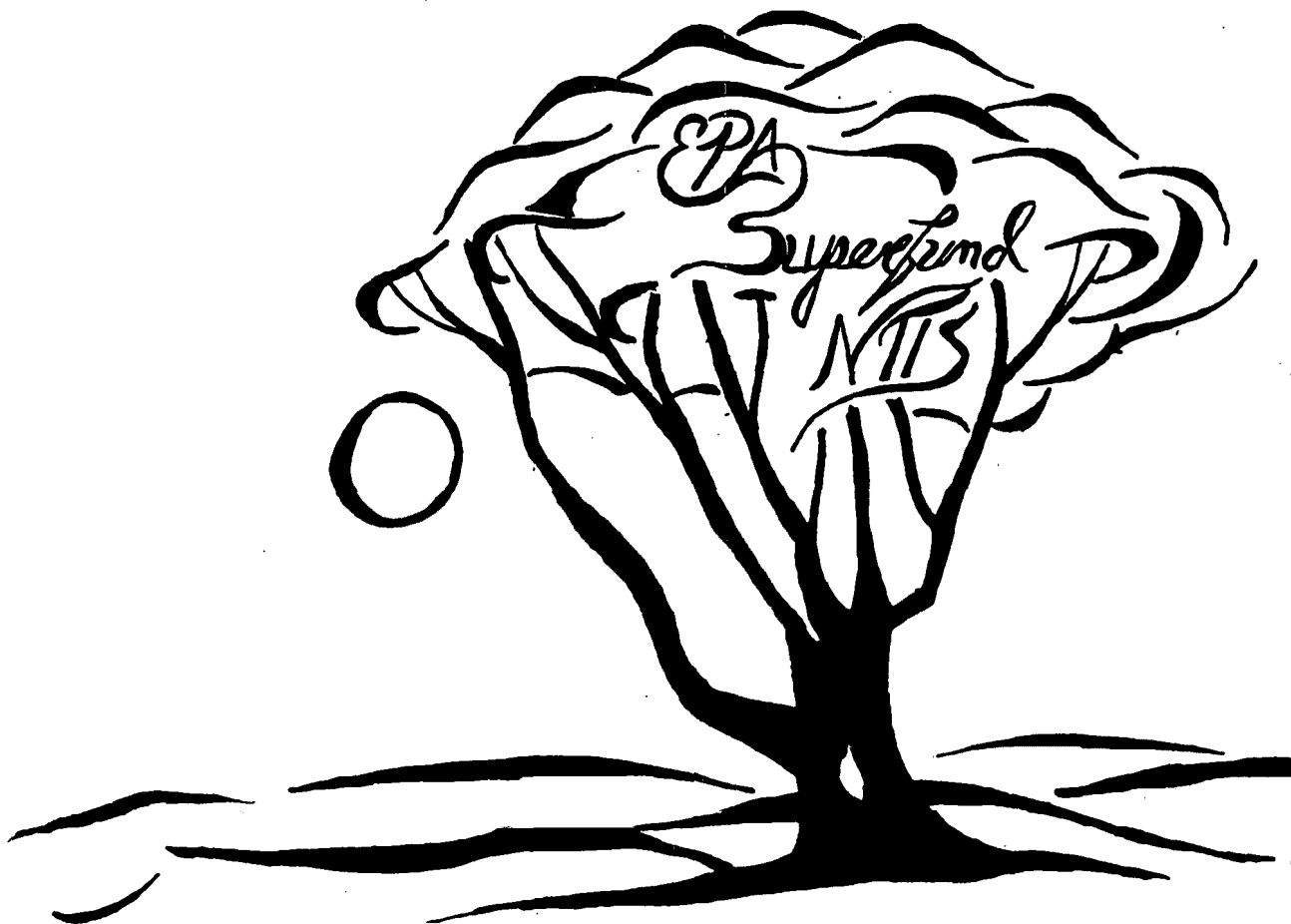


PB94- 964074
EPA/ROD/R04-94/207
February 1995

EPA Superfund Record of Decision:

**Peak Oil Co./Bay Drums Co.
(O.U. 4), Tampa, FL
6/28/1994**



**RECORD OF DECISION
OPERABLE UNIT 4
CENTRAL AND SOUTH WETLANDS**

PEAK OIL/BAY DRUMS NPL SITE

Brandon, Hillsborough County, Florida



Prepared By:

Environmental Protection Agency

Region IV

Atlanta, Georgia

**RECORD OF DECISION
OPERABLE UNIT FOUR
CENTRAL AND SOUTH WETLANDS**

PEAK OIL/BAY DRUMS NPL SITE

DECLARATION

SITE NAME AND LOCATION

Peak Oil/Bay Drums Superfund Site
Brandon, Hillsborough County, Florida

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for Operable Unit Four at the Peak Oil/Bay Drums site in Brandon, Hillsborough County, Florida, which was chosen in accordance with the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments Reauthorization Act of 1986 (SARA), and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the administrative record file for this site.

The State of Florida, as represented by the Florida Department of Environmental Protection (FDEP), has been the support agency during the Remedial Investigation and Feasibility Study process for the Peak Oil/Bay Drums site. In accordance with 40 CFR 300.430, as the support agency, FDEP has provided input during this process and although a formal letter of concurrence has not yet been received, concurrence is expected.

DESCRIPTION OF SELECTED REMEDY

The selected remedy described in this document addresses the fourth and final operable unit, which consists of two wetlands, the Central Wetland and the South Wetland, located in the area of the Bay Drums and Peak Oil site. The Operable Unit One remedy addresses the source of contamination at the Peak Oil site through the treatment of contaminated soils and the ash pile located on the site. The Operable Unit Two remedy addresses the groundwater contamination of the southern surficial aquifer and the Upper Floridan Aquifer at the Peak Oil and Bay Drums sites. The Operable Unit Three remedy addresses the source of contamination at the Bay Drums site through the treatment of contaminated soils on the site. The implementation of the Operable Unit One, Two, and Three remedies will eliminate or significantly reduce the potential for contaminant migration from the Bay Drums and Peak Oil facilities to the wetland areas.

The selected remedy is a "no-action" remedy that will include ecological monitoring of the wetlands. The purpose of the selected remedy is to monitor the ecologic status of the Central and South wetlands as the Operable Units One, Two, and Three remedies are being implemented and to ensure that conditions in the wetlands are protective of human health and the environment.

DECLARATION STATEMENT

The EPA has determined that no action is necessary to ensure the protection of human health or the environment. Because monitoring will be conducted in the wetlands, the five year review will apply to this site as required in Section 121(c) of CERCLA.

6-28-94
Date

John H. Hankinson, JR.
John H. Hankinson, JR.
Regional Administrator
U.S. EPA Region IV

TABLE OF CONTENTS

	<u>PAGE</u>
DECLARATION	i
Table of Contents	iii
List of Figures and Tables	v
1.0 Site Location and Description	1
2.0 Site History and Enforcement Activities	4
2.1 Site Wetlands	4
2.2 Peak Oil Site	5
2.3 Bay Drums Site	6
3.0 Highlights of Community Participation	7
4.0 Scope and Role of Operable Unit	8
5.0 Summary of Site Characteristics	9
5.1 Climate	9
5.2 Site Topography, drainage and Surface Features	9
5.3 Regional Geology	9
5.4 Regional Hydrogeology	10
5.5 Potential Contaminant Sources and Chemical Transport Mechanisms.....	13
5.6 Sampling Results	13
5.6.1 Sediment	14
5.6.2 Surface Water	15
6.0 Baseline Risk Assessment Summary	20
6.1 Human Health Risks	20
6.2 Environmental Risks	20
6.2.1 Wetland Characterization and Functional Assessment	20
6.2.2 Bioaccumulation	20
6.2.3 Environmental Toxicity Assessment	21
6.2.4 Endangered Species	22
7.0 Description of Remedial Alternatives	22
7.1 Alternative No. 1 - No Action with Ecological Monitoring	22
7.2 Alternative No. 2 - Filling of the Wetlands...	23
7.3 Alternative No. 3 - Wetland Excavation and Restoration	25

Table of Contents (Continued)

	<u>PAGE</u>
8.0 Comparative Analysis of Remedial Alternatives	25
8.1 Overall Protection of Human Health and the Environment	25
8.2 Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)	26
8.3 Long-Term Effectiveness and Permanence	26
8.4 Reduction of Toxicity, Mobility, or Volume Through Treatment	28
8.5 Short-Term Effectiveness	28
8.6 Implementability	28
8.7 Cost	29
8.8 State Acceptance	29
8.9 Community Acceptance	30
9.0 Selected Remedy	30
9.1 Major Components of the Remedy.....	30
9.2 Compliance with ARARs.....	31
10.0 Documentation of Significant Changes	31
Appendix A - Responsiveness Summary	

List of Figures

	<u>PAGE</u>
Figure 1 Site Location Plan.....	2
Figure 2 Study Area Plan.....	3
Figure 3 Typical Geologic Profile.....	11
Figure 4 Surface Water and Sediment Sampling Locations.....	16

List of Tables

Table 1 Sediment Screening Values.....	17
Table 2 Ratio of Analyte Concentrations in Wetland Sediments to NOAA ER-L Values.....	18
Table 3 Concentration of Analytes Exceeding Florida Surface Water Quality Standards in the Central And South Wetlands.....	19
Table 4 Glossary of Evaluation Criteria.....	27

Decision Summary

Operable Unit Four - Central and South Wetlands Peak Oil/Bay Drums Superfund Site Brandon, Hillsborough County, Florida

1.0 Site Location, and Description

The adjacent Peak Oil and Bay Drums sites and two nearby wetlands (collectively referred to in this document as the "site" or the "Peak Oil/Bay Drums site") are located in north central Hillsborough County, Florida within the southeast quarter of Section 7, Township 29 South, Range 20 East (Figure 1). The site is located on State Road 574 (SR 574), approximately 0.25 miles west of Faulkenburg Road. The two site wetlands are called the Central Wetland, located immediately to the south of the former Bay Drums facility, and the South Wetland, located about 500 feet southeast of the former Peak Oil facility (figure 2). Both the Central and the South wetlands are located on property owned by Hillsborough County. Two additional wetlands, the Cypress Pond Wetland and the Srayfield Wetland, are evaluated as comparison wetlands and are located several hundred yards south of the site.

The site is located in a primarily industrial area which contains a number of facilities. The Reeves Southeastern Wire facility and the Cast-Metals facility are located to the east of the Peak Oil site. Located between the Central and South wetlands are the Peoples Gas Company's natural gas distribution center and a soil and construction debris pile referred to as the shingle pile. The shingle pile was moved by EPA to its present location from the Bay Drums site during an EPA removal action in 1989. The Consolidated Bag Company is located southwest of the shingle pile. An abandoned CSX Railroad spur runs south between the Peak Oil and Bay Drums sites and leads to the South Wetland. This spur once serviced the Tampa Bay Sunshine Skyway Bridge painting site located both north and south of the spur near the South Wetland. The area south of the Bay Drums site is undeveloped Hillsborough County-owned land. South of the Central Wetland is an area which was historically used as a sprayfield for the Hillsborough County Wastewater Treatment Plant. The industrial nature of the site area is expected to be maintained in the foreseeable future.

The closest residential area to the site consists of single-family houses and mobile homes and is located approximately 0.3 miles east of the site across Faulkenburg Road. Other residential areas include single-family homes, approximately 0.75 miles north of the site across SR 574 on Martin Luther King Avenue; single-family homes in an area approximately 1.2 miles west of the site near the intersection of U.S. Highway 301 and SR 574; and single-family homes and mobile homes in an area approximately 1.8 miles northeast of the site.

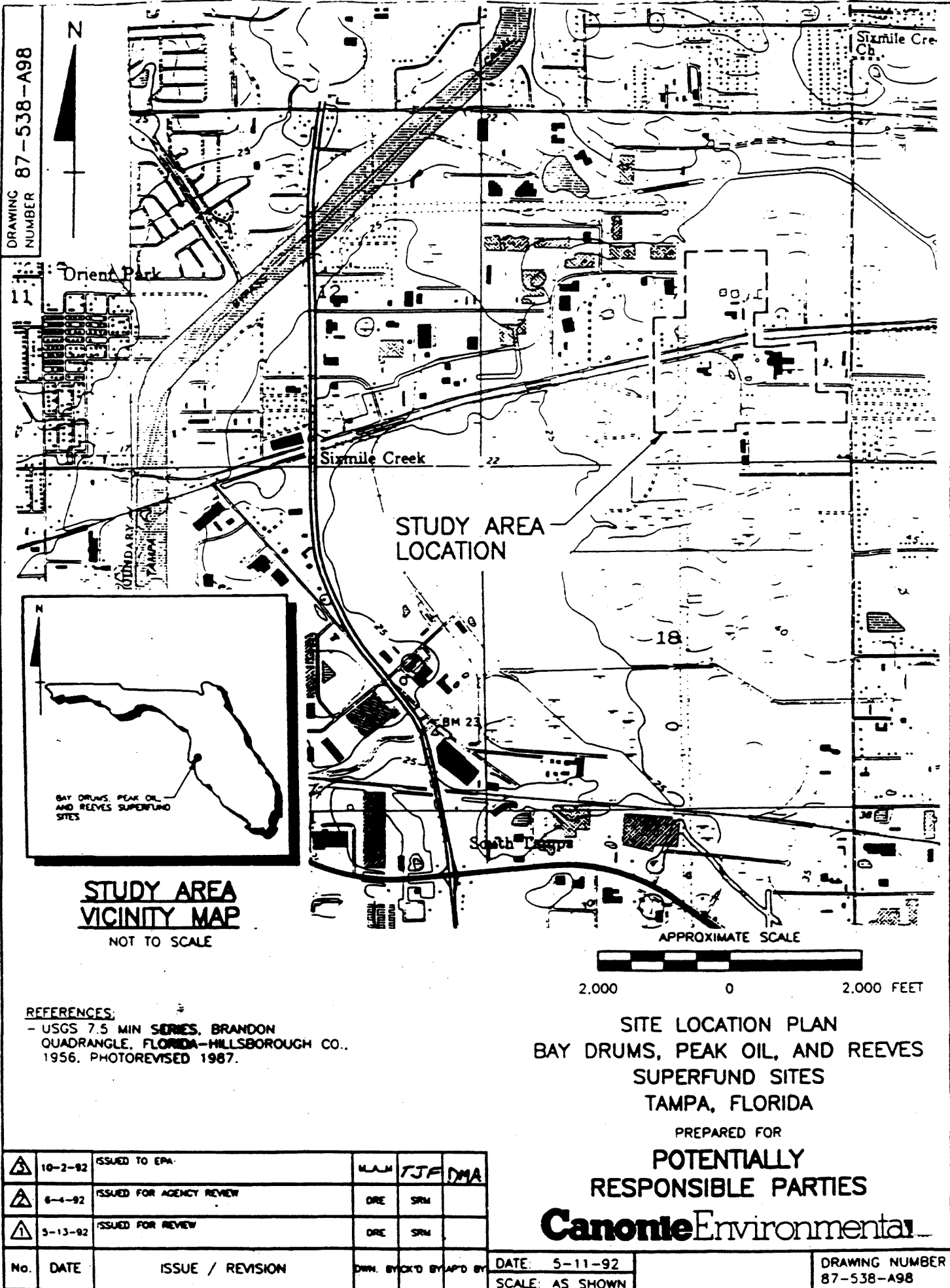
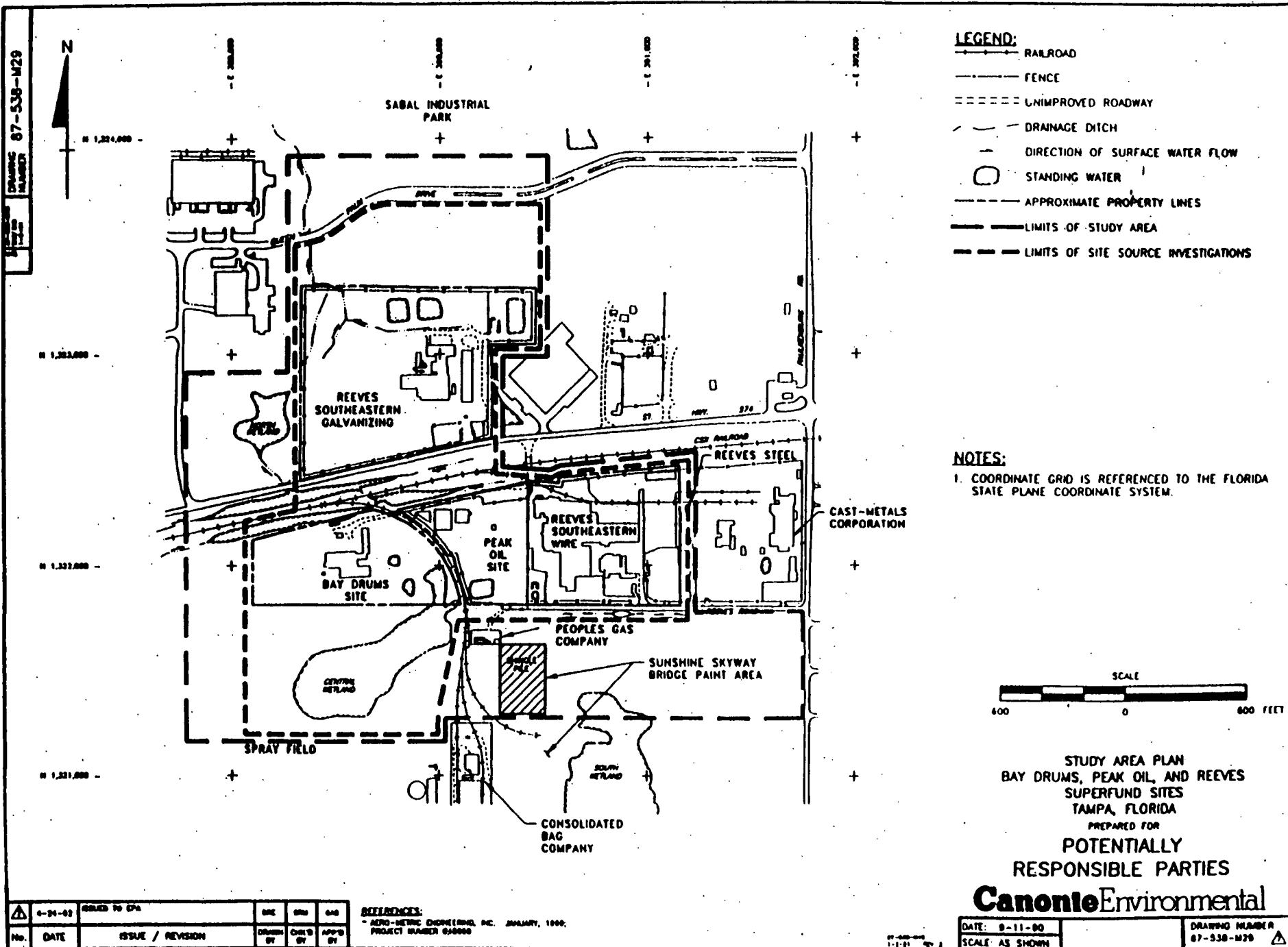


Figure 1 Site Location Plan
Source: Canonie Environmental, Area-Wide FS

Figure 2 Study Area Plan
Source: Canonie Environmental, Area-Wide FS

3



The Central wetland is approximately 6.25 acres in size and has no defined surface water inlet or outlet. A 2 to 3 foot ridge forms a distinct boundary along the southern edge of the wetland. A maintained pasture area and a power line right-of-way border the Central Wetland to the west and south and a Seaboard Coast Railroad line spur borders the wetland to the east.

The South Wetland measures about 9.7 acres. Similar to the Central Wetland, the South Wetland has no defined surface water inlet or outlet.

As shown on Figure 1.2, the Peak Oil site is approximately four acres in area. The Peak Oil site currently contains two warehouse-type buildings, a concrete block office building, a small storage shed, a small lagoon from which waste oil sludges were excavated during a previous EPA removal action, a 6,000 cubic-yard ash pile lined and covered with plastic liners (also from the previous EPA removal action), and a 400 cubic-yard soil pile. A concrete pad, 90 feet by 110 feet, is also located in the southeast corner of the site.

The Bay Drums facility is approximately 14.8 acres in area. The facility currently contains three small ponds. Two site buildings were destroyed in early 1994 and the foundations remain on-site.

2.0 Site History and Enforcement Activities

2.1 Site Wetlands

The Central and South wetlands were evaluated in two separate studies, one conducted by the Potentially Responsible Parties (PRPs), and one conducted by EPA. The Peak Oil PRPs entered into an Administrative Order on Consent with EPA in 1989 to conduct an Area-wide Hydrologic Remedial Investigation/Feasibility Study ("Area-Wide RI/FS"). The study focused on groundwater contamination, but included an evaluation of area wetlands, including the Central and South wetlands. EPA conducted the Area-Wide Wetlands Impact Study concurrently with the Area-Wide RI/FS to evaluate the ecologic status of the wetlands. Field work for the studies was performed in 1989 and 1990. EPA conducted a feasibility study for the Central and South wetlands in 1993 and 1994.

Central Wetland

The Central Wetland appears to have been relatively undisturbed until 1965. Since that time this system has been impacted by surrounding land uses and direct alterations of wetland hydrology. Activities which appear to have altered this system include scraping and possible installation of a perimeter ditch, construction of a ditch to the northeast, powerline maintenance

on the west side of the system, and agricultural activities to the south. Water levels and thus the lateral extent of the Central Wetland have been affected through the years by a county-owned spray field for treated waste water. Use of the pasture area immediately to the south for spraying of treated effluent has likely contributed to a current state characterized by dense vegetation by species adapted to high nutrient conditions.

South Wetland

The South Wetland has changed significantly over the past several decades. In an areal photograph from 1948 it appears that the South Wetland is being drained by a system of ditches. In the photo, less than ten percent of the current system had a wetland signature. It is unclear what the South Wetland looked like before the ditches were installed. Activities which have influenced the current state of this system include Drainage changes, construction of a road to the south, agricultural activities, construction of a railroad spur to the northwest, construction of a fill area on the west side, industrial storage in the fill area, and construction of a ditch draining the access road along the Reeves S.E. Wire facility.

2.2 Peak Oil Site

The Peak Oil Facility began operation as a waste oil re-refinery in approximately August, 1954, under the ownership of Mr. John Schroter. Ownership of the company was transferred in 1974 to Mr. Robert Morris. Mr. Morris and his sons continued the operation of the business as a waste oil re-refinery.

Facility operations involved a re-refining process to purify waste oils and lubrication fluids. The compounds accepted throughout facility operations were primarily used auto and truck crankcase oil, hydraulic oil, transformer fluid, and other waste oils. An acid/clay purification and filtration process was used to re-refine the oil. This process generated a low-pH sludge and oil-saturated clay, which were stored over the life of the facility in three separate impoundment areas (Lagoons No. 1, No. 2, and No. 3) in the southern portion of the site. Sludge storage Lagoon No. 1 was in use until sometime after 1960. Another sludge storage lagoon area was constructed further south of Lagoon No. 1. This area consisted of two large, unlined impoundments measuring approximately 90 feet by 100 feet each (Lagoon No. 2 and Lagoon No. 3). The two impoundments were connected by an oil/water separator.

Lagoon No. 1 and Lagoon No. 3 were backfilled. However, the exact dates of backfilling are unknown. Lagoon No. 2 is the only impoundment on the site that was not backfilled. This lagoon originally contained up to approximately 12 feet of sludge.

Overflow from Lagoon No. 2 was apparently directed to the oil/water separator to remove free oil, and the aqueous phase was discharged into Lagoon No. 3, to the east. In 1983, the U.S. Environmental Protection Agency (EPA) and the Florida Department of Environmental Protection (FDEP) conducted inspections at the Peak Oil and Bay Drums sites and reported that various chemical constituents were present in site soils, including heavy metals, petroleum hydrocarbons, trace concentrations of polychlorinated biphenyls (PCBs), and solvent-type chemical compounds. In 1986, EPA initiated a removal action at the Peak Oil site to incinerate the sludges found in Lagoon No. 2. Ash generated during the incineration process (approximately 6,000 cubic yards) is presently being stored at the site on a liner. The ash pile is also covered with a liner. In 1989, approximately 120 Peak Oil potentially responsible parties (PRPs) entered into two separate Administrative Orders on Consent (AOCs) with the EPA. One AOC was to conduct a remedial investigation/feasibility study (RI/FS) for the soils, sediment, and surface water at the Peak Oil site, and the other AOC was to conduct an RI/FS for area groundwater contamination.

2.3 Bay Drums Site

The Bay Drums site is a former drum reconditioning facility. When the Bay Drums site was active, drums from many sources were transported to the site for reconditioning. Nearly all of the site property was used for drum storage, although the active drum reclaiming area only covered approximately 2 acres of the site. Drum reconditioning activities ceased sometime in 1984.

Beginning in 1984, and continuing for approximately two and one-half years, the Bay Drums site was operated as Resource Recovery Associates, Inc. During that time, waste roofing shingles were deposited on most of the site at heights ranging from three to nineteen feet. The stated intent of the company was to recycle the shingles for asphalt, but no significant recycling ever occurred, and the site essentially operated as an unpermitted dump. On November 12, 1986, the U.S. Environmental Protection Agency (EPA) issued a Unilateral Administrative Order to the site operator to cease bringing materials on-site and to remove materials already located on the site. As a result of the property owner's failure to comply with the order and remove the shingles from the property, EPA's Emergency Response and Control Section (ERCS) commenced a removal action in March, 1989 to remove the roofing shingles and debris from the surface of the site. EPA removed approximately 70,000 cubic yards of shingles from the site prior to beginning field activities. This removal was necessary in order to evaluate the extent of soil contamination.

Initial sampling and trenching operations conducted at the site in March, 1989 revealed buried drums, sludges and other materials

throughout the entire northeast corner of the site. Further examination of the site revealed three additional drum burial areas south of the site buildings on Hillsborough County property. An EPA removal action was initiated in June 1989, to address the areas containing buried drums and high levels of contamination. The removal action consisted of the removal of drums, contaminated soils, sludges and pesticides from the site. The drums were decontaminated and disposed of off-site while approximately 4,000 cubic yards of soils and other materials were placed into a lined and covered cell which had been constructed on-site by EPA. In early 1990, this 4,000 cubic yards of contaminated materials were taken to a permitted hazardous waste facility in Utah via railcar.

Subsequent to the EPA removal action, EPA conducted a source control Remedial Investigation/Feasibility Study (RI/FS) to determine the nature and extent of contamination in the soils, sediments, and surface water. The RI/FS was completed and presented to the public in August 1992. A public meeting was held at the Brandon Community College on August 18, 1992, at which the Agency's preferred alternative for the Peak Oil and Bay Drums source control cleanup plan was presented. The preferred alternative for the Reeves site was also presented at this meeting. In 1993, a group of Bay Drums PRPs signed the Area-Wide Ground Water RI/FS Consent Order. The RI/FS for the area-wide groundwater had been conducted and funded jointly by a group of Peak Oil PRPs and by Reeves Southeastern Corporation. The Bay Drums PRPs then contributed their share of the funding after signing the Consent Order.

3.0 Highlights of Community Participation

In accordance with Sections 113 and 117 of CERCLA, EPA has conducted community relations activities at the site to ensure that the public remains informed concerning activities at the site. EPA issued press releases to keep the public informed. There was some local press coverage at EPA's activities, and EPA held meetings with local (county) and state officials to advise them of the progress at the site.

A community relations plan (CRP) was developed in 1988 and revised in 1989 to establish EPA's plan for community participation during remedial activities. Following completion of the FS, a Proposed Plan fact sheet was mailed to local residents and public officials on April 29, 1994. The fact sheet detailed EPA's preferred alternative for addressing the wetlands contamination (Operable Unit Four) at the Peak Oil/Bay Drums site. Additionally, the Administrative Record for the site, which contains site related documents including the Area-Wide Wetlands Impact Study, FS reports and the Proposed Plan, was made available for public review at the information repository in the Brandon Public Library. A notice of the availability of the

Administrative Record for the Peak Oil/Bay Drums site was published in the Tampa Tribune on May 3, 1994.

A 30-day public comment period was held from May 2, 1994 to May 31, 1994 to solicit public input on EPA's preferred alternative for Operable Unit Two. EPA held a public meeting on May 11, 1994 at the Hillsborough Community College in Brandon Florida, to discuss the remedial alternatives under consideration and to answer any questions concerning the proposed plan for the site. EPA's response to each of the comments received at the public meeting or during the public comment period is presented in the Responsiveness Summary which is provided as Appendix A of this ROD.

This decision document presents the selected remedial action for Operable Unit Four of the Peak Oil/Bay Drums site in Brandon, Florida, chosen in accordance with CERCLA, as amended by SARA, and to the extent practicable, the NCP. This decision is based on the Administrative Record for the site.

4.0 Scope and Role of Operable Unit

As with many Superfund sites, the problems at the Peak Oil/Bay Drums site are complex. As a result, EPA has divided the remedy for the site into four operable units (OUs). These are:

- o OU One: Contamination in the soils and sediments at the Peak Oil site;
- o OU Two: Contamination in the groundwater and surface water at the Peak Oil and Bay Drums sites;
- o OU Three: Contamination in the soils and sediments at the Bay Drums site;
- o OU Four: Contamination in the Central and South wetlands at the Peak Oil and Bay Drums site.

The remedial actions for OUs One, Two, and Three have been selected in separate RODs.

OU Four, the subject of this ROD, addresses the contaminated water and sediment of the Central and South wetlands. The principal risk from this contamination is to the ecology of the wetlands. The Baseline Risk Assessment conducted as part of OU Two indicates that the contaminants found in the Central and South Wetland pose no unacceptable risk to human health. The purpose of the selected remedy is to prevent excessive ecological impact from contaminated surface water and sediment in the Central and South wetlands. This fourth operable unit will be the final response action for this site.

5.0 Summary of Site Characteristics

5.1 Climate

The climate in the Tampa area is characterized by mild winters and relatively long, humid, and warm summers. Spring and fall tend to be dry, with the majority of the rainfall occurring in the summer.

5.2 Site Topography and drainage

Relief throughout the site and surrounding areas is flat with some localized depressions around wetlands and streams. Surface run-off water either collects in localized depressions and wetlands or drains into ditches or streams. Due to the study area's elevation above MSL, tidal surges will not impact the area. The area south of SR 574 demonstrates only minor changes in elevation (from about 39 to 42 feet above MSL) with the land sloping gradually toward small wetland areas. Surface water run-off is expected during prolonged or heavy precipitation.

5.3 Regional Geology

The geology of the Tampa area consists of a series of sedimentary sequences of rock and unconsolidated sediments overlying a basement of crystalline igneous or metamorphic rock. The basement rock is of Paleozoic age, and the sedimentary rocks range in age from the Mesozoic era through the Pleistocene epoch of the Cenozoic era (Figure 3).

The upper rock and sediment sequences include the Tampa limestone member of the Hawthorn Group (referred to as the Upper Floridan Aquifer), the Arcadia formation and Peace River formation of the Hawthorn Group (referred to as the low-permeability unit or low-permeability layer) and undifferentiated Pliocene, Pleistocene and Holocene deposits (referred to as the surficial aquifer). The limestone layer is approximately 80 feet to 400 feet thick, varying throughout the area, the Hawthorn clay layer is 15 feet to 40 feet, and finally the surficial sand ranges from 9 feet up to 37 feet in some areas.

Sedimentary rocks and unconsolidated deposits in the Tampa area consist of limestones, sand, clay and silt. The variability of rock and sediment types suggests environments of deposition ranging from open ocean to shoreline to lagoons and tidal marshes. The rock sequence consists of sand, fine-grained carbonate rocks and fine-grained clay or shale.

Rocks of the Miocene age underlie most of the Tampa area, and these strata are mostly clastic, with the exception of (1) sandy limestone that comprises the Tampa member and its equivalents and

(2) dolomite beds that commonly make up the lower part of the Arcadia formation.

The Suwannee Limestone formation and the overlying Tampa Limestone member comprise the upper portion of the Upper Floridan Aquifer. The Suwannee Limestone formation consists of white, yellow and light-brown, soft to hard, dense, fine-grained limestone with chert lenses to 25 feet thick.

The Hawthorn Group consists of highly variable sequences, mostly of clay, silt and sand beds, all of which contain scarce to abundant phosphate. The clays are characterized by swelling when hydrated and have the ability to absorb and retain certain ions in an exchangeable state.

The Hawthorn generally consists of a basal calcareous unit and a middle clastic unit known as the Arcadia formation, and an upper unit that is a highly variable mixture of clastic and carbonate rocks, known as the Peace River Formation. The middle and upper parts of the Hawthorn everywhere contain more phosphate than the lower calcareous unit. Because of its heterogeneity and the predominantly fine-textured nature of both the clastic and the carbonate beds within the Hawthorn, the entire group constitutes a low-permeability rock unit except for the Tampa limestone member.

5.4 Regional Hydrogeology

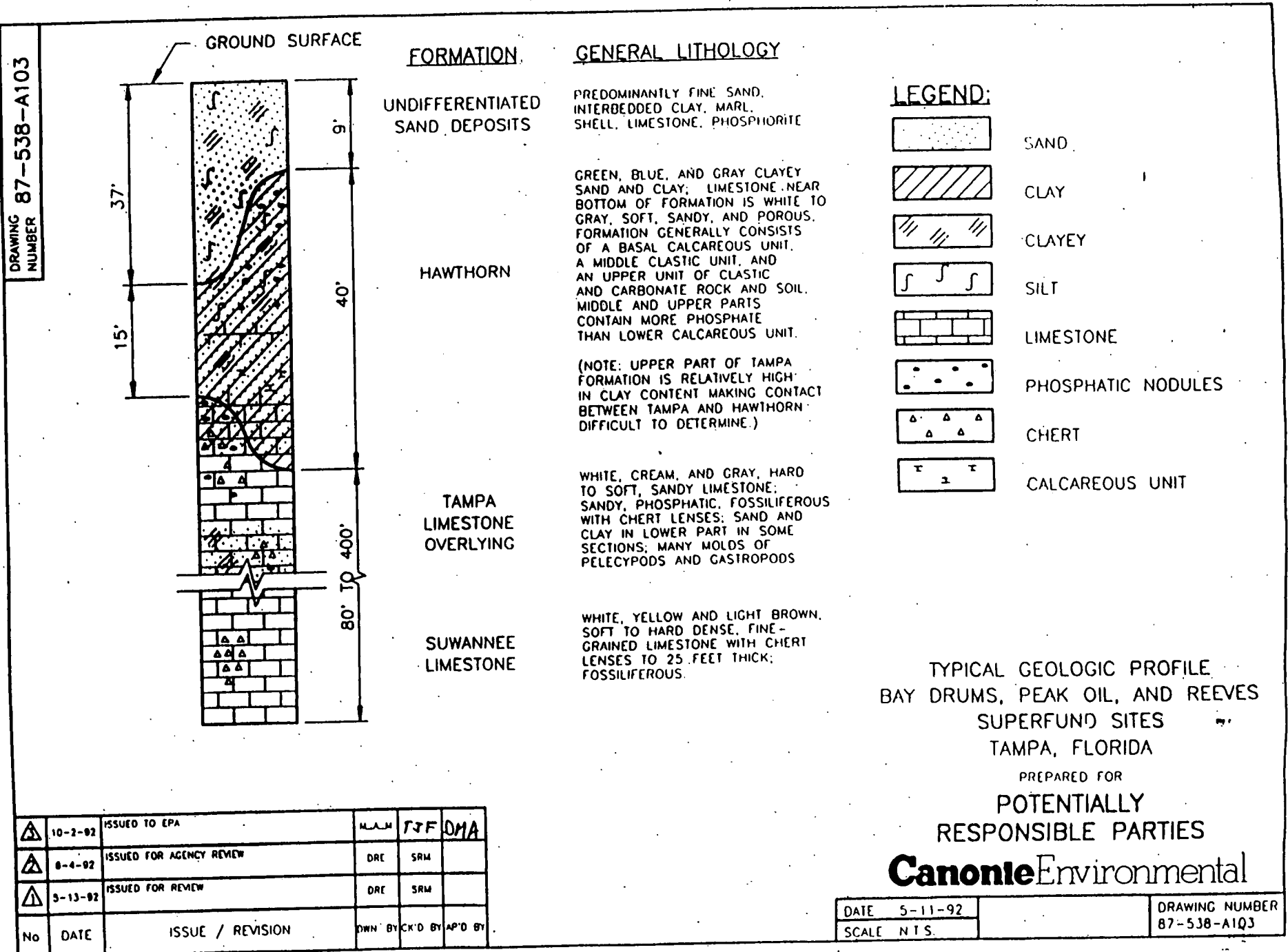
The groundwater system beneath the study area consists of two major water-bearing units: a class II surficial aquifer (the term surficial aquifer refers to permeable material that is exposed at land surface and that contains water under unconfined conditions) and the class I Floridan Aquifer system. A low-permeability unit comprised of a low-permeability sequence of rocks separates the Floridan from the upper surficial aquifer.

The Floridan Aquifer system consists of a thick sequence of carbonate rocks of the Tertiary age. The unit is comprised of white to light-gray, sandy, hard to soft, locally clayey, fossiliferous (pelecypod and gastropod casts and molds) limestone that contains phosphate and chert in places.

The phosphate content of the Tampa limestone is relatively low in comparison with that of the overlying Arcadia and Peace River Formation. Much of the Tampa member contains soft lime muds and

Figure 3 Typical Geologic Profile.
Source: Canonic Environmental, Peak Oil FS

11



solution cavities. Therefore, the Tampa limestone is highly porous in some zones, and its porous nature permits large volumes of water to flow through it. The upper part of the Tampa limestone is relatively high in clay content, making the contact between it and the clayey Arcadia formation difficult to determine.

Rainfall infiltrates the permeable surficial materials and, after percolating downward to the water table, moves laterally to points where it is discharged into surface streams and wetlands. Water levels within the surficial aquifer fluctuate seasonally and change rapidly in response to rainfall and other natural stresses such as evapotranspiration or the stages of streams. The groundwater flow patterns also change due to the increased rainfall during the summer months which raises the surface water elevation in the wetlands and lagoons, changing them into recharge basins for the surficial aquifer.

The thickness and lithologic character of the low-permeability layer that separates the surficial aquifer from the Upper Floridan Aquifer system determine the degree of hydraulic interconnection between the two. Where the low-permeability unit is thick or where it contains a high concentration of clay, there is essentially no interconnection between the surficial and Floridan aquifers. In these thick or clay-rich areas, water in the surficial aquifer moves laterally as opposed to vertically and does not breach the low-permeability unit. Breaches in the low-permeability unit in some locations, such as uncased boreholes, reduce hydrologic separation between the aquifers.

The regional groundwater flow pattern within the Upper Floridan Aquifer is based upon the USGS potentiometric surface map. The contour map and review of the water level plots indicate the regional groundwater flow is in a southwesterly direction in this area. The Tampa Bypass Canal divides the regions and forces the flow direction to shift northwesterly near the site. Reportedly, the canal excavation cut into the low-permeability layer and breached the Upper Floridan Aquifer in several places. In the vicinity of the site, the general groundwater flow direction is northwesterly.

Approximately 70 percent of the annual precipitation in the Tampa area is lost through evapotranspiration and about nine inches of the 47 inches of annual precipitation is available for groundwater recharge.

The surficial aquifer is composed of undifferentiated Pliocene and Pleistocene age deposits. The groundwater is suitable for domestic and small-quantity municipal supplies, although in some areas there is a high iron content. The surficial aquifer underlies the Peak Oil/Bay Drums site and is hydrologically connected to the Central and South wetlands.

5.5 Potential Contaminant Sources and Chemical Transport Mechanisms

Central and South wetland water and sediment quality is potentially influenced by a variety of area sources through several mechanisms of chemical transport. These mechanisms include stormwater run-off, discharge from the surficial aquifer and areal drift. Because the Bay Drums and Peak Oil superfund sites are located adjacent to and within the drainage basin of the Central Wetland, the sites are considered to be the principle sources of contaminants found in the Central Wetland. The northern part of the Central Wetland has been connected hydrologically above ground to an excavated pond on the Bay site during periods of increased rainfall. In general, the Central Wetland sampling stations located closer to the Bay Drums and Peak Oil sites showed higher contaminant concentrations than the stations located further from the sites.

The South Wetland is potentially affected by a variety of area sources, including the southern portion of the Peak Oil site. One likely source for elevated lead, zinc and aluminum found in the northern part of the South Wetland is the former Sunshine Skyway Bridge painting area, located adjacent to the South Wetland. Several additional industrial facilities are with the South Wetland drainage area, including the Consolidated Bag Company, the Reeves Southeastern Wire facility, and the Cast-Metals Corporation.

Lateral migration of impacted ground water has generally not resulted in widespread transport of chemical constituents found at the Bay Drums and Peak Oil sites. Because of the Central Wetland's proximity to the sites it is possible that contaminated surficial aquifer water is discharging to the wetland. Any groundwater discharging to the wetlands would have to meet Florida Surface Water Standards at the point of discharge.

All area wetlands are under the influence of areal drift from nearby industries, including a municipal incinerator and a Hillsborough County wastewater treatment plant sprayfield (currently not operating).

5.6 Sampling Results

Wetland surface water and sediment sampling results for the Central and South wetlands and two comparison wetlands (the Cypress Pond and Sprayfield Wetlands) were included in the Area-Wide Wetlands Impact Study and further evaluated in the Central and South Wetland Feasibility Study. The Samples were analyzed for Volatile Organic Compounds (VOCs), Semi-Volatile Organic Compounds (SVOCs), pesticides, and various inorganic parameters. Sampling results were evaluated from 4 locations in

the Central Wetland, 4 locations in the South Wetland, and 1 location in each of the comparison wetlands (figure 4). Surface water was evaluated against Florida Surface Water Standards, which are based on Federal Ambient Water Quality Criteria. Since there are no Federal or State ARARs for sediment, the sediment contaminant levels are evaluated against NOAA screening criteria.

5.6.1 Sediment

There are no federal or state ARARs for sediment. However, NOAA Effects Range-Low (ER-L), and Effects Range-Medium (ER-M) screening criteria for sediment are currently being used by EPA at Superfund sites (Table 1). NOAA developed the screening method through evaluation of biological effects data on aquatic (marine and freshwater) organisms. If sediment contaminant concentrations are below the ER-L, adverse effects are considered unlikely. If concentrations are above the ER-M, adverse effects on the biota are considered probable. If contaminant concentrations are between the ER-L and the ER-M, adverse effects are considered possible, and EPA recommends conducting toxicity tests as a follow-up. Such sediment and surface water toxicity tests were conducted as a part of the Area-Wide Wetlands Impact Study and are described in section 6.2 of this ROD.

Although the screening criteria are not ARARs, they are useful as a tool to help determine if there is a significant problem. A combination of screening criteria and the observed effects of the contaminants on the ecology is used in determining whether or not the wetlands should be remediated. A comparison of ER-Ls and the sediment results is presented in table 2. The table lists only those analytes which showed ER-L exceedances at at least one sampling station.

Central Wetland

As shown in table 2, station 02-CLW showed the greatest number of ER-L exceedances in the Central Wetland. ER-L values were exceeded at this station for lead, mercury and zinc and ER-M values were exceeded for PCB-1260 and DDE. Station 01-CLW exceeded the ER-M for PCB-1260. It should be noted that station 02-CLW and station 01-CLW are located on the Bay site in an excavated area that will be dredged and filled as a part of the Bay source remediation. Of the sampling stations located in the main (southern) part of the Central Wetland, station 03-CLW showed exceedances of the ER-L for antimony, benzo(a)anthracene, and dibenzo(a,h)anthracene. No exceedances were registered at station 04-CLW. No ER-M values were exceeded in the main (southern) part of the Central Wetland.

South Wetland

The ER-L value for zinc was exceeded in two of the four South

Wetland stations. PCB-1260, detected at station 02-SOW, exceeded both ER-L and ER-M values. No other exceedances were reported in the South Wetland.

Comparison Wetlands

No ER-L values were exceeded in the Cypress Pond Wetland or the Sprayfield Wetland.

5.6.2 Surface Water

A comparison of surface water sampling results of the Central and South wetlands to Florida Surface Water Quality Standards reveals that exceedances of the standards were limited in terms of the number of analytes detected above the standard and the number of sampling stations where the analytes were found above the standard. Table 3 outlines the exceedances of standards at the individual sampling stations. Surface water standards are applicable to groundwater at the point of discharge into the wetlands.

Central Wetland

Lead is the only analyte which exceeded the surface water standard at more than one Central Wetland sampling station. Although all of the samples exceeded the lead standard, only station 01-CLW, at 165 ppb, showed lead levels significantly above the standard. As indicated previously, stations 01-CLW and 02-CLW are located in areas to be remediated under the Bay Drums source control remedy (OU3). Additional surface water standard exceedances include zinc at station 01-CLW (410 ppb), and PCB-1260 at station 04-CLW (1 ppb).

South Wetland

Detected concentrations for zinc and lead at station 01-SOW significantly exceeded Florida Surface Water Quality Standards. Zinc and lead concentrations were detected at 3980 ppb and 248 ppb respectively at this station. In addition, the standard for metals was exceeded to a lesser extent for lead at stations 02-SOW (4.9 ppb) and 04-SOW (3.4 ppb), and for zinc at station 02-SOW (63.2 ppb) and 03-SOW (67.7 ppb). Estimated levels of Phthalate Esters (9 ppb) exceeded the Florida standard at station 01-SOW.

Comparison Wetlands

No Florida Surface Water Quality Standards were exceeded at any surface water sampling station in the Spray Field and Cypress Pond wetlands.

Figure 4 Surface Water and Sediment Sampling Locations
Source: Canonic Area-Wide FS

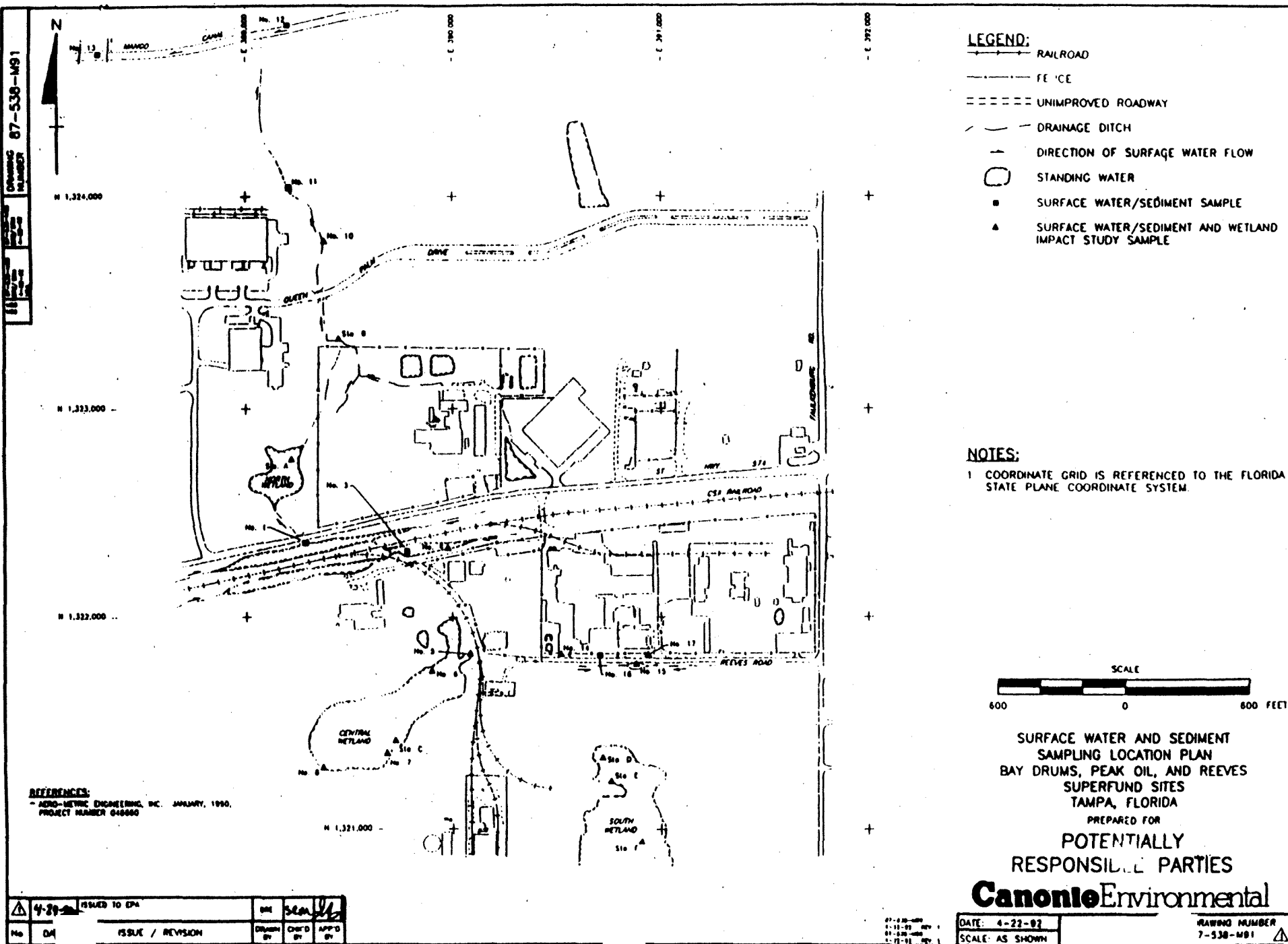


TABLE 1
SEDIMENT SCREENING VALUES

Chemical Analyte	NOAA ER-L Concentration	NOAA ER-M Concentration
Inorganics (ppm)		
Antimony	2	25
Arsenic	8.2	70
Cadmium	1.2	9.6
Chromium	81	370
Copper	34	270
Lead	46.7	218
Mercury	0.15	.71
Nickel	20.9	51.6
Zinc	150	410
Polychlorinated Biphenyls (ppb)		
Total PCBs	22.7	46.9
Pesticides (ppb)		
DDE	2	15
Chlordane	0.5	6
Polynuclear Aromatic Hydrocarbons (ppb)		
Benz (a) anthracene	261	1600
Benzo (a) pyrene	430	1600
Chrysene	384	2800
Dibenz (a, h) anthra- cene	63.4	260
Fluoranthene	600	5100
Pyrene	665	2600
Total PAHs	4022	44792

TABLE 2
RATIO OF ANALYTE CONCENTRATIONS IN WETLAND SEDIMENTS TO
NOAA ER-L VALUES

	CENTRAL WETLAND STATIONS				SOUTH WETLAND STATIONS				COMPARISON WETLAND STATIONS	
Station ID	01-CLW (No.5)	02-CLW (No.6)	03-CLW (No.7)	04-CLW (No.8)	01-SOW (D)	02-SOW (E)	03-SOW (F)	04-SOW (G)	01-CPW	01-SFW
Inorganic Elements										
Antimony	--	--	1.85	--	--	--	--	--	--	--
Lead	--	1.42	--	--	--	--	--	--	--	--
Mercury	--	1.60	--	--	--	--	--	--	--	--
Zinc	--	2.68	--	--	--	1.37	1.56	--	--	--
Organochlorine Pesticides Analysis										
PCB-1260	11.45	21.14	--	--	--	9.8	--	--	--	--
DDE	--	60.0	--	--	--	--	--	--	--	--
Polynuclear Aromatic Hydrocarbons										
Benzo(a)anthracene	--	--	1.37	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	--	--	3.15	--	--	--	--	--	--	--

Figures are given for only for sample concentrations that exceeded NOAA ER-L values.

Table 3									
Concentration of Analytes Exceeding Florida Surface Water Quality Standards in the Central and South Wetlands									
	CENTRAL WETLAND STATIONS (CLW)				SOUTH WETLAND STATIONS (SOW)				Florida Surface Water Quality Standard, Class III
	01	02	03	04	01	02	03	04	
Analyte	Concentrations (ppb)								
Lead(ppb) / Hardness- Specific Standard	165/ 6.82	<u>4.6</u> / 1.12	<u>2.5</u> / 1.12	<u>4.6</u> / 1.12	248/ 1.32	<u>4.9</u> / 0.09	<u>2.6</u> / 4.97	<u>3.4</u> / 3.18	Water Hardness Dependent**
Zinc(ppb) / Hardness- Specific Standard	410/ 176	<u>49.1</u> / 52.9	<u>19.0</u> / 52.9	<u>34.5</u> / 52.9	3980 / 58.9	<u>63.2</u> / 9.8	<u>67.7</u> / 142	<u>45.9</u> / 106	Water Hardness Dependent**
Total Phthalate Esters (ppb)	ND	ND	<u>2.0</u>	ND	9.0	<u>3.0</u>	ND	ND	3.0 ppb
PCB 1260 (ppb)	ND	ND	ND	1.0	ND	ND	ND	ND	.000045 ppb annual avg.; .03 ppb max

* Underlined readings did not exceed the Florida standard but were included for comparison.

** Hardness readings were taken at each sampling station to generate a hardness-specific standard for each sampling station.

6.0 Baseline Risk Assessment Summary

6.1 Human Health Risk Assessment

Risk to human health from wetland contaminants was evaluated as a part of Operable Unit Two in the Area-Wide Hydrologic Baseline Risk Assessment. This evaluation addressed exposure scenarios involving on-site trespassers and future on-site residents. Human health risks levels were found to be well below levels which EPA considers unacceptable. A summary of the human health risks assessment process and results is included in the Central and South Wetland Feasibility Study.

6.2 Environmental Risk

Environmental Risks for the wetlands in the study area are addressed in the Area-Wide Wetlands Impact Study through bioaccumulation studies and environmental toxicity assessments. Study objectives were to evaluate the ecological status of the wetlands, and to extend the toxicity testing to include possible source materials, soil, surface water, and sediments from several study area Industrial sites. Because the source contamination for the Bay Drums and Peak Oil sites are addressed as separate operable units, only wetland study results are further discussed here. An assessment of endangered species in the area of the wetlands is included in this section.

6.2.1 Wetland Characterization and functional assessment

The Central and South Wetlands as well as the two comparison wetlands are classified in the Wetlands Impact Study as palustrine, emergent systems. Even though the wetlands are relatively small, they are highly functional ecosystems providing surface and ground water quality benefits and protection plus fish and wildlife habitat. The study wetlands are colonized with at least 4 kinds of fish and 53 kinds of macroinvertebrates. These animals are commonly associated with Florida freshwater wetlands and can tolerate low dissolved oxygen concentrations, marked temperature changes and seasonal surface water level fluctuations characteristic of isolated wetlands. Because of the seasonal water level changes in the wet and dry periods of the year, a hydrologic mechanism is established in which food organisms such as small fish and invertebrates are concentrated for harvesting by wading birds and other predators. Overall, the study wetlands, including the comparison wetlands, were rated as moderate to high in their ecological functions and values.

6.2.2 Bioaccumulation

There are three primary objectives for determining chemical levels in aquatic organisms living near the Peak Oil/Bay Drums site. The first is to evaluate the potential for chemicals to

travel up the food chain, and thus, to migrate from the study area with the organisms or predators that ingest the aquatic organisms. The second is to reveal bioaccumulative chemicals of concern in surface water in the study area that may be present in concentrations too low to measure in the water directly, but can be detected in the organisms. Finally, chemicals found in biota at elevated concentrations can be tracked during and following the source remedial actions to help assess the effectiveness of the actions.

The Wetlands Impact Study concluded the following concerning bioaccumulation studies in the Central and South wetlands and the comparison wetlands:

- Overall, fish and crayfish sampled from the various wetland areas that comprise this study were not contaminated with a wide spectrum of contaminants at concentrations significantly over background. Several inorganic analytes were widely present over the area sampled at concentrations moderately elevated over background. These include aluminum, barium, copper, iron, manganese, titanium and zinc.
- Mercury concentrations in tissues analyzed were typically lower than national mean values. However, three of four samples of fish and crayfish taken from the comparison wetlands exceeded criteria proposed for the protection of birds that may prey upon them. The comparison wetlands are considered not to be impacted by the Bay and Peak NPL sites.

6.2.3 Environmental Toxicity Assessment

Samples from the Central and South wetlands as well as the two comparison wetlands were analyzed, and subjected to toxicity tests. Data generated from analysis of surface water and sediments indicated the following:

- In general, waters of the Central and South wetlands showed little toxicity to the organisms tested.
- The sediments of all wetland areas including the comparison wetlands (Cypress Pond and Sprayfield) were toxic to daphnia in a chronic toxicity test.
- The sediments of the Cypress Pond (comparison wetland) were toxic to fish, daphnids, algae, and bacteria.

6.2.4 Endangered Species

Several species of endangered plants and animals have a range that includes Hillsborough County. It is highly possible that the endangered wood stork (Federal Register 2/28/84) is utilizing the study wetlands for feeding, especially during periods of receding surface water levels when fish and macroinvertebrates are concentrated in small isolated pools. ESD field personnel observed in May 1989 one wood stork landing in the spray field located south of Columbus Drive. Even though feeding habitat is present at all the study wetlands, suitable nesting habitat is not available in the study wetlands with the exception of the tree communities which fringe the South Wetland. However, no sign of past or present nesting sites have been observed in the South Wetland.

Even though the range of the bald eagle, Florida scrub jay, eastern indigo snake and Florida golden aster includes Hillsborough County, adequate feeding, breeding and/or growth requirements do not exist within the study wetlands and their adjacent ecotones.

7.0 Description of Remedial Alternatives

A feasibility study was conducted to develop and evaluate remedial alternatives for contaminated wetlands at the site. Preliminary remedial alternatives were initially evaluated for effectiveness, implementability, and cost. Based on this evaluation, the following remedial alternatives were selected for the site.

7.1 Alternative 1 - No Action with Ecological Monitoring

In accordance with the requirements of subpart E of the NCP, "no action" is included for consideration as a baseline against which other remedial alternatives should be compared. The "no action" alternative may include monitoring to assure that conditions remain the same, but cannot include any active cleanup measures or institutional controls.

This no action alternative consists of semi-annual ecological assessments of the wetlands for a period of at least (5) years (at least 10 monitoring events in all) and the installation of surficial aquifer monitor wells. The monitoring schedule would be timed such that one or two assessments occur before work begins on the Operable Units One, Two, and Three remedies. The remaining assessments would occur once the Operable Unit One, Two, and Three remedies have been implemented (i.e. when the surface transport pathway has been eliminated and when surficial aquifer pumping begins). Each assessment includes the following:

a. General vegetation surveys to assess the composition and health of the plant communities and collection of samples to assess relative abundance and diversity of aquatic vertebrates and invertebrates.

b. Sampling and analysis of wetland surface water, sediment, and biota. Assays will be conducted for purgeable halocarbons and aromatics, phthalate esters, phenolic compounds, organochlorine pesticides and PCBs, extractable organics and Priority Pollutant Metals. Toxicity and bioaccumulation analysis will be conducted at least once each year of sampling (5 rounds in all).

c. Field measurement of hardness, pH, temperature, dissolved oxygen and conductivity at each sampling station.

d. Monitoring surficial aquifer wells for the same parameters indicated in part b and c of this alternative. The purpose of the well monitoring is to assess potential surficial aquifer contamination close to the point of discharge into the wetlands. Florida surface water standards are applicable at the point of discharge. The wells shall be placed so they would intercept surficial aquifer flow from the direction of the Bay Drums and Peak Oil sites.

This alternative would provide a means of determining the current ecological status of the wetlands, for observing changes in ecological status through time, and for confirming whether or not hazardous substances are entering the wetlands from the adjacent sites. The estimate present worth cost of this alternative is \$278,000.

7.2 Alternative 2 - Filling of the Wetlands

This alternative requires filling of the South and Central wetlands to preclude their use by wetland wildlife species, and mitigation for the lost wetlands. Required actions for filling the wetlands would include the following:

- a. Removal of woody vegetation.
- b. Filling of depressions with downed vegetation and clean soil to at least a level grade.
- c. Prevention of erosion by revegetating filled areas with species similar to that of the surrounding land.

Mitigation of Loss:

There are several possibilities for mitigating the loss of the wetlands, and some combination of the following options may be

acceptable to the responsible agencies:

- a. Create wetlands in close proximity to the potentially impacted wetlands (on-site mitigation). Although this mitigation option is preferred from the viewpoint of the agencies, it may be limited by the unavailability of nearby land for wetland construction.
- b. Create wetlands off site. The Florida Department of Environmental Protection and the Southwest Florida Water Management District normally require that mitigation for wetland impacts be conducted in the same watershed where the impacts occur, and that created wetlands be of the same ecological type as the impacted wetlands.
- c. Restore or enhance existing wetlands. This option would be largely restricted to an off-site area since there are no wetlands in the vicinity of the site which appear to provide sufficient restoration/enhancement potential. Mitigation through restoration/enhancement normally requires a higher replacement ratio than wetlands creation.
- d. Secure through purchase or other agreement, and protect in perpetuity, an area of natural wetlands (and possibly uplands as well). This option is occasionally implemented when it is impossible to fulfill mitigation requirements through other means. Typically, on-site wetland creation is used to fulfill the "no net loss" criterion and additional required mitigation may be allowed to be fulfilled through purchase of land for preservation. Mitigation of wetland impacts through land purchases is done at a much higher replacement ratio than wetland creation (e.g. 20:1). In a small number of cases, the Southwest Florida Water Management District has allowed wetland impacts to be partially mitigated through contributions to its Save Our Rivers program which purchases land for conservation.

If a 2:1 mitigation ratio is required for filling the Central and South wetlands the estimated present-worth cost for filling and mitigation (10 years of monitoring and maintenance) is projected to be \$1,478,000.

7.3 Alternative 3 - Wetland Excavation and Restoration

This alternative involves the removal and appropriate disposal of wetland vegetation and contaminated sediments. Clean wetland muck would then be placed in the wetlands and desirable native herbaceous plants would be installed. Monitoring would be conducted as described in Alternative No. 1, although the number

of ecological/chemical parameters to be monitored would be reduced to several "indicator" parameters since the contaminated sediments would be removed. Vegetation maintenance would be conducted to meet success criteria required by any applicable permits. The estimated present-worth cost for this remedy is expected to be \$1,465,000

8.0 Comparative Analysis of Remedial Alternatives

A detailed comparative analysis was performed on the remedial alternatives developed during the FS using the nine evaluation criteria set forth in the NCP. The advantages and disadvantages of each alternative were compared to identify the alternative with the best balance among the nine criteria. A glossary of the evaluation criteria is provided in Table 8-1. According to the NCP, the first two criteria are labeled "Threshold Criteria", relating to statutory requirements that each alternative must satisfy in order to be eligible for selection. The next five criteria are labeled "Primary Balancing Criteria", the technical criteria upon which the detailed analysis is based. The final two criteria are known as "Modifying Criteria", assessing the public's and State agency's acceptance of the alternative. Based on these final two criteria, EPA may modify aspects of the specific alternative.

A summary of the relative performance of each alternative with respect to the nine evaluation criteria is provided in the following subsections. A comparison is made between each of the alternatives for achievement of a specific criterion.

8.1 Overall Protection of Human Health and the Environment

The first criterion against which each of the remedial alternatives is analyzed in detail is that of overall protection of human health and the environment. CERCLA mandates that remedial actions provide this protection. Each remedial alternative is analyzed to determine whether it will eliminate, reduce, or control the risks identified in Area-Wide Hydrologic Baseline Risk Assessment and the Wetlands Impact Study. The remedial alternatives are also evaluated to determine whether unacceptable short-term or cross-media impacts will result from implementation. Overall protection of human health and the environment draws on the assessments of other evaluation criteria, especially long-term effectiveness and permanence, short-term effectiveness, and compliance with ARARs.

All three alternatives are protective of human health and the Environment.

8.2 Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

The second evaluation criterion in the detailed analysis of alternatives is compliance with ARARs. Each remedial alternative is assessed to determine whether it will meet the requirements that are applicable, or relevant and appropriate, under the federal and state environmental laws. Unless a waiver is justified, the remedial alternative must be in compliance with all chemical-specific, location-specific, or action-specific ARARs.

All three alternative can be designed to meet chemical-specific ARARs. Alternative 1 would initially allow contaminant concentrations above ARARs to remain, but would monitor wetland quality. Contaminant Levels would be expected to be reduced since the previous site removals were conducted, and with the implementation of the source and groundwater remedies for the Peak Oil/Bay Drums site. Alternatives 2 and 3 may conflict with the Executive Order on the Protection of Wetlands, 40 CFR part 6, which requires federal agencies to avoid, when possible, the destruction or loss of wetlands.

8.3 Long-Term Effectiveness and Permanence

The third evaluation criterion for the detailed analysis is the long-term effectiveness and permanence of the remedial action. The degree to which each remedial alternative provides a long-term, effective, and permanent remedy is assessed, and the degree of certainty that the alternative will be successful in achieving the response objectives is evaluated. This assessment includes factors such as an evaluation of the magnitude of the risks remaining at the conclusion of remedial activities, the degree to which treated residuals remain hazardous (considering volume, toxicity, mobility, and propensity to bioaccumulate), the adequacy and reliability of controls, and the potential exposure pathways and risks posed should the remedial action require replacement.

The long-term effectiveness of Alternative 1 depends on the analytical data collected and if the expected reduction in contaminant concentrations is seen. Alternative 2 is considered to be the most effective and permanent in the long term since only minor maintenance would be needed. Improvement of the wetlands as a result of alternative 3 may not be permanent since the industrial setting of the area could result in degradation of the wetlands to pre-remedial conditions.

Table 4
GLOSSARY OF EVALUATION CRITERIA

THRESHOLD CRITERIA:

Overall Protection of Human Health and the Environment -

Addresses whether or not a remedy provides adequate protection and describes how risks posed through each pathway are eliminated, reduced, or controlled through treatment, engineering controls or institutional controls.

Compliance with ARARs - addresses whether or not a remedy will meet all of the applicable or relevant and appropriate requirements of other federal and state environmental statutes and/or provides grounds for invoking a waiver.

PRIMARY BALANCING CRITERIA:

Long-Term Effectiveness and Permanence - refers to the magnitude of residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time once cleanup goals have been met.

Reduction of Toxicity, Mobility, or Volume Through Treatment - addresses the anticipated performance of the treatment technologies that may be employed in a remedy.

Short-Term Effectiveness - refers to the speed with which the remedy achieves protection, as well as the remedy's potential to create adverse impacts on human health and the environment that may result during the construction and implementation period.

Implementability - the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement the chosen solution.

Cost - includes capital and operation and maintenance costs.

MODIFYING CRITERIA:

State Acceptance - indicates whether the State concurs with, opposes, or has no comment on the Proposed Plan.

Community Acceptance - the Responsiveness Summary in the appendix of the Record of Decision responds to public comments received from the Proposed Plan public meeting and the public comment period and shows how the Agency used these comments to make the remedy selection.

8.4 Reduction of Toxicity, Mobility, or Volume Through Treatment

The fourth evaluation criterion for the detailed analysis is the reduction of toxicity, mobility, or volume through treatment. Each alternative is evaluated against this criterion to assess the anticipated performance of the treatment technologies used in the alternative to achieve the reduction in toxicity, mobility, and/or volume of the principal threats. CERCLA requires that a preference be given to treatment alternatives which reduce the toxicity, mobility, or volume of hazardous constituents.

Alternatives 1 does not reduce the mobility, toxicity or volume of contaminants. Alternatives 2 and 3 provide some degree of reduction of the mobility of site constituents. None of the alternatives offer a reduction in toxicity or volume.

8.5 Short-Term Effectiveness

The fifth criterion, short-term effectiveness, addresses the effectiveness of the alternative during construction and operation of the remedial action. Alternatives are evaluated with respect to their effects on human health and the environment, including risks to the community posed by implementation of the action, protection of the workers during implementation and the reliability and effectiveness of protective measures available to the workers, potential impacts to the environment caused by the remedial alternative and the effectiveness and reliability of mitigative measures which could be employed during implementation, and the time required to achieve the final response objectives.

None of the alternatives are expected to have any short term impacts on site workers or the surrounding community. Alternative 2 will have a short term impact on the environment since the wetlands would be destroyed. Alternative 3 would cause a short term disruption in the wetland ecosystems since vegetation and sediments would be removed.

8.6 Implementability

The sixth criterion upon which the detailed analysis of remedial alternatives is based is implementability. This criterion involves analysis of ease or difficulty of implementation, considering the following factors:

1. Technical feasibility, that is, the feasibility to reliably construct, operate, and monitor the effectiveness of a remedial action, as well as potential technical difficulties or unknowns associated with construction or operation;
2. Administrative feasibility, that is, the feasibility of

obtaining permits or rights-of-way for construction or operation, and coordinating interagency approval or activities;

3. Availability of services and materials for a treatment method or technology, such as the availability of disposal capacity, off-site treatment or storage capacity, availability of equipment or specialists, and availability of special resources.

All of the alternatives are considered to be easily implementable from a technical perspective, though alternative 1 would be the easiest to implement. Alternative 2 and 3 would require approval of property owners and easement holders or property purchases. Although the sediment to be disposed of as a part of alternative 2 would not be considered hazardous, there might be difficulty in finding a non-RCRA facility willing to accept the excavated sediment because of its origin near three Superfund sites.

8.7 Cost

The seventh criterion assesses cost of the Remedial Action. Both capital and O&M costs are considered. Cost estimates for each alternative were submitted to EPA by Biological Research Associates Inc., and modified, where appropriate, by EPA. Estimated costs from the Feasibility Study are considered rough approximations. No contingency costs are included and inflation to fieldwork and laboratory costs during the remediation period was not considered.

Alternative 1 is the least expensive alternative, at \$278,000. Alternatives 2 and 3 are similar in cost at \$1,478,000 and \$1,465,000 respectively.

8.8 State Acceptance

This criterion assesses the technical and administrative issues and concerns the state may have regarding each of the remedial alternatives. Many of these concerns are addressed through compliance with applicable ARARs.

The State of Florida, as represented by the Florida Department of Environmental Protection (FDEP), has been the support agency during the Remedial Investigation and Feasibility Study process for the Area-Wide Hydrological Study. In accordance with 40 CFR 300.430, as the support agency, FDEP has provided input during this process. Based upon comments received from FDEP, it is expected that concurrence will be forthcoming; however, a formal letter of concurrence has not yet been received.

8.9 Community Acceptance

This criterion assesses the issues and concerns the public may have regarding each of the remedial alternatives.

This criterion is addressed in the Responsiveness Summary, Appendix A, of this document.

9.0 SELECTED REMEDY

Based upon consideration of the requirements of CERCLA, the NCP, the detailed analysis of alternatives and public and state comments, EPA has selected alternative 1, the no-action remedy, as the remedy for this site. Results of the Wetlands Impact Study and the Area-Wide Baseline Risk Assessment indicated that no action is necessary at the site. However, because contaminants were found at levels above background in wetland sediment and surface water, biannual monitoring of wetland surface water, sediment, and the nearby surficial aquifer shall be conducted.

The purpose of the selected remedy is to assess the overall ecologic status of the Central and South wetlands as the Operable Units One, Two, and Three remedies are being implemented. Monitoring data shall be compared to past wetland data, Florida Surface Water Standards (F.A.C, 17-302) and NOAA sediment ER-L and ER-M screening values. The remedies for Operable Units One, Two and Three (described in section 4.0) are expected to significantly reduce or eliminate the potential for the Bay Drums and Peak Oil facilities to act as sources of wetland contamination. However, If monitoring indicates a potential threat to human health or the environment, EPA, in consultation with the State of Florida, will reconsider the protectiveness of this alternative and the need for additional remedial actions.

The estimated cost for the remedy is \$278,000. This Selected Remedy is protective of human health and the environment.

9.1 Major Components of the Remedy

The no action remedy consists of semi-annual ecological assessments of the wetlands for a period of at least (5) years (at least 10 monitoring events in all) and the installation of surficial aquifer monitor wells. The monitoring schedule shall be timed such that one or two assessments occur before work begins on the Operable Units One, Two, and Three remedies. The remaining assessments shall occur once the Operable Unit One, Two, and Three remedies have been implemented (i.e. when the surface transport pathway has been eliminated and when surficial aquifer pumping begins) Each assessment shall include the following:

a. General vegetation surveys to assess the composition and health of the plant communities and collection of samples to assess relative abundance and diversity of aquatic vertebrates and invertebrates.

b. Sampling and analysis of wetland surface water, sediment, and biota. Assays shall be conducted for purgeable halocarbons and aromatics, phthalate esters, phenolic compounds, organochlorine pesticides and PCBs, extractable organics and Priority Pollutant Metals. Toxicity and bioaccumulation analysis shall be conducted at least once each year of sampling (at least 5 rounds).

c. Field measurement of hardness, Ph, temperature, dissolved oxygen and conductivity at each sampling station.

d. Monitoring surficial aquifer wells for the same parameters as in part b and c of this section. The purpose of the well monitoring is to assess potential surficial aquifer contamination close to the point of discharge into the wetlands. Florida surface water standards are applicable at the point of discharge. The wells shall be placed so they would intercept surficial aquifer flow from the direction of the Bay Drums and Peak Oil sites.

The wetland remedial action will be considered complete when a) monitoring wells immediately upgradient of both the South and Central wetlands demonstrate that groundwater discharging to the wetlands does not exceed F.A.C. 17-302 surface water standards for site-related contamination, b) Operable Unit Two groundwater cleanup goals identified in the OUII ROD (or any subsequent modification of those cleanup goals) have been met, and c) an evaluation of post-OU4 ROD monitoring data confirms the effectiveness of the selected remedy in providing adequate protection of human health and the environment.

9.2 Compliance with ARARs

The Florida Administrative Code Chapter 17-302 Maximum Contaminant Levels (MCLs) for class III surface water bodies are considered to be ARARs for the site wetlands. NOAA ER-M/ER-L values are not ARARs for this site, but will serve as guidelines to assess overall conditions in the wetlands. The Florida surface water standards and the NOAA ER-Ls may not be initially met by the selected remedy. However, these values are expected to be achieved over a short period of time once the source and groundwater remedies are implemented. If the surface water standards and the NOAA ER-Ls are not achieved then EPA will re-evaluate the effectiveness of the remedy.

Removal actions conducted in between 1985 and 1990 at the Bay Drums site/Peak Oil site have likely reduced the influx of

contaminants from these sites to the wetlands. In addition, once the Bay Drums and Peak Oil source remedial actions are implemented, and the groundwater remedy is in place, the potential for contaminant transport from the Bay Drums and Peak Oil facilities will be significantly reduced.

10.0 Documentation of Significant Changes

The Proposed Plan for the Peak Oil/Bay Drums site was released to the public on May 2, 1994. The Proposed Plan identified Alternative 1, No Action with Ecologic Monitoring, as the preferred alternative for wetland remediation. EPA reviewed all written and verbal comments submitted during the public comment period. Upon review of these comments, it was determined that no significant changes to the remedy, as originally identified in the Proposed Plan, were necessary.

APPENDIX A
RESPONSIVENESS SUMMARY

RESPONSIVENESS SUMMARY
PEAK OIL/BAY DRUMS SUPERFUND SITE
HILLSBOROUGH COUNTY, FLORIDA

The Environmental Protection Agency (EPA) held a public comment period from May 2, 1994 to May 31, 1994 for interested parties to comment on EPA's Proposed Plan for Operable Unit (OU) Four addressing the Central and South Wetlands at the Peak Oil/Bay Drums Superfund site. During this comment period, the EPA held a public meeting at the Hillsborough Community College in Brandon, Florida on May 11, 1994. This meeting addressed the wetlands alternatives for both the Peak Oil/Bay Drums site and the nearby Reeves site. At this time, EPA representatives presented the results of the studies undertaken at the site and also EPA's preferred alternative for the wetlands.

A summary of EPA's response to comments received during the public comment period, known as the responsiveness summary, is required under Section 117 of CERCLA. EPA has considered all of the comments summarized in this responsiveness summary in determining the final selected remedy presented in the Record of Decision for Operable Unit Four.

This responsiveness summary consists of the following sections:

- A. Background of Community Involvement and Concerns: This section provides a brief history of community interest and concerns regarding the Peak Oil/Bay Drums site.
- B. Summary of Major Questions and Comments Received During the Public Comment Period and EPA's Responses: This section presents both oral and written comments submitted during the public meeting and public comment period, and provides the responses to these comments.

A. Background of Community Involvement and Concerns

In accordance with Sections 113 and 117 of CERCLA, EPA has conducted community relations activities at the Peak Oil/Bay Drums site to ensure that the public remains informed concerning progress at the site. During the numerous removal activities at the site, EPA issued press releases to keep the public informed. There was moderate local press coverage of EPA's activities, and EPA held meetings with county and state officials to advise them of the progress at the site.

A community relations plan (CRP) was developed in 1988 and revised in 1989 to establish EPA's plan for community participation during remedial activities. Following completion of the Feasibility Study (FS), a Proposed Plan fact sheet was mailed to local residents and public officials in April, 1994. The fact sheet detailed EPA's preferred alternative for

addressing the wetland contamination at the Peak Oil/Bay Drums site. Additionally, the Administrative Record for the site, which contains site related documents including the RI and FS reports and the Proposed Plan, was made available for public review at the information repository in the Brandon Public Library. A notice of the availability of the Administrative Record for the Peak Oil site was published in the Tampa Tribune on May 3, 1994.

EPA held a public meeting in Brandon, Florida on May 11, 1994 at the Hillsborough Community college to discuss the remedial alternatives under consideration and to answer any questions concerning the Proposed Plans for the Peak Oil/Bay Drums and Reeves Superfund sites. Although attendance was fairly low, a few concerns were raised during this meeting. In addition EPA received written comments during the comment period. For the most part, no comments received conveyed an objection to the selection of the No-action With Ecological Monitoring Remedy. EPA's responses to comments and concerns are summarized in Section B. A transcript of the public meeting was prepared by a certified notary public, and this document is a part of the Administrative Record upon which the remedy selected in the Operable Unit Four Record of Decision is based.

Following the issuance of the final Record of Decision for OU Four, EPA will continue to keep the community informed about progress at the site through fact sheets and informal information meetings. Additionally, documents pertaining to the implementation of Operable Unit Four will be placed in the information repository at the Brandon Public Library.

B. Summary of Major Questions and Comments Received During the Public Comment Period and EPA's Responses

1. Comment

Which metals were found in the wetlands over the accepted levels?

Response

Lead and Zinc were detected in the surface water above Florida Class III Surface Water Standards. In the sediment there were limited exceedances of the National Oceanic and Atmospheric Administration (NOAA) Effects Range-Low (ER-L) sediment screening values. The NOAA value was exceeded for lead at one sampling station, zinc at three stations, mercury at one station and antimony at one station.

2. Comment

What types of bioaccumulation and toxicity tests were

conducted, and were the toxicity tests run in-situ?

Response

For bioaccumulation tests, all samples were ground and analyzed for all target compound list (TCL) metals and for TCL organics other than volatiles.

Water and sediment samples were taken to the laboratory and tested for toxicity. Water samples were tested using a bacterium (Photobacterium nr. phosphoreum), a freshwater algae (Selenastrum capricornutum), a small freshwater cladoceran (Ceriodaphnia dubia), a freshwater fish (Pimephales promelas) and a terrestrial plant (Lactuca sativa). Soils and sediments were eluted, and the eluates produced were tested using the same suite of organisms.

Further details of the toxicity and bioaccumulation testing process can be found in the Bay Drums, Peak Oil, and Reeves Southeastern Areawide Wetland Impact Study, which can be found in the site repository.

3. **Comment**

A citizen expressed concern over the cost of installing additional wells at the site and indicated that the existing wells should be sufficient to supply groundwater data.

Response

EPA's preferred alternative calls for the installation of several surficial aquifer wells to monitor surficial aquifer discharge to the wetlands. These wells are necessary to evaluate whether or not any surficial aquifer contamination is discharging to the wetlands at concentrations above surface water standards.

4. **Comment**

A citizen expressed a concern that the list of endangered water fowl generated for the wetlands was based on field observations and that several other endangered species that may inhabit the area could have remained unsighted during the field visits.

Response

Endangered or threatened species are generally confirmed at a site through field observations. At the Peak Oil/Bay Drums site one endangered species and one threatened species was identified. In addition, assumptions were made through habitat assessment, about the potential presence or absence

of additional endangered species whose regional habitat includes the site area. Nevertheless, there is a reasonable possibility that previously undocumented endangered or threatened species visit or inhabit the wetlands. However, because the study results (contaminant levels, bioaccumulation tests, and toxicity tests) indicated little apparent adverse impacts on wetland biota, any discovery of previously undocumented endangered or threatened species would not change EPA's decision process for this site.

5. Comment

A Florida State Natural Resource Trustee indicated that the ROD should designate qualifiers for possible re-evaluation of the proposed alternative based upon the monitoring results and specify that the wetlands should be filled if the results revealed an injurious impact to the wetlands.

Response

Specific data evaluation activities will be planned during the project scoping phase. These evaluation activities will include comparing the new data to applicable standards and to past data. It is not EPA's intent, however, to specify in the ROD specific conditions that would trigger additional action at the site or to outline what the additional action would consist of. EPA feels that there are too many unknown factors to warrant incorporating a specific contingency remedy into the ROD.

As with all superfund sites, EPA has the authority to re-evaluate the effectiveness of a remedy should site conditions indicate such a need. Additionally, five-year reviews will be conducted for this site.

6. Comment

A May 26, 1994 letter from the Peak Oil/Bay Drums PRPs presented the opinion that a no-action remedy should be chosen rather than a remedy which calls for monitoring. The letter makes the following points/assertions about the selected remedy (printed in bold). Each PRP comment is followed by EPA's response:

The wetlands are ecologically indistinguishable from the reference wetlands evaluated in the Wetland Impact Study.

The toxicity tests, bioaccumulation tests, and general vegetation/diversification surveys conducted as a part of the Wetlands Impact Study did not indicate that the Central or South wetlands were being impacted more significantly than the reference wetlands. However, surface water and

sediment samples taken from the wetlands indicated that the Central and South wetlands were more contaminated than the reference wetlands in terms of the numbers and the concentrations of contaminants detected.

The South Wetland received no significant stormwater run-off or groundwater flow from the Peak/Bay sites [and therefore no contaminants].

While the Feasibility Study (FS) for the Central and South Wetlands does indicate that surficial aquifer flow from the Peak Oil site to the South Wetland would be limited, the possibility for such an occurrence exists. In addition, the FS indicates that the Peak Oil site is a potential source for South Wetland contamination via surface migration. Stormwater run-off collects from the site in a ditch on the north side of Reeves Road, and then drains into the South Wetland. The primary contaminants detected in the South Wetland above surface water standards and sediment criteria (lead and zinc) were also found at elevated concentrations at the Peak Oil site. In summary, EPA considers the Peak Oil site to be a potential source of South Wetland contamination.

The previously-selected source and groundwater remedies for the site would eliminate the need for any action to take place for the wetlands.

As shown in the Wetlands Impact Study, Peak Oil/Bay Drums site-related chemicals were detected in the wetlands. Exceedances of Florida surface water standards and NOAA sediment screening values for these site-related chemicals exist. While previous removals and future remedial actions (for OUs One Two and Three) at the site are expected to result in improved wetland conditions, this improvement must be demonstrated by continued wetland monitoring and evaluation.

Establishment of the precise detail of any required monitoring program must await the project's remedial design phase.

EPA agrees that the detailed planning of the monitoring program should await the design phase. The Selected Remedy section of the ROD does, however, outline certain general requirements for the monitoring program (sampling parameters, minimum number of sampling events, etc.). For example, the Selected Remedy section of the ROD indicates that monitoring data will be evaluated against the previously collected data. For this evaluation to occur, the newly collected data must be comparable to the previous data.