials classified as GM and SM will be identified as cohesionless only when the fines have a plasticity index of zero.

1.2.5 Compaction

The process of mechanically stabilizing a material by increasing its density at a controlled moisture condition. "Degree of Compaction" is expressed as a percentage of the maximum density obtained by the test procedure described in ASTM D 1557 for general soil types abbreviated

in this specification as "_____ percent ASTM D 1557 maximum density."

1.2.6 Controlled Fill and Controlled Backfill

A specified soil mix or gradation of materials constructed to attain maximum bearing strength and minimize consolidation or differential settlement under a load. Controlled fill is sometimes called 'structural fill'.

1.2.7 Embankment

A "fill" having a top that is higher than adjoining ground.

1.2.8 Excavation

The removal of soil, rock, or hard material to obtain a specified depth or elevation.

1.2.9 Fill

Specified material placed at a specified degree of compaction to obtain an indicated grade or elevation.

1.2.10 Hard Material

Weathered rock, dense consolidated deposits or conglomerate materials, (excluding manmade materials such as concrete) which are not included in the definition of "rock" but which usually require the use of heavy excavation equipment with ripper teeth or the use of jack hammers *for* removal.

1.2.11 In Situ Soil

Existing in place soil.

1.2.12 Lift

A layer (or course) of soil placed on top of a previously prepared or placed soil.

1.2.13 Rock

Solid, homogeneous, interlocking crystalline material with firmly cemented, laminated, or foliated masses or conglomerate deposits, neither of which can be removed without systematic drilling and blasting, drilling and the use of expansion jacks or feather wedges, or the use of backhoe-mounted pneumatic hole punchers or rock breakers; also large boulders, buried masonry, or concrete other than pavement, exceeding 1 cubic *yard* in volume. Removal of "hard material" will not be considered rock excavation because of intermittent drilling and blasting that is performed merely to increase production.

1.2.14. Soil

The surface material of the earth's crust resulting from the chemical and mechanical weathering of rock and organic material.

1.2.15 Subgrade

The material in excavation (cuts) and fills (embankments) immediately below any subbase, base, pavement, or other improvement. Also, as a secondary definition, the level below which work above is referenced.

1.2.16 Topsoil

In natural or undisturbed soil formations, the fine-grained, weathered material on the surface or directly below any loose or partially decomposed organic matter. Topsoil may be a dark-colored, fine, silty, or sandy material with a high content of well decomposed organic matter, often containing traces of the parent rock material.

1.2.17 Unsatisfactory Material

Existing, in situ soil or other material which can be identified as having insufficient strength characteristics or stability to carry intended loads in fill or embankment without excessive consolidation or loss of stability. Materials classified as PT, OH, or QL by ASTM D 2487 are unsatisfactory. Unsatisfactory materials also include man-made fills, refuse, frozen material, uncompacted backfills from previous construction, unsound rock or soil lenses, or other deleterious or objectionable material.

1.2.18 Working Platform

A layer of compacted crushed rock or natural stone that replaces the in situ soil to provide a stable, uniform bearing foundation for construction equipment to facilitate further site construction.

1.3 SUBMITTALS

Submit the following in accordance with Section 01300, "Submittals."

1.3.1 SO-08. Statement

- a. Shoring and sheeting plan G
- b. Dewatering system G
- c. site safety plan for contaminated soil and groundwater G
- d. Soil contaminated with hazardous waste excavation and disposal plan G
- e. Petroleum contaminated soil excavation and disposal plan G
- f. soil screening plan G

1.3.1.1 Shoring and Sheet piling Plan

Submit 15 days prior to starting work. Describe materials or shoring system to be used. Indicate whether or not any components will remain after filling or backfilling. Provide plans, sketches, or details along with calculations by a registered professional engineer. Indicate sequence and method for installation and removal.

1.3.1.2 Dewatering System

Submit 15 days prior to starting work. Describe the basic components of the dewatering system proposed and its planned method of operation. Dewatering plan, as a minimum, shall address those requirements outlined in paragraph entitled "Drainage and Dewatering." Dewatering effluent from areas indicated on the plans shall be treated at the industrial waste treatment plant. See Table 1 appended to this section for contaminated groundwater parameters and concentrations.

1.3.1.3 Site Safety Plan

Submit a site safety plan for handling contaminated soil and groundwater within technical proposals. See Table 1 appended to this section for contaminated soil and groundwater parameters and concentrations. The site safety plan shall be prepared and signed by a Certified Industrial Hygienist (CIH). The site safety program shall be reviewed and approved by the safety/health officer of the facility. The site safety plan shall meet OSHA requirements and address the following:

- a. Identification and evaluation of the hazards and risks associated with each contaminated site being excavated or dewatered, including precautionary measures to be followed by workers.
- b. Determination of levels of personnel protection to be worn for various site operations.
- c. List of equipment with adequate nomenclature by item, that will be used at the job site and the date and location where this equipment can be inspected by the Contracting Officer.
- d. Establishment of work zones (exclusion area, contamination area, and support area).
- e. Establishment of decontamination methods and procedures.
- f. Determination of the number of people required to enter the contamination zones during the initial entries and subsequent operations.
- g. Establishment of emergency procedures, such as: escape routes, fire protection, signals for withdrawing work parties from site, emergency communications, wind indicators, including Navy notification.
- h. Identification and arrangements with nearest medical facility for emergency medical care for both routine-type injuries and

toxicological problems. Submit name, location, and telephone number of this medical facility.

- i. Establishment of continual air and personnel monitoring procedures.
- j. Establishment of procedures for obtaining and handling potentially contaminated samples.
- k. Identification of medical monitoring program, including respirator medical qualification examination for each individual at the work site.
- l. Identification of training plan to be instituted, including contents of 29 CFR 1910.1200 and 29 CFR 1910.134; its training contents; and instructor with appropriate qualifications.
- m. Establishment of a respiratory protection program conforming to 29 CFR 1910.134.
- n. Establishment of a hazard communication program 29 CFR 1910.1200.

1.3.1.4 Soil Contaminated with Hazardous Waste Excavation and Disposal Plan

Describe methods, means, equipment, sequence of operations and schedule to be employed in excavation, transport, handling and stockpiling of soil contaminated with hazardous waste. Furnish a material handling plan that describes phases of dealing with the contaminated soil. See Table 1 appended to this section for contaminated soil parameters and concentrations.

At IR Sites 9B, 29, and 34, the Contractor shall provide the Contracting Officer five working days notice as to when the excavation will be complete. Upon completion of the excavation, soil samples will be collected by a Government representative. The Contractor shall keep the excavation open for 15 calendar days after excavation. The Contractor shall be available to excavate the area one more time at the request of the Contracting Officer. Upon completion of the second excavation and soil sampling the Contractor may close the excavation. A second excavation payment will be in accordance with the Basis of Bid Statement.

At IR Site 36 the Contractor shall provide the Contracting Officer five working days notice as to when the excavation will be complete. Upon completion of the excavation, soil sampler will be collected by the Government. Upon completion of the soil sampling the Contractor may close the excavation.

At IR Sites 32, 33, and 35, the Contractor shall return all excavated soil to the excavation and berm any additional soil above the excavation. Follow health and safety plan during excavation.

Provide names and addresses of companies who will transport, treat and dispose of all-contaminated soil. Provide copies of the last two RCRA inspections for facilities that will dispose of hazardous waste. All waste shall be handled, stored, disposed of, and treated in accordance with 40

a CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, and 40 CFR 265.

1.3.1.5 Petroleum Contaminated Soil Excavation and Disposal Plan

Describe methods, means, equipment, sequence of operations and schedule to be employed in excavation, transport, handling and stockpiling of soil contaminated with petroleum. Methods shall be in accordance with 17-770 F.A.C. IR Site 9A is petroleum-contaminated.

Excessively contaminated soil as defined by 17-770 F.A.C. shall be treated off-site at an approval disposal facility:

1.3.1.6 Soil Screening Plan

The contractor shall provide a soil screening program to detect any unknown environmental contamination. The plan shall be implemented by a qualified environmental professional during all excavation. At a minimum the plan shall include the following:

- a. Equipment to be used for in-the-field screening.
- b. Names and qualifications of the environmental professional.
- c. Action levels to stop excavation.

1.3.2 SD-10, Test Reports

- a. Gradation of borrow material
- b. Plasticity index of borrow material
- c. Classification of borrow material

Submit test reports in advance of bringing any borrow material onto Government property.

1.3.3 SD-12, Field Test Reports

- a. Fill and backfill material tests
- b. Shell Surfacing material tests
- c. Type B Stabilization material tests

1.4 REGULATORY REQUIREMENTS

Materials and workmanship specified herein with reference to FDOT SSS-1 State Standard shall be in accordance with the referenced articles, sections and paragraphs of the standard except that contractual and payment provisions do not apply. Where the term "Engineer" is used, it shall mean the Contracting Officer- Where the term "state" is used, it shall mean "Federal Government."

1.5 DELIVERY AND STORAGE

Deliver and store materials in a manner to prevent contamination or segregation. Store synthetic fiber filter cloth to prevent exposure to direct sunlight in accordance with the manufacturer's recommendations.

1.6 CRITERIA FOR BIDDING

Base bids on the following criteria:

- a. Surface elevations as indicated.
- b. No pipes or other man-made obstructions, except those indicated will be encountered.
- c. The character of the material to be excavated or used for subgrade is as indicated. Rock or hard material as defined in paragraph entitled, "Definitions," will not be encountered, except that materials such as existing pavements, foundations, and base materials will be encountered. Where known, such materials are indicated, or else available record drawings are referenced in these contract documents.
- d. Ground water elevations indicated are those existing at the time of subsurface investigations were made and do not necessarily represent ground water elevation at the time of construction.
- f. Suitable backfill and fill material in the quantities required are not available on Government property.
- g. Blasting will not be permitted.

1.7 SITE CONDITIONS

1.7.1 Dewatering Plan

Base on site surface and subsurface conditions, available soils and hydrological data and contamination limits shown on the drawings.

1.7.2 Utilities

Movement of construction machinery and equipment over pipes and utilities during construction shall be at the Contractor's risk. Perform work adjacent to privately owned utilities in accordance with procedures outlined by the utility company. Excavation made with power-driven equipment is not permitted within two feet of known Government-owned utility or subsurface construction. For work immediately adjacent to utility or subsurface construction, for excavations exposing a utility or other buried obstruction, excavate by hand. Start hand excavation on each side of the indicated obstruction and continue until the obstruction is uncovered or until clearance for the utility is assured. Support uncovered lines or other existing work as affected by the contract excavation until approval for backfill is given by the Contracting Officer. Report damage to utility lines or subsurface construction immediately to the Contracting Officer.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Soil Materials

Provide materials free from debris, roots, wood, scrap materials, vegetable matter, refuse or frozen material. Maximum particle size permitted is 3 inches. Use excavated material from the site for the work indicated when material falls within the requirements specified herein.

2.1.1.1 General Site Fill, Backfill and Embankment Material

Provide a soil material that can be readily compacted to the specified densities. Materials shall be classified as GP, GM, SW, SP, SM, or combination thereof by ASTM D 2487 with a maximum particle size of 3 inches. The plasticity index cannot exceed 6 percent when tested in accordance with ASTM D 4318, and not more than 12 percent by weight can be finer than the No. 200 sieve when tested in accordance with ASTM D 1140.

2.1.1.2. Working Platform

Material and thicknesses of working platform for support of construction equipment shall be at the discretion of the construction contractor. The gradation and placement of such material shall not create large void spaces upon which overlying work is indicated to be placed.

2.1.1.3 Borrow

Provide materials meeting requirements for general site fill, backfill, and embankment. Obtain borrow materials in excess of those furnished from excavations described herein from sources off Government property.

2.2 FILTER FABRIC

Filter fabric shall meet the requirements of Section 02225, "Excavation, Backfilling, and Compacting for Utilities."

2.3 TYPE B STABILIZATION

Provide stabilizing of the roadbed where indicated to provide a firm and unyielding subgrade having a Limerock Bearing Value (Florida method) of 40 minimum. The stabilizing material shall conform to FDOT SSS-1, Section 914 for Type B. Material shall come from a source approved by the Florida Department of Transportation. Material composition and bearing value shall be tested prior to any use and if there is a change in source or if appearance or performance in field alters.

2.4 SHELL SURFACING

A shell surfacing course shall be provided for unpaved travelways where indicated. The shell material shall conform to FDOT SSS-1, Section 913, and placement, spreading, and finishing shall conform to FDOT

SSS-1, Section 250. At least the top 1-1/2 inches of the course shall consist of washed shell with no sand, The mixture shall be compacted percent or more of maximum density as determined by ASTM D 1557. When a total thickness of 6 inches or less is indicated, it may be placed in a single layer.

PART 3 EXECUTION

3.1 PROTECTION

3.1.1 Shoring and Sheeting

Provide shoring and sheeting where required. In addition to Section A and B of COE EM-38s-1-1. and other requirements of this contract, the Contractor must meet the following:

- a. Prevent undermining of pavements, foundations, and slabs.
- b. Slope banks where space permits unless indicated otherwise.
- c. Where shoring and sheeting materials remain in place in complete work to prevent settlements or damage to adjacent structures or structures directed, backfill the excavation to 3 feet below the finished grade and remove the remaining exposed portion of the shoring before completing the backfill,

3.1.2 Drainage and Dewatering

Plan for and provide the structures, equipment, and construction for the collection and disposal of surface and subsurface water encountered in the course of construction. Dewatering effluent from areas specified on the plans shall be treated at the industrial waste treatment plant.

3.1.2.1 Drainage

Dispose of surface water which may accumulate in open excavations, unfinished fills, or other low areas. Remove water by trenching where approved, pumping, or other methods to prevent softening of exposed surfaces. Surface dewatering plan shall include rerouting of any storm water runoff or natural drainage if necessary and shall comply with requirements specified in Section 01560, "Temporary Controls."

3.1.2.2 Dewatering

Groundwater flowing toward or into excavations shall be controlled to prevent sloughing or excavation slopes and walls, boils, uplift and heave in the excavation and to eliminate interference with orderly progress of construction. French drains, sumps, ditches or trenches will not be permitted within 3 feet of the foundation of any structure, except with specific written approval, and after specific contractual provisions for restoration of the foundation area have been made. Control measures shall be taken by the time the excavation reaches the water level in order to maintain the integrity of the in situ material, While the excavation is open, the water level shall be maintained continuously, at least 1 foot below the working level unless otherwise authorized by the Contractor.

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operate the dewatering system until construction work below existing water levels is complete. Measure and record the performance of the dewatering system. Have a back-up pump and system available for immediate use. Provide sediment basins or other filtering means for any dewatering effluent to be discharged to industrial waste distribution so as to limit the quantities of solids and sediments being deposited into the distribution system. See Section 01560, Temporary Controls. for additional requirements.

3.1.3 Protection and Restoration of Surfaces

Protect newly graded areas from traffic, erosion, and settlements. Repair and reestablish damaged or eroded slopes, elevations or grades and restore surface construction prior to acceptance. Protect existing streams, ditches and storm drain inlets from water-borne soil. Conduct work in accordance with requirements specified in Section 01560, "Temporary Controls."

3.1.3.1 Disposal of Excavated Material

Dispose of excavated material in such a manner that it will not obstruct the flow of runoff, streams, endanger a partly finished structure, impair the efficiency or appearance of facilities, or be detrimental to the completed work. Additionally, disposal shall conform to the Project Environmental Plan.

3.2 SURFACE PREPARATION

3.2.1 Clearing and Grubbing

Unless indicated otherwise, remove trees, logs, stumps, shrubs, and brush within the limits of construction. Protect from damage trees and shrubs which are to be saved or which are outside the limits of construction. Protect trees which are to be saved during construction as indicated or where not indicated by wooden enclosures or wire fences located at or outside of the tree drip lines. Do not permit traffic, parking of equipment, and storage of material within the tree drip lines. Except where area is indicated "Clearing Only", grub out matted roots and roots over 2 inches in diameter to at least 18 inches below the existing surface. Any merchantable timber resulting from demolition is the property of the Navy and will be harvested by the Navy under separate contract. Merchantable timber includes pine logs of at least 5 feet in length, with a minimum small end diameter of 6 inches. Merchantable timber does not include stump, branches, and foilage. Brush, refuse, stumps, roots, and unmerchantable timber shall become the property of the Contractor and removed from the Government property. Conduct work in accordance with requirements specified in Section 01560, "Temporary Controls."

3.2.2 Stockpiling Topsoil

Strip topsoil from the site where excavation or grading is indicated and stockpile separately from other excavated material. Protect and store in segregated piles until needed. It should be anticipated that no topsoil

meeting requirements of these specifications for use with new planting material exists on site.

3.2.3 Unsatisfactory Material

Remove organic matter, sod, muck, rubbish, and unsuitable soils under embankments and under pavements or slabs on grade. Unsatisfactory material shall be removed from Government property.

3.2.4 Preparation of Subgrade

Field investigations indicate there is approximately 6 to 12 inches of existing subgrade beneath existing asphalt paved areas of the site which is stabilized with mixtures of sand, clay, and shell. This material is below the existing base course and extends laterally approximately 25 feet beyond pavement limits. After removal of existing pavement, the Contractor shall remove the existing base course from areas beyond limits of new buildings and pavements. The Contractor shall then scarify and mix the soil to a depth of at least 12 inches, adding new clean fill material, as necessary, to break up the existing stabilization and provide a relatively uniform and free-draining subgrade under areas to be grassed.

3.2.5 Subgrade Proof Rolling

After removal of topsoil or other overburden, proof roll the existing subgrade within pavement and building pad areas with six passes of a minimum 15-ton pneumatic-tired roller. Operate the roller in a systematic manner to assure the number of passes over all areas, and at speeds between 2.5 and 3.6 miles per hour. When proof rolling under structures, one-half of the passes made with the roller shall be in a direction perpendicular to the other passes. Proof rolling shall be done in the presence of the Contracting Officer. Rutting or pumping may indicate unsatisfactory conditions and that material shall be undercut as directed by the Contracting Officer and replaced with the appropriate fill material. Perform proof rolling only when weather conditions permit. Do not proof roll wet or saturated subgrades. Materials degraded by proof rolling a wet or saturated subgrade shall be replaced by the Contractor as directed by the Contracting Officer at no cost to the Government. Notify the Contracting Officer 3 days prior to proof rolling.

3.3 EXCAVATION

Excavate to contours and dimensions indicated. Keep excavations free from water while construction is in progress. Notify the Contracting Officer immediately in writing in the event that it becomes necessary to remove rock, hard material, or other material defined as unsatisfactory to a depth greater than indicated and an adjustment in contract price will be considered in accordance with the Contract clause entitled 'Differing Site Conditions: Refill excavations cut below the depths indicated with suitable fill and compact as specified herein. Excavate soil disturbed or weakened by construction operations or soils softened from exposure to weather. Refill with suitable fill and compact as specified herein.

3.3.1 Excavations for Structures and Spread Footings

Excavate to depth indicated. If excavation is deeper than indicated, then fill with concrete when the foundations or footings are placed.

3.3.2 Shoring and Sheeting

Shore and sheet excavations as described in the submitted plan, with various members sized and arranged to prevent injury to persons and damage to structures. Also arrange shoring and sheeting to preclude injurious caving during removal.

3.3.3 Excavation of Contaminated Soil.

Excavate as required by the Environmental/Contamination Areas drawings. Place soil removed from the excavation in a temporary containment area. Collect and temporarily store water runoff from the stockpiled soils.

3.3.3.1 Temporary Containment of Excavated Contaminated Soil

Provide a temporary containment area near the excavation area. Cover containment area with 30 mil polyethylene sheeting. Place excavated soil on the impervious barrier and cover with 6 mil polyethylene sheeting. Provide straw bale berm around the outer limits of the containment area and cover with polyethylene sheets. Secure edges of sheets to keep the polyethylene sheeting in place. Contaminated soil may not be stockpiled on site for more than 90 days.

3.3.3.2 Excavation Methods

Select methods and equipment to remove soil to minimize disturbance to areas beyond the limits of the excavation areas. Material that becomes contaminated as a result of the Contractor's operations shall be removed and disposed of at no additional cost to the Government. Soil shall be excavated to the groundwater level or elevation +4.0 whichever is reached first except at Site 34 which shall be excavated to the groundwater level or 9 feet below grade whichever is reached first.

3.4 BORROW MATERIALS

Select borrow materials to meet requirements and conditions of the particular fill or backfill material to be used. Obtain borrow materials from sources off of Government property.

3.5 FILLING AND BACKFILLING

3.5.1 Subgrade Preparation

Scarify the underlying subgrade surface to a depth of 6 inches before the fill is started. Step, bench, or break up sloped surfaces steeper than one vertical to 4 horizontal so that the fill material will bond with or be securely keyed to the existing material. Scarify existing surface to a minimum depth of 6 inches if subgrade density is less than the degree of compaction specified and recompact. When the subgrade is part fill and

part excavation or natural *ground*, scarify the excavated or natural portion to a depth of 12 inches and recompact as specified for the adjacent or overlying fill. Compact with equipment well suited to the soil being compacted. Moisten or aerate material as necessary to provide the moisture content that will readily facilitate obtaining the specified compaction with the equipment used.

3.5.2 Fill and Backfill Beside Structures

Place required backfill material adjacent to structures and compact in a manner that prevents wedging action or eccentric loading upon or against the structures. Step or serrate slopes bounding or within areas to be backfilled to prevent sliding of the fill. Moisten or aerate material as necessary to provide the moisture content that will readily facilitate obtaining the specified compaction with the equipment used. Do not place material on surfaces that are muddy, frozen, or contain frost. Do not use equipment for backfilling operations or for the formation of embankments against structures that will overload the structure. Backfilling against concrete will be done only after the concrete has attained its 28-day compressive strength unless approval has been obtained from the Contracting Officer.

3.5.3 General Fill, Backfill, and Embankment

Construct fill, backfill and embankment at the locations and to lines and grades indicated. Use only approved materials in constructing fill or prepared subgrade. Place satisfactory material in horizontal lifts not exceeding 8 inches in loose depth. Do not place material on surfaces that are muddy, frozen, or contain frost. Compact with equipment well suited to the soil being compacted. Moisten or aerate material as necessary to provide the moisture content that will readily facilitate obtaining the specified compaction with the equipment used. Compact each lift as specified before placing the overlaying lift.

3.5.4 Final Backfill for Utilities

Construct backfill (final backfill.) for storm drains, manholes, utility lines, and other utility appurtenances using the material and compacting requirements specified herein for the adjacent or overlying work. Backfill and initial backfill requirements are specified in Section 02225, "Excavation, Backfilling, and Compacting for Utilities: Backfilling against concrete will be done only after the concrete has attained its 28-day compressive strength unless approval has been obtained from the Contracting Officer.

3.5.5 Weather Limitations

Fill and backfill shall not be constructed when weather conditions detrimentally affect the quality of the finished course. Place fill and backfill only if the atmospheric temperature is above freezing in the morning and is rising. Do not construct till and backfill in the rain or on saturated subgrades. If weather conditions are windy, hot or arid, with high rate of evaporation, schedule the placement in cooler portions of the day and furnish equipment to add moisture to the fill or backfill before and after placement.

3.6 COMPACTION

Compact each layer or lift of material specified so that the in-place density tested is not less than the percentage of maximum density specified in Table III.

TABLE III

Percent ASTM D 1557
Maximum Density

Fill, Embankment and Backfill

General Fill and General Backfill under steps, parking lots, vehicular sidewalks and pavements	95
General Fill and General Backfill under nonvehicular sidewalks and grassed areas	90
General Fill and General Backfill beside structures	95
General Fill and General Backfill under footings and structures	98
Beneath all other areas of work in this Project	95

Subgrade (Top of fill, backfill or cut)

Under building slabs, steps, vehicular sidewalks, pavements and parking lots, top 12 inches	95
Under footings, top 12 inches	90
Under nonvehicular sidewalks, and grass areas, top 6 inches	90

3.7 FINISH OPERATIONS

3.7.1 Site Grading

Grade to finished grades indicated within 0.10 foot. Grade areas to drain water away from structures and to provide suitable surfaces for mowing machines. Existing grades which are to remain but are disturbed by the Contractor's operations shall be restored as specified herein.

3.7.2 Finishing Subgrades Under Structures and Pavements

Finish surface of top lift of fill or top of subgrade to the elevation and cross section indicated. Finished surface shall be smooth and of uniform

texture. Lightly scarify or blade the finished surface to bring the finished surface to within 0.05 foot of the indicated grade and to eliminate imprints made by compaction and shaping equipment.. Surface shall show no deviations in excess of 3/8 inch when tested with a 10-foot straightedge.

3.7.3 Disposition of Surplus Material

Surplus or other soil material not required or suitable for filling, backfilling, or embankment shall be removed from Government property. Comply with the requirements of Section 01560, "Temporary Controls."

3.7.4 Protection of Surfaces

Protect newly graded areas from traffic, erosion, and settlements that may occur and as required in the Section 01560, "Temporary Controls" and as specified in the paragraph entitled "Protection and Restoration of Surfaces." Repair or reestablish damaged grades, elevations, or slopes prior to acceptance of work.

3.8 FIELD QUALITY CONTROL

3.8.1 Sampling

Furnish one 50-pound composite sample for each 5000 cubic yards of subgrade being compacted and fill material being placed. Submit samples, in the number directed, whenever the source or character of the fill, backfill, or embankment material changes. Contain each sample in a clean container and fasten to prevent loss of material. Tag each sample for identification. Tag shall contain the following information:

Contract No. _____
 Sample No. _____
 Date of Sample _____
 Sampler _____
 Source _____
 Intended Use _____

3.8.2 Tests

Test fill and backfill using ASTM C 136 for conformance to ASTM C 33, and ASTM D 2487 gradation limits. Test fill and backfill for material finer than the No. 200 sieve using ASTM D 1140. Test fill, and backfill for liquid limit and plasticity index using ASTM D 4318. Test fill, backfill, and subgrade in cut materials for moisture density relations using ASTM D 1557. Perform one of each of the required tests for each material used when directed. Provide additional tests as specified above for each source change. Perform density tests in randomly selected locations using ASTM D 1556 or ASTM D 2922 and ASTM D 3017 as follows: one test per 18,000 square feet in each layer of lift or subgrade in cut. Additionally, perform density tests on the prepared subgrade at 20 percent of the individual building footing locations. Determine moisture content of soil material in place at every location where in-place density is tested, Where ASTM D 2922 and ASTM D 3017 are used to test field compaction densities, verify the results of

the tests by performing at least one test per day using ASTM D 1556 at a location already tested by ASTM D 2922 and at least one additional test using ASTM D 1556 for every 10 tests performed with a nuclear device, also at locations already checked by ASTM D 2922.

3.9 TYPE B STABILIZATION

Placement, Spreading, mixing and finishing of stabilized subgrade shall conform to FDOT SSS-1, Section 160. The stabilized subgrade shall extend a minimum of 6 inches horizontally beyond the limits of base course to be placed above unless indicated otherwise. It is the Contractor's responsibility that the finished roadbed section meets the Limerock Bearing Value (Florida Method) of 40 minimum, regardless of the quantity of stabilizing materials necessary to be added. The stabilized subgrade shall be compacted to not less than 98 percent of the ASTM D 1557 maximum density. The completed stabilized subgrade shall be shaped to conform with the required finished grades and tolerances specified elsewhere for earthwork. All soft yielding areas shall be removed and replaced with suitable material. A minimum of one field density test shall be performed for every 600 square yards of stabilized subgrade and a minimum of two tests shall be performed each day stabilizing is occurring. Laboratory moisture-density testing shall be performed whenever a change in stabilizing source, soil material, or proportions occurs.

3.10 SHELL SURFACING

Placement, spreading, and finishing of shell surfacing shall conform to FDOT SSS-1, Section 250. The surface shall be graded as indicated and to provide drainage. The course shall be compacted to not less than 98 percent of the ASTM D 1557 maximum density. Finish rolling shall be done using rubber-tired rollers to produce a smooth and even surface. Perform field density testing in accordance with ASTM D 1556, one test for each 200 square yards of each layer. Perform smoothness test with a 10-foot straightedge applied parallel with and at right angles to the center line of the paved area; Correct surface deviations in excess of 3/8-inch by loosening, adding, or removing material, reshaping, watering, and compacting.

-- End of Section --

APPENDIX TO SECTION 02221
TABLE 1
TABLE OF CONTAMINATED SOIL AND GROUNDWATER
PARAMETERS AND CONCENTRATIONS

TABLE OF CONTAMINATED SOIL AND GROUNDWATER PARAMETERS AND CONCENTRATIONS

AREA	LOCATION WITHIN SITE	COMPOUND(S) DETECTED	MAXIMUM CONCENTRATION DETECTED	UNITS	PRELIMINARY REMEDIATION GOAL (PRG)	STANDARD THAT IS EXCEEDED	LIMIT AS SET BY THE STANDARD (ppb)	REMOVAL AREA DIMENSIONS (ft)	
9A	See Drwg C426 General	Soil						38 x 38	
		Benzopyrene	140	ppb	88	—	—		
		Groundwater							
		Aluminum	2050	ppb	—	FSDWS	200		
		Calcium	38100	ppb	—	NAS Background	N/A		
		Iron	3940	ppb	—	FSDWS	300		
Lead	27	ppb	—	FSDWS	15				
Manganese	683	ppb	—	RBC	180				
9B and 29	See Drwg C426 General	Soil						75 x 38	
		Dieldrin	2200	ppb	40	—	—		
		Benzopyrene	120	ppb	88	—	—		
		Groundwater							
		Aluminum	1830	ppb	—	FSDWS	200		
		Calcium	36900	ppb	—	NAS Background	N/A		
		Cyanide	278	ppb	—	FSDWS	200		
		Dieldrin	0.13	ppb	—	N/A	N/A		
Iron	1400	ppb	—	FSDWS	300				
Manganese	270	ppb	—	RBC	180				
34	See Drwg C426	Soil	Napthalene	170	ug/kg	—	OVA	50	150 x 50
36 Industrial Waste Line (See Drawing C426)	Existing pit to South of Bldg 2662	Soil						25 x 25	
		Barium	40.2	mg/kg	none	—	—		
		Benzopyrene	340	ug/kg	none	—	—		
		Lead	223	mg/kg	none	—	—		
		Mercury	0.12	mg/kg	none	—	—		
	Existing Force Main South of Manhole A-10	Barium	88.1	mg/kg	none	—	—	25 x 25	
		Benzopyrene	15000	ug/kg	none	—	—		
		Benzoanthracene	14000	ug/kg	none	—	—		
		Benzo(a)fluoranthene	1200	ug/kg	none	—	—		
		Copper	192	mg/kg	none	—	—		
		Indenopyrene	6000	ug/kg	none	—	—		
		Lead	1590	mg/kg	none	—	—		
		Manganese	82	mg/kg	none	—	—		
		Mercury	0.19	mg/kg	none	—	—		
		Zinc	100	mg/kg	none	—	—		
	Existing Inlet from Bldg 608	Benzopyrene	1500	ug/kg	none	—	—	25 x 25	
		Benzoanthracene	1200	ug/kg	none	—	—		
		Benzo(a)fluoranthene	1200	ug/kg	none	—	—		
		Dibenzanthracene	210	ug/kg	none	—	—		
	Existing Manhole A-10-2	Benzopyrene	300	ug/kg	none	—	—	25 x 25	
		Cadmium	2.3	mg/kg	none	—	—		
Existing Manhole A-10-D	Benzopyrene	110	ug/kg	none	—	—	25 x 25		
	Calcium	37300	mg/kg	none	—	—			
	Indenopyrene	57	ug/kg	none	—	—			
	Magnesium	387	mg/kg	none	—	—			
	Manganese	128	mg/kg	none	—	—			
Existing Manhole A-10-E	Benzopyrene	130	ug/kg	none	—	—	25 x 25		
	Indenopyrene	62	ug/kg	none	—	—			
	Manganese	122	mg/kg	none	—	—			
Existing I.W. Line	same as manholes A-10-D and A-10-E	—	—	—	—	—	150 x 20		
	General	Groundwater							
Aluminum	3380	ppb	—	FSDWS	200				
Benzene	62	ppb	—	FDWS	1				
Chlorobenzene	1200	ppb	—	N/A	N/A				
1,1-Dichloroethene	8	ppb	—	RBC	7				
Iron	3700	ppb	—	FSDWS	300				
Lead	180	ppb	—	FSDWS	15				
Manganese	718	ppb	—	FDWS	50				
Thallium	8	ppb	—	RBC	2				
32,33,35 Industrial Waste Treatment	See Drawing C426	Soil						None	
		Acenaphthene	1900	ug/kg	N/A	—	—		
		Aldrin	0.23	ug/kg	N/A	—	—		
		Aluminum	2770	mg/kg	N/A	—	—		
		Aroclor 1260	180	ug/kg	N/A	—	—		
		Arsenic	1.3	mg/kg	N/A	—	—		
		Barium	58.9	mg/kg	N/A	—	—		
		Benzo(a)anthracene	250	ug/kg	N/A	—	—		
Benzo(b)fluoranthene	360	ug/kg	N/A	—	—				

TABLE 1

TABLE OF CONTAMINATED SOIL AND GROUNDWATER PARAMETERS AND CONCENTRATIONS

IR SITE	LOCATION WITHIN SITE	COMPOUND(S) DETECTED	MAXIMUM CONCENTRATION DETECTED	UNITS	PRELIMINARY REMEDIATION GOAL (PRG)	STANDARD THAT IS EXCEEDED	LIMIT
32,33,35 (Continued)	See Drawing C428	Benzo(b,k)fluoranthene	350	ug/kg	N/A	---	
		Benzo(i)fluoranthene	380	ug/kg	N/A	---	
		Benzo(a)pyrene	180	ug/kg	N/A	---	
		alpha-BHC	0.22	ug/kg	N/A	---	
		beta-BHC	2.9	ug/kg	N/A	---	
		delta-BHC	0.49	ug/kg	N/A	---	
		gamma-BHC (Lindane)	2	ug/kg	N/A	---	
		Butylbenzylphthalate	1800	ug/kg	N/A	---	
		Cadmium	2.3	mg/kg	N/A	---	
		Calcium	2200	mg/kg	N/A	---	
		Carbazole	50	ug/kg	N/A	---	
		alpha-Chlordane	1.8	ug/kg	N/A	---	
		gamma-Chlordane	3.1	ug/kg	N/A	---	
		Chloroform	1	ug/kg	N/A	---	
		Chromium	90.6	mg/kg	N/A	---	
		Chrysene	250	ug/kg	N/A	---	
		Copper	23.6	mg/kg	N/A	---	
		4,4'-DDD	58	ug/kg	N/A	---	
		4,4'-DDE	38	ug/kg	N/A	---	
		4,4'-DDT	180	ug/kg	N/A	---	
		Dibenz(a,h)anthracene	69	ug/kg	N/A	---	
		Dibenzofuran	1400	ug/kg	N/A	---	
		1,2-Dichlorobenzene	12000	ug/kg	N/A	---	
		1,3-Dichlorobenzene	8800	ug/kg	N/A	---	
		1,4-Dichlorobenzene	12000	ug/kg	N/A	---	
		Dieldrin	38	ug/kg	N/A	---	
		Di-n-butylphthalate	58	ug/kg	N/A	---	
		Endosulfan I	0.34	ug/kg	N/A	---	
		Endosulfan II	0.45	ug/kg	N/A	---	
		Endosulfan sulfate	1.4	ug/kg	N/A	---	
		Endrin	1.8	ug/kg	N/A	---	
		Endrin aldehyde	0.81	ug/kg	N/A	---	
		Endrin ketone	1.4	ug/kg	N/A	---	
		Fluoranthene	1900	ug/kg	N/A	---	
		Fluorene	3900	ug/kg	N/A	---	
		Heptachlor	2.1	ug/kg	N/A	---	
		Heptachlor epoxide	0.35	ug/kg	N/A	---	
		Indeno(1,2,3-cd)pyrene	280	ug/kg	N/A	---	
		Iron	1820	mg/kg	N/A	---	
		Lead	48.4	mg/kg	N/A	---	
		Magnesium	198	mg/kg	N/A	---	
		Manganese	20.8	mg/kg	N/A	---	
		Methoxychlor	7.1	ug/kg	N/A	---	
2-Methylnaphthalene	24000	ug/kg	N/A	---			
Naphthalene	10000	ug/kg	N/A	---			
Nickel	8.8	mg/kg	N/A	---			
4-Nitrophenol	87	ug/kg	N/A	---			
Phenanthrene	6900	ug/kg	N/A	---			
bis(2-Ethylhexyl)phthalate	8000	ug/kg	N/A	---			
Pyrene	2000	ug/kg	N/A	---			
Sodium	110	mg/kg	N/A	---			
Vanadium	3.9	mg/kg	N/A	---			
Xylene (total)	480	ug/kg	N/A	---			
Zinc	28.1	mg/kg	N/A	---			
30 Drainage Ditch	See Drawing C428	Soil					
		Aluminum	12900	mg/kg	N/A	---	
		Aroclor 1260	190	ug/kg	N/A	---	
		Arsenic	8.1	mg/kg	N/A	---	
		Barium	37.7	mg/kg	N/A	---	
		Benzene	7	ug/kg	N/A	---	
		Benzo(a)anthracene	1700	ug/kg	N/A	---	
		Benzo(a)pyrene	1900	ug/kg	N/A	---	
		Benzo(b)fluoranthene	2000	ug/kg	N/A	---	
		Beryllium	0.42	mg/kg	N/A	---	
		2-Butanone	12	ug/kg	N/A	---	
		Cadmium	27.8	mg/kg	N/A	---	
		Calcium	29000	mg/kg	N/A	---	
		Carbazole	39	ug/kg	N/A	---	
Carbon tetrachloride	6	ug/kg	N/A	---			

TABLE 1 TABLE OF CONTAMINATED SOIL AND GROUNDWATER PARAMETERS AND CONCENTRATIONS (Continued)

REF	LOCATION WITHIN SITE	COMPOUND(S) DETECTED	MAXIMUM CONCENTRATION DETECTED	UNITS	PRELIMINARY REMEDIATION GOAL (PRG)	STANDARD THAT IS EXCEEDED	LIMIT AS SET BY THE STANDARD [ppb]	REMOVAL AREA DIMENSIONS [ft]
30 (Continued)	See Drawing C428	Chromium	155	mg/kg	N/A	---	---	
		Chrysene	1600	ug/kg	N/A	---	---	
		alpha-Chlordane	8.5	ug/kg	N/A	---	---	
		gamma-Chlordane	3.4	ug/kg	N/A	---	---	
		Copper	98.4	mg/kg	N/A	---	---	
		4,4'-DDD	11	ug/kg	N/A	---	---	
		4,4'-DDE	64	ug/kg	N/A	---	---	
		4,4'-DDT	45	ug/kg	N/A	---	---	
		Dibenz(a,h)anthracene	580	ug/kg	N/A	---	---	
		Dibenzofuran	180	ug/kg	N/A	---	---	
		1,2-Dichloroethane	19	ug/kg	N/A	---	---	
		Dieldrin	18	ug/kg	N/A	---	---	
		Ethylbenzene	5	ug/kg	N/A	---	---	
		Fluoranthene	2600	ug/kg	N/A	---	---	
		Fluorene	460	ug/kg	N/A	---	---	
		Hexachloroethane	110	ug/kg	N/A	---	---	
		Indeno(1,2,3-cd)pyrene	1300	ug/kg	N/A	---	---	
		Iron	16100	mg/kg	N/A	---	---	
		Lead	284	mg/kg	N/A	---	---	
		Manganese	1620	mg/kg	N/A	---	---	
		Magnesium	1030	mg/kg	N/A	---	---	
		Mercury	0.47	mg/kg	N/A	---	---	
		Methylene chloride	8	ug/kg	N/A	---	---	
		N-nitroso-di-n-propylamine	56	ug/kg	N/A	---	---	
		Nickel	7.5	mg/kg	N/A	---	---	
		Nitrobenzene	39	ug/kg	N/A	---	---	
		Phenanthrene	1100	ug/kg	N/A	---	---	
		Phenol	47	ug/kg	N/A	---	---	
		bis(2-ethylhexyl)Phthalate	1700	ug/kg	N/A	---	---	
		Pyrene	2300	ug/kg	N/A	---	---	
		Selenium	0.49	mg/kg	N/A	---	---	
		Sodium	241	mg/kg	N/A	---	---	
		1,1,2,2-Tetrachloroethane	8	ug/kg	N/A	---	---	
		Tetrachloroethene	2	ug/kg	N/A	---	---	
		Toluene	40	ug/kg	N/A	---	---	
		Vanadium	33.8	mg/kg	N/A	---	---	
		Xylene(total)	5	ug/kg	N/A	---	---	
		Zinc	88.2	mg/kg	N/A	---	---	

- Notes:
- FDWS - Florida Drinking Water Standard
 - FSDWS - Florida Secondary Drinking Water Standard
 - FPDWS - Florida Primary Drinking Water Standard
 - RBC - ERA Region II Risk Based Concentration
 - NAL - EPA Numeric Removal Action Level
 - OVA - Organic Vapor Analyzer
 - N/A - Not Applicable

SECTION 01560

TEMPORARY CONTROLS
03/94

PART 1 GENERAL

1.1. REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1910.120	Hazardous Waste Operations and Emergency
29 CFR 1910.1200	Hazard Communication
29 CFR 1926	Safety and Health Regulations for Construction
29 CFR 1926-SUBPART V	Power Transmission and Distribution
40 CFR 122.26	BPA National Pollutant Discharge Elimination System Permit Regulations
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Generators of Hazardous Waste
40 CFR 263	Transporters of Hazardous Waste
40 CFR 264	Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 265	Interim Status Standard for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 300	National Oil and Hazardous Substances Pollution Contingency Plan
49 CFR 178	Shipping Container Specification

CORPS OF ENGINEERS (COE)

COE PI-385-1-1	1992 Safety and Health Requirements Manual
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ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA 832R 92-005

Stormwater Management for Construction
Activities, Developing Pollution Prevention
Plans and Best Management Practices

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 241

1993 Safeguarding Construction,
Alteration, and Demolition Operations

1.2 DEFINITIONS

1.2.1 Sediment

Soil and other debris that have eroded and have been transported by runoff and water or wind.

1.2.2 Solid Waste

Rubbish, debris, garbage, and other discarded solid materials, except hazardous waste as defined in paragraph entitled "Hazardous Waste," resulting from industrial, commercial, and agricultural operations and from community activities.

1.2.3 Rubbish

Combustible and noncombustible wastes such as paper, boxes, glass, crockery, metal, lumber, cans, and bones.

1.2.4 Debris

Combustible and noncombustible wastes such as ashes and waste materials resulting from construction or maintenance and repair work, leaves, and tree trimmings.

1.2.5 Chemical Wastes

This includes salts, acids, alkalies, herbicides, pesticides, and organic chemicals.

1.2.6 Garbage

Refuse and scraps resulting from preparation, cooking, dispensing, and consumption of food.

1.2.7 Hazardous Waste

Hazardous substances as defined in 40 CFR 261 or as defined by applicable state and local regulations.

1.2.6 Oily Waste

Petroleum products and bituminous materials.

1.2.9 Class I Ozone Depleting Substance (ODS)

Class I ODS is defined in Section 602(a) of The Clean Air Act and includes the following chemicals:

chlorofluorocarbon-11 (CFC-11)	chlorofluorocarbon-213 (CFC-213)
chlorofluorocarbon-12 (CFC-12)	chlorofluorocarbon-214 (CFC-214)
chlorofluorocarbon-13 (CFC-13)	chlorofluorocarbon-215 (CFC-215)
chlorofluorocarbon-111 (CFC-111)	chlorofluorocarbon-216 (CFC-216)
chlorofluorocarbon-112 (CFC-112)	chlorofluorocarbon-217 (CFC-217)
chlorofluorocarbon-113 (CFC-113)	halon-1211
chlorofluorocarbon-114 (CFC-114)	halon-1301
chlorofluorocarbon-115 (CFC-115)	halon-2402
chlorofluorocarbon-211 (CFC-211)	carbon tetrachloride
chlorofluorocarbon-212 (CFC-212)	methyl chloroform

1.2.10 . Industrial Hygienist

An Industrial Hygienist must be certified in comprehensive practice by the American Board of Industrial Hygiene.

1.3 SUBMITTALS

Submit the following in accordance with Section 01300, "Submittals."

1.3.1 SD-08, Statements

- a. Class I ODS prohibition G
- b. Environmental protection plan G
- c. Preconstruction survey report. G
- d. Safety program G
- e. MSDS G
- f. Confined space entry procedure G
- g. Health and safety plan G
- h. Stormwater Pollution Prevention Plan G

1.3.2 SD-18, Records

- a. Disposal permit for hazardous waste G

1.3.2.1 Disposal Permit for Hazardous Waste

Submit a copy of the applicable EPA and state permits, and licenses for transportation, treatment, storage, and disposal of hazardous waste by permitted facilities. Provide copies of the last two RCRA inspections for facilities that will dispose of hazardous waste. All waste shall be handled, stored, disposed of, and treated in accordance with 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, and 40 CFR 265.

1.4 CLASS I ODS PROHIBITION

Class I ODS as defined and identified herein shall not be used in the performance of this contract, nor be provided as part of the equipment. This prohibition shall be considered to prevail over any other provision, specification, drawing, or referenced documents.

1.5 ENVIRONMENTAL PROTECTION REQUIREMENTS

While excavating in areas designated to contain contaminated soil, the contractor shall prevent movement or spreading of soil contamination to adjacent areas. Groundwater may be removed for temporary dewatering purposes and treated at the Station's Wastewater Treatment Plant as indicated in the drawings. The Contractor is not required to provide temporary measures to prevent horizontal movement of contamination while dewatering as the Government will initiate a post-construction groundwater monitoring and clean-up program, if necessary. Where it is necessary to dewater, the Contractor shall plan for expeditious dewatering. Prior to initiating dewatering, the Contractor shall demonstrate to the Contracting Officer, the Contractor's proposed dewatering approach. Comply with Federal, state, and local regulations pertaining to the environment, including but not limited to water, soil, air, and noise pollution.

1.5.1 Environmental Protection Plan

The Environmental Protection Plan shall identify precautions to be taken when working in IR sites 9A, 9B, 29, 30, 32, 33, 34, 35, and 36 as specified in Section 02221, "Earthwork for Structures and Pavements." The plan shall also include environmental monitoring procedures to be taken when excavating outside of the environmental sites as specified in Section 02221, "Earthwork for Structures and Pavements."

1.5.1.1 Environmental Plan Review

With the technical proposal, submit the proposed environmental plan for review and approval. Five days after the award of contract, the Contractor shall meet with the Contracting Officer to discuss the proposed environmental protection plan and to develop mutual understanding relative to the details of environmental protection, including measures to protect natural resources, required reports and other necessary measures to be taken.

1.5.2 Preconstruction Survey

Prior to the start of on-site construction, perform a preconstruction survey of the project site with the Contracting Officer. The Contractor shall take photographs showing existing environmental conditions in and adjacent to the site, and all areas the Contractor will utilize and affect.

1.5.3 Stormwater Pollution Prevention Plan Requirements

Submit the proposed stormwater pollution prevention plan including a copy of "Notice of Intent". Provide and plan for Stormwater Pollution Prevention in accordance with 40 CFR 122.26, and EPA 8328 92-005,

including requirements for preparation and submittal of Notice of Intent. The Contractor shall be responsible for preparation and submission of the required Notice of Intent to the EPA. Contractor's intended procedures shall be detailed in a Stormwater Pollution Prevention Plan. Provide and maintain, during the life of the contract, stormwater pollution prevention as specified, as detailed in the stormwater pollution prevention plan and in accordance with all federal, state, and local regulations.

1.5.4 Environmental Protection/Stormwater Pollution Prevention Plan Meeting

Five calendar days after the award of the contract, meet with the Contracting Officer to discuss the proposed environmental protection plan and stormwater pollution prevention plan and to develop mutual understandings relative to the details of environmental protection, and stormwater pollution prevention, including measures for protecting natural resources, and other measures to be taken. Perform a preconstruction survey of the project site with the Contracting Officer, and take photographs showing existing environmental conditions in and adjacent to the site. Fourteen calendar days after the meeting, submit the proposed environmental plan, preconstruction survey and stormwater pollution prevention plan, unless earlier delivery is specified or indicated elsewhere. Commence work after approval as directed by the Contracting Officer and before initiating any construction.

1.5.5 Licenses and Permits

Obtain licenses and permits pursuant to the "Permits and Responsibilities" FAR Clause except for the following:

- a. Application to Construct a Domestic Wastewater Facility, FDEP 17-600
- b. Closure Requirements for Hazardous Waste Treatment, Storage and Disposal Facilities, 40 CFR 270
- c. RCRA Permit for Hazardous Waste Treatment, Storage and Disposal Facility, 40 CFR 264
- d. Notice of Intent to Use General Permit for New Stormwater Discharge Facility Construction, FDEP 17-25
- e. Application to Operate/Construct Air Pollution Sources, FDEP 17-2
- f. Notice of Intent to Use General Permit for Wastewater Collection / Transmission System, FDEP 17-600
- g. Notice of Intent to Use General Permit for Drinking Water Distribution System, FDEP 17-555
- h. National Pollutant Discharge Elimination System Notification, 40 CFR 122
- i. Consumptive Use Permit Application for Landscape Uses, N.W. FL. Water Mgmt. A2-C

For permits obtained by the Contracting Officer, whether or not required by the permit, the Contractor is responsible to perform quality control inspections of the work in progress, and to submit certifications to the applicable regulatory agency, via the Contracting Officer, that the work conforms to the contract requirements. The inspections and certifications that the work was performed and that the project was constructed in accordance with the contract documents and permits shall be provided through the services of a Professional Engineer, registered in the state where the work is being performed. As a part of the quality control plan, which is required to be submitted for approval by the quality control section, provide a subitem containing the name, P.E. registration number, address, and telephone number of the professional engineer(s) who will be performing the inspections and certifications for each permit listed above.

1.6 SAFETY PROGRAM

COE EM-385-1-1. Submit safety program, including Accident Prevention Plan, for review and approval with the technical proposals. Conform to the requirements of federal, state and local laws, rules, and regulations. Work can not proceed until the Safety Program has been approved. Submit "Activity Hazard Analysis. for each major phase of the work. The program shall include:

- a. 29 CFR 1910.
- b. 29 CFR 1926.
- c. 29 CFR 1926-SUBPART V, tagout and lockout procedures.
- d. COE EM-385-1-1.
- e. Contract Clause "FAR 52.236-1, Accident Prevention.. In this clause, the date of COE EM-385-1-1 should be 1 October 1992.
- f. Contract Clause "FAR 52.223-3, Hazardous Material Identification and Material Safety Data."
- g. MSDS, supply Material Safety Data Sheet for all: hazardous materials brought on-site.
- h. NFPA 241.
- i. When cranes will be needed for lifting steel, add the statement: "Do not hoist two or more separately rigged loads (Tandem or Xmastree lifting), regardless of weight". to the Safety Plan.
- j. Work in confined Spaces. In addition to requirements in Section XXVII of COE EM-385-1-1, submit a Confined Space Entry Procedure (CSEP) for approval. CSEP shall identify the name and qualifications of the person responsible for testing the confined space work environment. Allow a minimum of 5 working days prior to beginning this work for obtaining approval and any required permits.

- (1) Entry into a confined or enclosed space by personnel for any purpose, including hot work, shall be prohibited until the qualified person has conducted appropriate tests to ensure the confined or enclosed space is safe for the work intended.
 - (a) Confined Space. Refers to a space which by design has limited openings for entry and exit; unfavorable natural ventilation which could contain or produce dangerous air contaminants, or which is not intended for continuous employee occupancy. Confined spaces include but are not limited to storage tanks, compartments of ships, process vessels, pits, silos, vats, degreasers, reaction vessels, boilers, ventilation and exhaust ducts, sewers, tunnels, underground utility vaults, and pipelines.
 - (b) Qualified Person. A person designated by the Contractor, in writing, as capable (by education or specialized training) of anticipating, recognizing, and evaluating employee exposure to hazardous substances or other unsafe conditions in a confined space, This person shall be capable of specifying necessary control and protective action to ensure worker safety.. Where work involves facilities that handle combustible and hazardous materials, this qualified person shall be a NPPA certified marine chemist or a CIH.
- (2) Daily Confined Space Entry Permit shall be completed by the qualified person. The permit shall be posted in a conspicuous place close to the confined space entrance with a copy to the Contracting Officer.
- (3) Submit to Contracting Officer a letter of certification for the qualified person. The letter shall state the qualified person's name and qualifications and delineate the qualified person's authority to direct work stoppage in the event of hazardous conditions. When working in confined spaces with combustibles or hazardous materials, provide an NFPA-certified marine chemist or CIH, and submit Certification thereof.

1.6.1 Safety Plan Including Accident Prevention

1.6.1.1 Hazardous Material Use

with respect to hazardous materials, the safety program shall include provisions to deal with hazardous materials, pursuant to the Contract Clause "FAR 52.223-3, Hazardous Material Identification and Material Safety Data." In addition to PAR 52.223-3, the plan shall consist of:

- a. An index of hazardous materials to be introduced to the site including radioactive materials and instruments capable of producing ionizing radiation;
- b. Plan for protecting personnel and property during the transport, storage and use of the materials;

- c. Procedures for spill response and disposal;
- d. Material Safety Data Sheets for materials listed in the index of the plan and not required in the technical section of the specification. Post Material Safety Data Sheets at the worksite where the products will be used.
- e. Approved labelling system to identify contents on all containers on site;
- f. Personnel training plan.

Provide drawings and calculations for temporary storage of fuel or hazardous materials storage. Each hazardous material must receive approval prior to bringing onto the job site or prior to any other use in conjunction with this contract. Allow a minimum of 10 working days for processing of the request for use of a hazardous material.

1.6.1.2 Hazardous Material Exclusions

Notwithstanding any other hazardous material permitted used in this contract, radioactive materials or instruments capable of producing ionizing radiation as well as materials which contain asbestos, mercury, or polychlorinated biphenyls are prohibited. Exceptions to the use of any of the above excluded materials, such as nuclear soil density testing equipment, may be considered by the Contracting Officer upon written request by the Contractor.

1.6.2 Unforeseen Hazardous Material

All known hazardous materials are indicated on the drawings. If additional material that is not indicated on the drawings is encountered that may be dangerous to human health upon disturbance during construction operations, stop that portion of work and test the material. The Intent is to identify materials such as PCB, lead paint, and friable and nonfriable asbestos. If the material is not hazardous or poses no danger, the Contractor shall proceed without change. If the material is hazardous and handling of the material is necessary to accomplish the work, the Government will issue a modification pursuant to "FAR 52.243-4, Changes" and "FAR 52.236-2, Differing Site Conditions."

1.6.3 Station Permits

Station permits are required for, but are not necessarily limited to, welding and burning. See Section 01561, "Additional Temporary Controls" for excavation permit requirements. Allow 46 hours for processing of the application.

1.6.4 Hazardous Noise

Provide hazardous noise signs, as directed, wherever equipment and work procedures produce sound levels greater than 84 dBA or 140 db peak sound level.

1.6.5 Forms

Submit OSHA Form 101 or 200 or other forms that contain the same information for each recordable occupational injury or illness (first aid cases not recordable), lost time accident or property damage \$1,000 or more resulting from jobsite accidents within 6 Uays of an accident. Notify the Contracting Officer immediately by telephone of fatalities, major accidents resulting in five or more disabling injuries, or property damage/material losses over \$100,000 for each accident.

1.6.6 Health and Safety Plan (HASP)

COE EM-38s-1-1. Perform a Hazard Analysis, and submit with the technical proposals a detailed job-specific HASP for the work procedures to be used in the removal, demolition, and disposal of materials, and in accordance with Section 02050, "Demolition and Removal", Section 02081, "Engineering Control of Asbestos Containing Materials:", Section 02082, "Removal and Disposal of Underground Storage Tanks", Section 02090, "Removal and Disposal of Lead Containing Paint", Section 02221, "Earthwork for Structures and Pavements", and Section 02225, "Excavation, Backfilling, and Compacting for Utilities." A certified industrial hygienist shall prepare, sign, and seal the plan. The industrial hygienist shall be retained by the Contractor for the duration of the contract and be present on site during all in-situ soil excavation and building demolition work. Prior to beginning the work, obtain approval of the plan and meet with the Contracting Officer to discuss work procedures and safety precautions. The HASP shall include:

- a. Location, size, and details of control areas.
- b. Location and details of decontamination systems.
- c. Interface of trades involved in the construction.
- d. Sequencing of work.
- e. waste disposal plan.
- f. Sampling protocols and testing labs.
- g. Protective equipment.
- h. Detailed description of method of controlling pollution.
- i. Emergency procedures for spills, fire, etc.
- j. Hazard communication program (29 CFR 1910.1200).
- k. Spill and discharge control plan
- l. Employee training program
- m. Evidence of compliance with 29 CFR 1910.120 and other Federal, state or local requirements.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 PROTECTION OF NATURAL RESOURCES

Preserve the natural resources within the project boundaries and outside the limits of permanent work. Restore to an equivalent or improved condition upon completion of work. Confine construction activities to within the limits of the work indicated or specified.

3.1.1 Land Resources

Except in areas to be cleared, **do not remove**, cut, deface, injure, or destroy trees or shrubs without the Contracting Officers permission. Do not fasten or attach ropes, cables, or guys to existing nearby trees for anchorages unless authorized by the Contracting Officer. Where such use of attach ropes, cables, or guys is authorized, the Contractor shall be responsible for any resultant damage.

3.1.1.1 Protection

Protect existing trees which are to remain and which *may* be injured, bruised, defaced, or otherwise damaged by construction operations. Remove displaced rocks from uncleared areas. By approved excavation, remove trees with 30 percent or more of their root systems destroyed.

3.1.1.2 Replacement

Remove trees and other landscape features scarred or damaged by equipment operations, and replace with equivalent, undamaged trees and landscape features. Obtain Contracting Officer's approval before replacement.

3.1.2 Water Resources

3.1.2.1 Stream Crossings

The Contracting Officer's approval is required before any equipment will be permitted to ford live streams. In areas where frequent crossings are required, install temporary culverts or bridges. Remove temporary culverts or bridges upon completion of work, and repair the area to its original condition or as directed by the Contracting Officer.

3.1.2.2 Oily Wastes

Prevent oily or other hazardous substances from entering the ground, drainage areas, or local bodies of water. Surround all temporary fuel oil or petroleum storage tanks with a temporary earth berm lined with plastic of sufficient size and strength to contain the contents of the tanks in the event of leakage or spillage. Provide CQC-approved shop drawing and containment volume calculations prior to storing fuel on site.

3.1.3 Fish and Wildlife Resources

Do not disturb fish and wildlife. Do not alter water flows or otherwise significantly disturb the native habitat adjacent to the project and critical to the survival of fish and wildlife, except as indicated or specified.

3.2 HISTORICAL AND ARCHAEOLOGICAL RESOURCES

Carefully protect in-place and report immediately to the Contracting Officer historical and archaeological items or human skeletal remains discovered in the course of work. Stop work in the immediate area of the discovery until directed by the Contracting Officer to resume work. There are areas within the limits of the project, as indicated within the drawings, in which the Contractor may encounter historical and archaeological items upon excavation. Within these areas, all excavation work extending more than 16 inches below existing grades shall be monitored for historical and archaeological items. Monitoring shall be performed by a professional archaeologist retained by the Contractor and approved by the State of Florida, Department of Historic Resources, who shall be present during all excavation operations within these indicated areas. If historical and archaeological items are encountered, the Contracting Officer shall be immediately notified and the archaeologist retained by the Contractor shall direct the Contractor's activities so as to document such items and to minimize any disturbance. The Contractor shall reflect in the required Network Project Schedule those periods when monitoring will be necessary. The Contractor shall base his bid on approximately 14 days of delay to critical path activities resulting from historic and archaeological finds during excavation activities.

Due to the potential time delay periods caused by archaeological monitoring, the Contractor shall base his bid on utilizing an archaeologist having a familiarity with the project and the project site within the last twelve months. It is recommended the Contractor base his bid on utilizing Janus Research/Piper Archaeology, 400 4th Street North, P. O. Box 919, St. Petersburg, Florida 33701, Attn: Mr. Ken Hardin, President (813/821-7600).

3.3 EROSION AND SEDIMENT CONTROL MEASURES

3.3.1 General Requirements

Erosion and sediment control measures shall be provided throughout construction and shall be in conformance with the project Stormwater Pollution Prevention Plan. Requirements for this plan are included elsewhere in this section and a preliminary plan containing additional guidance is appended at the end of this section..

3.3.2 Special Requirements for Interfacing with Adjacent Contractors

The work in this project includes demolition, grading, drainage, utilities and miscellaneous work in several areas that will subsequently be occupied by other contractors. These areas include the Fire Training Complex, E Club, Medical Dental Facility, and Hazardous Material Facility. The Contractor shall prepare the Stormwater Pollution Prevention Plan, and erosion and sediment control measures, to adequately provide protection for

these facilities and shall prepare guidelines and procedures to be provided to these assuming contractors, to ensure the integrity of the overall site's erosion and sediment control measures. The Contractor shall also attend periodic meetings with these assuming contractors to brief them on the measures for the overall site and to coordinate individual activities with respect to erosion and sediment control measures. The Contractor shall designate an individual with adequate training and experience with erosion and sediment control measures to monitor and supervise the layout, installation, and maintenance of the site protection measures.

3.3.3 Burnoff

Burnoff of the *ground* cover is prohibited,

3.3.4 Protection of Erodible Soils

Immediately finish the earthwork brought to a final grade, as indicated or as specified. Immediately protect the side slopes and back slopes upon completion of rough grading. Plan and conduct earthwork to minimize the duration of exposure of unprotected soils.

3.3.5 Temporary Protection of Erodible Soils

Provide the following methods to prevent erosion and control sedimentation.

3.3.5.1 Retardation and Control of Runoff

Retard and control the rate of runoff from the construction site. Provide diversion ditches, benches, and berms to retard and divert runoff to protected drainage courses.

3.3.5.2 Vegetation and Mulch

Provide temporary protection on sides and back slopes as soon as rough grading is completed or sufficient soil is exposed to require erosion protection. Protect slopes by accelerated growth of permanent vegetation, temporary vegetation, mulching, or netting. Stabilize slopes by hydroseeding, anchoring mulch in place, covering with anchored netting, sodding, or such combination of these and other methods necessary for effective erosion control,

3.3.5.3 Seeding

Provide seeding where *ground* is disturbed. Include topsoil or nutriment during the seeding operation necessary to establish or re-establish a suitable stand of grass.

3.3.6 Silt Barriers

Provide silt barriers (silt fences, hay bales, turbidity barriers, etc.) as detailed on the drawings, and as required by the Stormwater Pollution Prevention Plan to be developed. to prevent discharge of eroded soil or other sediment from the surface drainage system. Collected sediment shall be removed and handled in a manner to prevent reintroduction to the stormwater system and as approved by the Contracting Officer. The

Contractor shall also provide sediment basins and other control measures as required. Any sediment/stilling basins or permanent swales utilized during construction for sediment control shall be cleaned of silts and sediments prior to final grading and dressing of site..

3.4 CONTROL AND DISPOSAL OF SOLID WASTES

Pick up solid wastes, and place in covered containers which are regularly emptied. Do not prepare or cook food on the project site. Prevent contamination of the site or other areas when handling and disposing of wastes. At project completion, leave the areas clean.

3.4.1 Disposal of Rubbish and Debris

Dispose of rubbish and debris in accordance with the requirements specified below:

3.4.1.1 Removal From Government Property

Remove and dispose rubbish and debris from Government property.

3.4.2 Garbage Disposal

Place garbage in approved containers, and move to a pickup point or disposal area within the project limits. Garbage shall be disposed of and removed from Government property by the Contractor.

3.5 CONTROL AND DISPOSAL OF HAZARDOUS WASTE

3.5.1 Hazardous Waste Generation

Handle generated hazardous waste in accordance with 40 CFR 262.

3.5.2 Hazardous Waste Disposal

Dispose of hazardous waste in accordance with 40 CFR 263, 40 CFR 264, and 40 CFR 265. Do not dispose of hazardous waste until obtaining Contracting Officer approval of the disposal permit. The Contractor shall not use the Industrial Waste Treatment Facility for disposal of Contractor-generated hazardous waste.

3.5.3 Hazardous Waste Storage

Store hazardous waste in containers in accordance with 49 CFR 178. Hazardous waste shall be identified in accordance with 40 CFR 261 and 40 CFR 262.

3.5.4 Spills of Oil and Hazardous Materials

Take precautions to prevent spills of oil and hazardous material. In the event of a spill, immediately notify the Contracting Officer. Spill response shall be in accordance with 40 CFR 300 and applicable state regulations. . .

3.6 DUST CONTROL

Keep dust down at all times, including during nonworking periods. Sprinkle or treat, with dust suppressants, the soil at the site, haul roads, and other areas disturbed by operations. Dry power brooming will not be permitted. Instead, use vacuuming, wet mopping, wet sweeping, or wet power brooming. Air blowing will be permitted only for cleaning nonparticulate debris such as steel reinforcing bars. Only wet cutting will be permitted for cutting concrete blocks, concrete, and bituminous Concrete. Do not unnecessarily shake bags of cement, concrete mortar, or plaster. Inspect haul route at least once per shift during site fill operations and clean spills as necessary. At a minimum, wet sweep the haul route from the West Gate to the Site Entrance once per day.

3.7 NOISE

Make the maximum use of low-noise emission products, as certified by the EPA. Blasting or use of explosives will not be permitted without written permission from the Contracting Officer, and then only during the designated times.

3.8 FIRE PROTECTION

3.8.1 Compliance

COE EM-305-1-1, NFPA 241, and activity fire regulations. Obtain approval from the activity Fire Chief prior to commencement of hot work operations.

3.8.2 Fired Kettles

Melt kettles for tar, asphalt, and similar materials shall not be closer than 25 feet to buildings or combustible materials. Provide a minimum of two 20-pound ABC all-purpose type extinguishers at the melting kettle and the area of hot material application. Equip kettles with proper heat controls and means of agitation to assure controlled uniform temperatures throughout contents to prevent spot heating. Do not heat contents above flash point.

3.8.3 Notification of Fire

Post the activity fire poster in conspicuous locations and at telephones in construction shacks,

-- End of Section --