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Environmental Protection
Agency

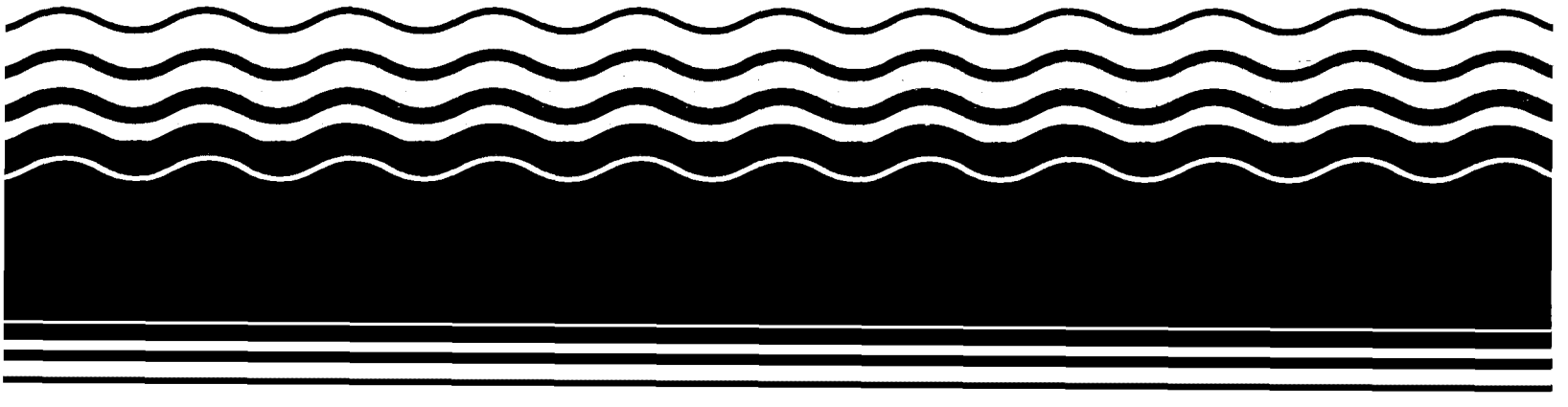
Office of
Emergency and
Remedial Response

EPA/ROD/R06-93/083
September 1993
PB94-964206

EPA

Superfund Record of Decision:

PAB Oil & Chemical Services, LA



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SUPERFUND RECORD OF DECISION
PAB Oil & Chemical Services, LA
First Remedial Action - Final

5. Report Date 09/22/93

6.

7. Author(s)

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9. Performing Organization Name and Address

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U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

13. Type of Report & Period Covered
800/800

14.

15. Supplementary Notes
PB94-964206

16. Abstract (Limit: 200 words)

The 16.7-acre PAB Oil & Chemical Services site is an abandoned waste disposal area located in Vermilion Parish, Louisiana. The site overlies the Chicot Aquifer System and is part of the Atlantic-Gulf Coastal Plain. Site features include a levee around the majority of the property, three waste disposal pits: northwest pit, northeast pit, and south pit, and three surface water bodies: salt water pond, northwest pond, and an abandoned canal. Land use in the area is mixed rural, agricultural, and residential. The area residents use 55 wells located within one-half mile of the site and three municipal wells located within three miles of the site to obtain their drinking and irrigation water. From 1978 to approximately 1983, PAB Oil & Chemical Services (PAB Oil) began site operations as a disposal facility for oil field drilling mud and salt water, under State interim approval. PAB Oil reportedly sold the waste oil skimmed from the oil-based drilling mud separation/disposal pits located in the northeast part of the site to reclaimers. In 1980, the State passed an amendment, which established new requirements for offsite drilling mud and salt water disposal facilities. PAB Oil was granted temporary authority to operate with 90 days to comply with the new requirements and to obtain a State permit to discharge treated water from

(See Attached Page)

17. Document Analysis a. Descriptors
Record of Decision - PAB Oil & Chemical Services, LA
First Remedial Action - Final
Contaminated Media: soil, sediment, sludge, gw, sw
Key Contaminants: VOCs (benzene, toluene), other organics (PAHs), metals (arsenic)

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement	19. Security Class (This Report) None	21. No. of Pages 134
	20. Security Class (This Page) None	22. Price

(See ANSI-Z39.18) *See Instructions on Reverse*

OPTIONAL FORM 272 (4-77)
(Formerly NTIS-35)
Department of Commerce

Abstract (Continued)

the disposal pits to the surface water drainage system. Later that year, a citizen's complaint of an illegal discharge from the site into an offsite drainage ditch led to EPA and State site investigations. These investigations determined that the majority of the onsite contamination was a direct result of the drilling mud and fluids, produced water, workover fluids, and tank bottoms that the facility received from oil and gas exploration and production. Other contamination was attributed to pesticides from local agricultural uses and naturally occurring contamination, such as arsenic in the ground water. In 1982, PAB Oil reported that it had ceased accepting oil field waste because it could not meet the new State requirements. As a result, the State revoked PAB Oil's interim authority and ordered the site to be closed. In 1983, the State notified PAB Oil of its decision to seal the site's storage tanks and the gates to the facility due to open leakage from pits and because an unknown party had placed petroleum waste in an onsite tank. In 1983, PAB Oil went out of business and becasue they lacked the funds necessary for a proper site closure, abandoned the sight. As a result, the contaminated waste still remained onsite. In 1984, 1985, and 1987, EPA conducted additional site investigations and, in 1991, discovered an immediate threat posed by ignitable waste contained in one of four onsite storage tanks that was structurally damaged. Therefore, in 1992, EPA implemented a quick-response removal action to relocate the waste from all four storage tanks, dismantle the tanks, and treat and dispose of the waste offsite. This ROD addresses a first and final remedy for all the contaminated media that pose a risk by direct contact with the site or migration of site contaminants into the surrounding environment. The primary contaminants of concern affecting the soil, sediment, sludge, ground water, and surface water are VOCs, including benzene and toluene; other organics, including PAHs; and metals, including arsenic, and barium.

The selected remedial action for this site includes excavating and treating onsite approximately 10,900 yd^3 of organic-contaminated soil, 520 yd^3 of sediment, and 15,500 yd^3 of sludge using biological treatment process treating residuals from the bioremediation process with elevated levels of inorganic contamination using solidification/ stabilization, followed by onsite disposal; utilizing a 2-foot thick, clay cover, or other suitable cover over the disposal area; collecting and treating onsite approximately 9,187,000 gallons of surface water using granular activated carbon and sand filtration, followed by onsite discharge to drainage ditches; conducting treatability studies to determine the appropriate biological treatment process; and post-RA ground water monitoring. The estimated present worth cost for this remedial action is $13,113,000, which includes an estimated annual O&M cost of $85,900 for 30 years.

PERFORMANCE STANDARDS OR GOALS:

Soil, sediment, and sludge cleanup goals are based on State and Federal regulations and a health-based exposure limit of 10^{-6}, and include arsenic 10 mg/kg; barium 5,400 mg/kg; and total carcinogenic PAHs 3 mg/kg. Surface water cleanup levels are based on State discharge limits and ambient water quality criteria, and include barium 2,000 ug/l; benzene 100 ug/l; beryllium 275 ug/l; iron 1,000 ug/l; and toluene 74 ug/l.

RECORD OF DECISION

PAB OIL AND CHEMICAL SERVICES, INC. SITE

VERMILION PARISH, LOUISIANA

SEPTEMBER 1993

PAB OIL AND CHEMICAL SERVICES, INC.
RECORD OF DECISION

STATUTORY PREFERENCE FOR TREATMENT AS A PRINCIPAL ELEMENT IS MET AND FIVE-YEAR REVIEW IS REQUIRED

SITE NAME AND LOCATION

PAB Oil and Chemical Services, Inc. Site
Vermilion Parish, Louisiana

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the PAB Oil and Chemical Services, Inc. Site (hereinafter "PAB Oil site" or the "site"), in Vermilion Parish, Louisiana, which was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 ("CERCLA"), as amended by the Superfund Amendments and Reauthorization Act of 1986 ("SARA"), 42 U.S.C. §9601 et seq., and to the extent practicable, the National Contingency Plan ("NCP"). This decision is based on the Administrative Record for this site.

The State of Louisiana concurs on the selected remedy.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this Record of Decision ("ROD"), may present an imminent and substantial endangerment to public health, welfare, or the environment.

DESCRIPTION OF THE REMEDY

The site is being handled as one operable unit. The principal concerns to be addressed at the site are from contaminated sludges, soil and sediments, surface water, and to a lessor extent, ground water. The major components of the selected remedy include:

- Removal and on-site treatment of all surface water with final discharge to site drainage ditches;

- Excavation and biological treatment of organic contaminated sludges, soils, and sediments;

- Solidification/Stabilization of biologically treated residuals to address inorganic contamination and, if necessary, any remaining organic contaminants;

- Final disposal of treated residuals in an on-site disposal unit;

- long-term ground water monitoring; and

- long-term site operation and maintenance.

STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost effective. This remedy does satisfy the statutory preference for treatment that reduces toxicity, mobility or volume as a principal element of the remedy. The selected remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable for this site.

Because the remedy may result in hazardous substances remaining on-site above health-based concentration levels, a review will be conducted within five years of commencement of the remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

9-22-93
Date

Joe Winkle
Acting Regional Administrator
U.S. Environmental Protection Agency
Region 6

PAB OIL SUPERFUND SITE

9/93 RECORD OF DECISION

CONCURRENCE PAGE

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THE DECISION SUMMARY

I. SITE NAME, LOCATION AND DESCRIPTION

The PAB Oil and Chemical Services, Inc. Site ("PAB Oil site" or "site") is located less than 3 miles north of Abbeville, Louisiana, adjacent to U.S. Route 167, in Vermilion Parish, Section 12, T12S-R3E (Figure #1). The property is located in a generally rural area with the surrounding property being chiefly agricultural with livestock grazing and crops. Residential use of the surrounding property has increased however, along the major roadways in close proximity to the site (U.S. Route 167 to the west and Parish Road P-3-26 to the south).

The PAB Oil site consists of about 16.7 acres with approximately 82% of the site being utilized as pits/ponds and related berms or levees (Figure #2). The site was used for disposal of oil and gas exploration and production wastes including drilling muds, drilling fluids and produced waters. The pits presently contain solid and/or liquid wastes that have the potential of migrating into the surrounding environment.

The site and surrounding area are flat and have a general surface elevation of slightly below +20 ft. mean sea level ("MSL"). The top of the disposal pit berms range in height from approximately 5.3 - 6.2 ft above grade, while the berm around the large salt water pond ranges from 3-5 ft above grade. The site itself has a levee around the majority of the property, ranging from 4 ft to the east along a former irrigation canal, to 1-2 ft along the remainder of the site.

The subsurface cross-sections and boring logs reveal, for the most part, three subsurface stratigraphic units: an upper clay unit (2-20 feet below ground surface), a middle clay/silt/sand unit (20-25 feet below ground surface) and a lower sand/gravel unit (25+ feet below ground surface. Ground water beneath the site was encountered at approximately 30 ft. below the ground surface in the upper Chicot Aquifer System.

II. SITE HISTORY AND ENFORCEMENT ACTIVITIES

Relevant site history dates back to 1978 when PAB Oil and Chemical Services, Inc. began operating a disposal facility for oil field drilling muds and salt water on the property. This operation continued for approximately five years and has since been abandoned. As part of its normal operations, PAB Oil reportedly sold to reclaimers the waste oil skimmed from the oil-based drilling mud separation/disposal pits located in the northeast part of the site.

PAB Oil began operations in late 1978 and operated under interim approval, granted by the Louisiana Department of Natural Resources ("LDNR"), Office of Conservation on September 25, 1979. The approval was granted under authority of Statewide Order 29-B, which regulates the drilling, production and operation of oil and gas wells in the State of Louisiana, including provisions for pollution control.

On July 20, 1980, an amendment to Statewide Order 29-B, which established new requirements for off-site drilling mud and salt water disposal facilities, became effective. Existing facilities, including PAB Oil, were granted temporary authority to operate, with 90 days to comply with the new requirements. At the same time, PAB Oil was also notified by LDNR that it needed a permit from the Office of Environmental Affairs in order to discharge treated water from the disposal pits into the surface water drainage system.

A citizen's complaint of discharge from the site into an off-site drainage ditch led to site identification by the Environmental Protection Agency ("EPA") on June 27, 1980. As a result, site inspections were conducted by the EPA, the LDNR and the Louisiana Department of Environmental Quality ("LDEQ"). The EPA Field Investigation Team ("FIT") conducted a preliminary assessment and preliminary sampling inspection in 1980. "Notices of Violation" of Statewide Order 29-B were sent to PAB Oil on December 4, 1980, by the LDEQ and on October 2, 1980, by the LDNR.

On January 8, 1981, the Vermilion Parish Police Jury and the Vermilion Parish Planning Committee, at the urging of the Vermilion Association to Protect the Environment ("VAPE"), requested that the LDNR deny PAB Oil's request for a permit to discharge treated oil field wastewater into Coulee Kinney via the Parish drainage system. PAB Oil was again notified of violations of Statewide Order 29-B on June 30, 1981, by the LDEQ and on March 30, 1982, by the LDNR.

PAB Oil was owned by Alex Abshire until February 1982, when it was reported as sold to a consortium headed by William H. Lambert and Jack Clothier. PAB Oil reported that it stopped receiving oil field waste in August 1982, because of its inability to meet the requirements of Statewide Order 29-B. Its interim authority to operate the disposal site was revoked by the LDNR on November 10, 1982, and PAB Oil was ordered to proceed with a closure plan for the site.

On January 12, 1983, PAB Oil was notified that the storage tanks and the gates to the facility had been sealed by agents of the LDNR, Office of Conservation, due to open leakage from pits and because an unknown party had placed petroleum waste in a tank at the site on or about January 10, 1983. All notices of violations from both departments were referred to the State Attorney General's office for prosecution in January 1983. Adjoining property owners

had also filed private lawsuits against PAB Oil alleging salt water contamination of private water wells and surface property damage.

In 1983, the company reportedly lacked the funds for a proper closure. It is now out of business and the wastes are still on-site. PAB Oil's lease was canceled in November 1984, and control of the property was returned to land owner Edmond Mouton. Mr. Mouton has since passed away and the property is part of his Estate.

At the request of EPA, the Technical Assistance Team inspected the site on November 20, 1984, and FIT conducted comprehensive sampling at the site on July 9 and 10, 1985. In May, 1986, the FIT was tasked by the EPA to obtain additional information regarding the location and description of the City of Abbeville water wells and the use of surface water in the vicinity of the site. In 1987, the FIT performed an Expanded Site Inspection ("ESI"). Based in part on the findings from these investigations, the site was proposed to the Superfund National Priority List ("NPL") in June 1988. The site was finalized on the NPL in March 1989.

EPA conducted the Remedial Investigation ("RI") at the site with assistance from Sverdrup Corporation under the Alternative Remedial Contract Strategy. RI field activities for the PAB Oil site were conducted from January 14, 1991, to March 29, 1991 (Phase 1) and from October 7, 1991, to October 31, 1991 (Phase 2). Initial Phase 1 RI field activities were conducted to evaluate the current overall environmental impact that has resulted from disposal activities that occurred during the period that the facility was in operation. The subsequent Phase 2 RI field activities were conducted to further define the nature and extent of contaminant impacts as determined from the results of the Phase 1 RI field activities. In addition, an evaluation of the potential risks to human health and the environment from site contaminants was conducted as part of the RI in the Risk Assessment. The RI Report was finalized in January 1993.

During the course of the RI sampling, it was discovered that an emergency situation existed at the site that required immediate action. This Removal Action was carried out by several of the site's Potentially Responsible Parties ("PRPs") under the authority of an Administrative Order on Consent. The purpose of the Removal Action was to address the threat posed by ignitable wastes contained in one of four on-site storage tanks that was structurally damaged. The action consisted of removing the waste materials from all four storage tanks, dismantling the tanks, and treating and disposing the wastes off-site. The scrap metal from the dismantled tanks was also taken from the site. All work was completed by February 1992.

As mentioned above, several PRPs have been identified at this site. Approximately 100 PRPs were issued General Notice Letters in August

1989 and RI/FS Special Notice Letters in December 1989. Although a large portion of these PRPs are viable companies, negotiations for an enforcement-lead RI/FS were unsuccessful and all work conducted at the site thus far (excluding the Removal Action) has been conducted by the EPA.

III. HIGHLIGHTS OF COMMUNITY PARTICIPATION

The requirements of CERCLA Sections 113(k)(2)(B)(i-v) and 177, 42 U.S.C. §§9613(k)(2)(B)(i-v) and 9617, were met during the remedy selection process, as illustrated in the following discussion.

A series of community interviews near the site were conducted in May 1990. The interviews included a cross-section of the area residents and landowners, as well as the Abbeville-Vermilion Chamber of Commerce, Mayor Broussard, members of the Vermilion Association to Protect the Environment, and other civic groups. A site mailing list was developed through the community interview process and is continually updated as the site activities progress.

Fact sheets summarizing the progress of the remedial investigation were mailed out to all individuals on the site mailing list in January 1992. In December 1992, in conjunction with fact sheets announcing the completion of the RI/FS, an informal Open House was held at the Abbeville General Hospital.

The RI/FS Reports and Proposed Plan for the PAB Oil site were released to the Public on March 22, 1993. The documents were made available to the public in the Administrative Record File in the noted information repositories: Vermilion Parish Public Library, Abbeville, Louisiana; Louisiana Department of Environmental Quality, Baton Rouge, Louisiana; and the U.S. Environmental Protection Agency Region 6 Library, Dallas, Texas. A summary of the Proposed Plan and the notice of availability of the these documents and Administrative Record File was published in the *Abbeville Meridional* and *Kaplan Herald*. In addition, a fact sheet summarizing the Proposed Plan of Action for the PAB Oil site was mailed to the site mailing list on March 26, 1993.

The EPA held a public comment period regarding the RI/FS, Proposed Plan and Administrative Record from March 26, 1993, through April 25, 1993. During this initial public comment period, a formal public meeting was held on April 8, 1993, at the Abbeville General Hospital. Representatives from the EPA presented the remedial alternatives, the EPA preferred alternative, and answered questions. All questions and comments were recorded to be included in the Responsiveness Summary. Due to a request by the Technical Assistance Grant ("TAG") technical advisor, the public comment period was extended through May 25, 1993. The extension was announced through cards mailed to individuals on the site mailing list and a newspaper advertisement in the *Abbeville Meridional*.

A response to all comments received during this 60 day public comment period, either written or verbally expressed at the public meeting, is included in the Responsiveness Summary (Appendix #1). The Responsiveness Summary is included as part of the ROD.

This decision document presents the selected remedial action for the PAB Oil superfund Site, in Vermilion Parish, Louisiana, chosen in accordance with CERCLA, as amended by the Superfund Amendments and Reauthorization Act and, to the extent practicable, the National Contingency Plan ("NCP"). The decision for this site is based on the Administrative Record. An index for the Administrative Record is included as Appendix #2 to the ROD.

IV. SCOPE AND ROLE OF RESPONSE ACTION

The remedy to eliminate or minimize the identified threats at the PAB Oil site under this ROD is addressed as one operable unit. This is the only and final operable unit planned for this site. As mentioned previously, a Removal Action was completed in 1992 at this site to address former threats associated with four storage tanks and their contents.

The studies undertaken at the PAB Oil site have identified the contaminated sludges, soils, sediments, surface water and ground water as actual or potential threats to human health and the environment. The threats, or risks posed by these contaminants, stem from possible ingestion, dermal contact or migration into the surrounding environment including the underlying ground water which is a potential drinking water source.

EPA defines principal threats as sources of highly mobile or toxic materials which cannot be kept in place by engineering controls and represent a risk several orders of magnitude higher than health-based goals for the site. The sludges contained in the disposal pits have been identified as the principal threat at the PAB Oil site because these sludges, if left alone, would continue to be a potential threat to the ground water through leachate migration and to human health and the environment through direct exposure.

Low level risk materials are sources of contamination that could be kept in place by capping and pose a low risk. For example, the associated soils identified on-site (pond sediments, former tank-area surficial soils) with less elevated levels of contamination as compared to the sludge samples, are considered a low level risk because of the lower potential for these areas to contaminate the ground water or pose a direct contact risk to humans.

In addition, the investigations at the site identified potential human and environmental risks associated with the contaminant levels found in the surface waters and ground water. Surface water risks were identified due to potential direct exposure (dermal

contact) and ground water risks were identified due to potential ingestion and dermal contact and inhalation while bathing.

The specific remedial objectives determined to be necessary at the PAB Oil site are:

1. Prevent direct contact, ingestion, and migration of the disposal pit sludges and associated soils.

2. Prevent direct contact with contaminated surface waters.

3. Prevent the potential for human exposure to contaminated ground water.

V. SUMMARY OF SITE CHARACTERISTICS

The PAB Oil site consists of about 16.7 acres with approximately 82% of the site being utilized as pits/ponds and related berms or levees. The site and surrounding area are flat and have a general surface elevation of slightly below +20 ft. MSL. The top of the disposal pit berms range in height from approximately 5.3 - 6.2 ft. above grade, while the berm around the large salt water pond ranges from 3-5 ft. above grade. The site itself has a levee around the majority of the property, ranging from 4 ft. to the east along the former irrigation canal, to 1-2 ft. along the remainder of the site.

The region has an average annual temperature of 20°C, with temperatures ranging from highs of 38°C in July and August to lows of -7°C in December and January. Rainfall in the area averages 59 inches per year, with a mean average annual lake evaporation rate of 48-50 inches per year.

SURFACE WATER

The majority of surface runoff from the site, including overflow from the salt water ponds, drains to the west in the ditches on both sides of the site access road. Flow continues along the road to the U.S. Route 167 drainage ditch. Flow then drains to the north along U.S. Route 167 for approximately 70 ft. before it turns eastward. The surface water flows eastward for approximately 160 ft. back toward the site before it starts to deviate from its eastward direction and head in a northern direction, away from the site.

The precipitation that enters the northwest pit resulting in overflow spills into the northeast pit through an opening in the berm between the two areas. Water then flows to the south pit from the northeast pit through an interconnecting pipe. The water then flows from the south pit to the salt water pond through a connecting pipe.

The salt water pond overtops a low berm/spillway in the southwestern part of the former tank battery. The discharge exits the bermed tank area through a drainage pipe which leads to the site access road drainage ditch. The salt water pond overflow proceeds westward along the south road ditch unless the discharge exceeds the capacity of the ditch in which case, some of the flow runs over the access road to the north road ditch and progresses westward along with the flow in the south road ditch.

REGIONAL GEOLOGY

The site is located within unconsolidated sediments of the Atlantic-Gulf Coastal Plain physiographic province. These sediments are of Pleistocene age and were deposited by the ancestral Mississippi River that derived sediment and flow from the central part of the North American Continent. The sediments were deposited in a complex series of alternating beds of sand, gravel, silt and clay. The beds dip toward the south and southeast and vary in thickness from less than 100 ft. in southwestern Louisiana to more than 7,000 ft. beneath the Gulf of Mexico.

The surficial topsoil generally ranges from 0-2 ft. below the ground surface and consists of dark brown organic clay with some black fairway-manganese nodules and iron staining. Below the surficial soils is a brown and gray mottled clay. This clay zone extends to depths ranging from 19-23. ft below the ground surface for most of the site. This zone lessens to 13-14 ft. below ground surface to the west of the site. Black fairway-manganese nodules and iron staining were noted throughout this clay unit. Next, extending to depths of 22-25 ft. below ground surface for the majority of the site, was a brown and gray sandy silt and silty clay unit. This zone extends to only 16-17 ft. below ground surface to the west of the site. The deepest unit encountered beneath the site, according to the ESI, is a reddish brown to grayish brown sand extending to depths of at least 110 ft. below ground surface. This sand unit coarsened downward from fine to medium sized sand to some fine and coarse gravel. Banded iron staining was also reported observed in this zone.

The cross-sections and boring logs reveal basically three subsurface stratigraphic units: an upper clay unit, a middle clay/silt/sand unit and a lower sand/gravel unit. The middle unit appears to act as a transition unit between the upper clay and lower sand.

REGIONAL HYDROGEOLOGY

The major hydrogeologic unit in the site vicinity is the Chicot Aquifer System. The Chicot Aquifer System is subdivided into the Upper and the Lower Chicot Aquifers. Locally, the Upper Chicot Aquifer is further divided into the Abbeville Unit and the Upper Sand Unit.

The Chicot Aquifer System generally consists of a coarsening downward sequence of clays, silts, sands, and gravels. The medium- to coarse-grained sand and gravel aquifer units dip and thicken southward toward the Gulf of Mexico. Water levels in the Chicot Aquifer range from near land surface to 150 ft. below land surface. Water levels are lowest in areas of heavy industry and significant population.

Water levels in 1903 showed a natural southward gradient that probably existed before heavy ground water development began. Rain falling on areas of recharge for the Chicot Aquifer System provided baseflow to the Sabine, Vermilion and Atchafalaya Rivers during pre-development years. The southward water level gradients of the early 1900s have been reversed as of approximately 1940 and now slope northward toward large pumping centers (such as the city of Lafayette, Louisiana, located approximately 15 miles north of the site).

Ground water beneath the site was encountered at approximately 30 ft. below the ground surface (-10.0 feet, MSL) in the upper Chicot Aquifer System, Abbeville Unit. The ground water flow direction under the site was found to be generally west-northwest with a gradient of 0.0002 ft/ft. Both of these observations of the local ground water flow are consistent with regional flow conditions.

In accordance with EPA's Guidelines for Ground Water Classification under the EPA Ground Water Protection Strategy, (December 1986), the ground water beneath the site is classified as a Class II ground water because the ground water is currently used or is potentially available for drinking water or other beneficial uses. Ground water in the area is used for drinking water purposes (there are more than 55 residential wells within 1/2 mile of the site and three city of Abbeville municipal wells within 3 miles of the site) as well as for agricultural purposes (irrigation and crawfish ponds).

KNOWN OR SUSPECTED SOURCES OF CONTAMINATION

It is believed that most, if not all of the contamination found at the site is related to the waste disposal activities that occurred in the late 1970's and early 1980's. The facility received wastes related to the exploration and production ("E&P") of oil and gas from throughout the Gulf Coast Region, including offshore operations. These wastes were mainly drilling muds, drilling fluids, produced water and other associated wastes such as workover fluids and tank bottoms. Almost all of the contaminants found at the site can be related to one or more of these waste types.

It is believed that most of the remaining contaminants identified during site investigations that can not be directly related to the oil and gas E&P disposal activities are either a result of off-site

human activities (pesticides resulting from local agricultural use) or naturally occurring (arsenic in the ground water). Evidence also exists to support the prior occurrence of a limited amount of illegal dumping of unknown wastes at the facility.

The wastes were delivered to the site by vacuum tank trucks which were ordered to dispose the material into the appropriate pit based on a physical description of the waste given by the driver to the operator. Drilling muds were transferred into either the northwest or northeast pit. Lighter wastes such as produced water were sometimes dumped directly into the large, salt water pond located to the west of the disposal pits.

CONTAMINATION CHARACTERIZATION

The media and associated contaminants of concern at the site were identified in the RI. Not all contaminants of concern are contaminants that drive the risk or the need to conduct remedial actions at the site. The contaminants most critical to risk are discussed in detail in Section VI., SUMMARY OF SITE RISKS. Based on the results of the RI, the following media categories were identified:

- Sludges and Associated Soils
- Sediments and Surface Soils
- Surface Water
- Ground Water

Sludges and Associated Soils:

The three waste disposal pits as shown on Figure #2 (northwest pit, northeast pit and south pit) contain the majority of contamination found at the site. There was no liquid found in the northwest pit, but the probing revealed an average sludge depth of approximately 16 ft. Natural clay is present under the sludge at 16 ft. The estimated sludge volume of the northwest pit is 9,200 cubic yards ("yd^3"). The majority of the northeast pit contains liquid down to approximately 7.5-8 ft, which is underlain by about 7-7.5 ft. of sludge. A clay bottom was reached at 15 ft. below the water surface. The estimated volume of liquid in the northeast pit is 1,300,000 gallons with an estimated sludge volume of 5,400 yd^3. The northeast pit also contains a paraffin layer of scum which floats on the water surface at thicknesses up to 3 inches. The south pit contains primarily liquid with depths ranging from 9-14 ft. The thickness of the sludge on the bottom of the pit varies from 6 inches to 2 ft. The estimated volume of liquid in the south pit is 1,300,000 gallons with an estimated sludge volume of 900 yd^3.

The sludge from the northwest and northeast disposal pits are similar in appearance, being described as a brown to gray/black sludge with a noticeable petroleum odor. The south pit sludge also

has a noticeable petroleum odor, but its appearance is described to be a soupier and blacker material than that of the other two pits. The clay/soil underlying the pits typically has a hydrocarbon odor which varies from slight to strong. Some of the upper clay/soil samples has a visible dark, oily liquid in the pore spaces.

Numerous volatile and semi-volatile organic compounds, typical of petroleum type constituents, were detected in the sludge samples from the three disposal pits. The following compounds were the predominant organic contaminants detected in the pit sludges. The values presented are the greatest concentration detected in each pit.

	NW Pit mg/kg	NE Pit mg/kg	S Pit mg/kg
Volatile Organic Compounds			
Benzene	6.6	42	7.5
Toluene	27.0	145	11.5
Ethyl Benzene	15.0	80	6.5
Total Xylenes	75.0	325	40.0
Semi-volatile Organic Compounds			
Naphthalene	200	200	7.4
2-Methylnaphthalene	540	455	50
Fluorene	55	61	6.0
Phenanthrene	95	180	7.8
Pyrene	4.3	20	2.3

Sludge samples from each of the three waste pits were also analyzed for pesticides and polychlorinated biphenyls ("PCBs"). Sludge samples from the northwest pit and the northeast pit were found to contain low concentrations of several pesticides. One type of PCB, Aroclor-1260, was found to be present in two sludge samples collected from the northeast pit.

Sludge samples from each of the three pits were evaluated for chloride concentrations, total petroleum hydrocarbons ("TPH") and pH. The sludge samples were found to have varying levels of each parameter. The south pit sludge reported the highest concentration of chloride at 66,900 mg/kg while the northeast pit recorded the highest TPH at 823,000 mg/kg (82.3%). The pH of the sludge ranged from 7.1 to 12.0.

Various dioxin isomers and one furan isomer were detected in the sludge samples collected from the three waste pits. Dioxin and furan isomers are evaluated according to a toxicity equivalence factor which relates the toxicity of each isomer to that of 2,3,7,8-tetrachlorodibenzo-p-dioxin ("TCDD"), which is the most toxic of the dioxin/furan isomers. A total of six sludge samples reported toxicity equivalence to 2,3,7,8-TCDD above 0.01 µg/kg, however, no sample had an equivalence greater than or equal to 1.00 µg/kg. 1.00 µg/kg is the current cleanup standard for residential scenarios established in response to a Center for Disease Control risk assessment that established this as a "level of concern".

Numerous inorganic compounds (metals) were detected in the sludge samples from the three disposal pits at concentrations which exceeded background soil levels. The following metals, proceeded by their greatest detected level within each pit, were the predominant inorganic contaminants detected in the pit sludges:

	NW Pit mg/kg	NE Pit mg/kg	S Pit mg/kg
Inorganic Compounds			
Arsenic	25.1	13.5	7.5
Barium	46,500	48,400	7,450
Cadmium	11.8	7	ND
Calcium	32,000	24,100	16,600
Chromium	933	857	136
Copper	685	111	15.4
Lead	2,780	585	32.4
Mercury	2.6	3.4	0.4
Zinc	3,610	2,560	1,510

Note: ND = not detected

The clay soils beneath the pits and the floating paraffin layer ("scum") on the northeast pit were found to contain many of the same compounds that were detected in the waste pit sludges, especially the organics, although at lesser concentrations.

Besides the underlying clay soils and floating paraffin layer, soils associated with the sludges in the disposal pits for purposes of this discussion includes the pit berms, sediments from the ponds and drainage ditches, and surface soils affected by past operations.

Pit Berms

During the field investigation, the outer pit berm, which encompasses the three disposal pits, was evaluated and appeared very sound. There was no visual evidence of present seepage, past spillage or overflows.

Both the organic and inorganic analyses reflected relatively uncontaminated material in the circumferential berm except on the inside of the berm at the northwest corner of the northwest pit, where there appeared to be some residual sludge or other petroleum product present. This location revealed semi-volatile tentatively identified compounds ("TICs") and TPHs as well as numerous inorganic compounds such as barium, cadmium, calcium, chromium, lead, mercury and zinc at levels above background soil concentrations. The levels at which these contaminants were present were significantly lower than the concentrations detected in the pit sludges, however, the concentrations present indicate an impact from site activities.

Sediments

The canal sediment samples indicated low levels of several organic compounds such as 4-methyl-2-pentanone, benzoic acid and benzo(a)pyrene. There were no detectable levels of target compound list ("TCL") pesticides or PCBs found in the canal sediment samples. The only inorganic parameter detected in the sediment samples, which was outstanding compared to background values, was mercury detected at 0.20 mg/kg.

The majority of contamination detected in the salt water ponds' sediments occurred in samples located in the southeast corner of the salt water pond at or near the suspected discharge pipe from the south pit. At this discharge pipe, the sediment was oily and black in color and had a distinct petroleum odor.

The only non-laboratory suspected volatile organic contamination appeared in the form of TICs. On the other hand, many semi-volatile organic compounds were detected. Most of the compounds detected were polycyclic aromatic hydrocarbons ("PAHs"). The highest concentrations reported were for 2-methylnaphthalene (5,670 µg/kg), phenanthrene (2,750 µg/kg) and fluorene (1,070 µg/kg). Elevated levels of naphthalene, pyrene and chrysene were also detected along with a large number of semi-volatile TICs.

No pesticides or PCBs were detected in the pond sediments. The dioxin and furan analysis reported that there was no 2,3,7,8-TCDD detected. Two different dioxin isomers were detected in seven of the nine samples analyzed, however, due to the low values and the lower relative toxicities of the isomers detected, none of the samples had a toxicity equivalence to 2,3,7,8-TCDD greater than 0.01 µg/kg.

The most significantly elevated inorganic parameter detected in the pond sediments was barium. Elevated barium levels were detected throughout the pond sediments. The highest value recorded was 9,860 mg/kg barium detected in a sediment sample collected from the southeast corner of the salt water pond. The southeast corner also reported elevated levels of calcium, chromium, cobalt and zinc.

In general, the concentration of barium and chloride in the site drainage ditch sediments are the highest near the outfall/overflow from the salt water pond and decrease as the ditch proceeds to the west toward U.S. Route 167. The highest detected barium and chloride concentrations were 4,030 and 1,257 mg/kg, respectively. The surface water concentrations of barium, calcium, chloride and sodium were also detected at higher values in the drainage ditches on-site than they were in the off-site U.S. Route 167 ditch, immediately after the confluence of the site runoff.

Surface Soils

The majority of the contamination detected in the on-site soils occurred in the former tank battery area soils. There were, however, some elevated values, primarily inorganic constituents, detected in the pond island/mound soils and the soil borings adjacent to the disposal pits. The most significantly elevated parameters, compared to background, were arsenic, barium, beryllium, calcium, chloride, cobalt, lead, mercury and nickel.

The organic compounds detected in the visually stained tank battery area soils revealed hydrocarbon contamination. The only volatile organic compounds detected, other than TICs, were ethylbenzene and total xylenes. Various semi-volatile organics, however, were detected. These were primarily PAHs which included phenanthrene, fluoranthene and fluoranthene isomers, pyrene and chrysene. A large number of semi-volatile TICs were also detected in the tank soils.

No pesticides or PCBs were detected in any of the off-site soils. Several pesticides were detected on-site at low concentrations.

TPH values for the tank soils were found to be elevated above background levels. The TPH values were found to generally decrease with depth. The highest reported TPH value was found in a surface sample at 18,110 mg/kg. Chloride concentrations, although not significantly elevated above background, were found to increase with depth rather than decrease. This is possibly due to the relatively high solubility of chloride compounds.

The dioxin and furan analysis performed on the tank soils revealed the presence of some dioxins. 2,3,7,8-TCDD, however, was not detected nor were any furans. A total of four dioxin isomers were detected nine times in the eleven samples analyzed. Two samples reported toxicity equivalence to 2,3,7,8-TCDD greater than 0.01

µg/kg, however, no tank soil sample had an equivalence greater than or equal to 1.00 µg/kg.

The concentrations of inorganic compounds (metals) in the tank soils were evaluated against background soil levels to determine whether the tank soil concentrations of these compounds were elevated. The predominant inorganic compounds which were found to be elevated in the tank soils were arsenic, barium, calcium, chromium, lead, magnesium, nickel, potassium, silver, sodium and zinc.

Surface Waters

The disposal pit liquids (waters) were studied by collecting a surface and a subsurface composite water sample from both the northeast and south pits. Both the organic and inorganic analyses for the pit waters reflected elevated values compared to the off-site ditch and canal waters and the on-site ditch and salt water pond waters.

The predominant volatile organic contaminants detected in the pit waters were common fuel constituents. Benzene, ethylbenzene, toluene and total xylenes ("BTEX") were detected at maximum levels of 200, 56, 78 and 190 µg/l. The solvents 1,1-dichloroethane and tetrachloroethene and a relatively high value of acetone were also detected.

The semi-volatile organic analysis revealed the presence of several methylphenol isomers and various PAHs such as naphthalene, 2-methylnaphthalene, fluorene, phenanthrene and chrysene. Various semi-volatile TICs were also detected such as substituted benzenes, phenols and naphthalenes.

Total organic carbon ("TOC") and chemical oxygen demand ("COD") were reported at substantially higher values in the disposal pit waters than those reported for the site ditches and salt water ponds. The highest TOC and COD values were 258 and 1,200 mg/l, respectively.

The pesticide/PCBs analysis performed on the pit waters detected various pesticides at low concentrations.

The inorganic sample results from the pit waters detected antimony, barium, beryllium and chromium at levels of 93.3, 13,000, 2.5 B and 99.7 µg/l, respectively. As a reference, the MCL for antimony is currently being proposed at 10 or 5 µg/l while the MCLs for barium, beryllium and chromium are currently 2,000, 1.0 and 100 µg/l, respectively. Many other inorganic parameters, including arsenic, copper, zinc and chloride were detected at levels which were elevated compared to other site waters.

In addition to the surface waters in the disposal pits, the PAB Oil site contains surface water in the salt water pond (or large pond), the northwest pond and an abandoned canal at the eastern edge of the property. The majority of precipitation runoff from the site, including overflow from the ponds and the pits, drains to the west in the ditches on both sides of the site access road. Flow continues along the road to the U.S. Route 167 drainage ditch. During the investigation, the surface waters and sediments were investigated to evaluate the past and current migration of contamination.

The salt water pond has overall dimensions of approximately 765 ft by 430 ft with an average liquid depth of 2 ft. A deeper area was discovered in the northeast corner measuring 95 ft by 125 ft and having an overall depth (water and sediment) near 7.5 ft. The total volume of water within the salt water pond is approximately 4,500,000 gallons.

The northwest pond measures approximately 165 ft by 175 ft with varying depths from 2 ft to 11 ft. The water volume in the pond was calculated to be approximately 800,000 gallons.

The canal is no longer utilized and is dead-ended at several locations in the area of the site. Water, therefore, currently does not flow and the water level present in the canal is solely dependent on local rainfall. The water in the canal segment adjacent to the site has been observed to be nonexistent as well as over 3 ft in depth depending on the time of year.

Water samples collected from the canal showed no evidence of organic or inorganic contamination.

There were no volatile organic compounds detected in the pond water samples which were not suspected to be attributable to laboratory contamination. The only TCL semi-volatile organic compound reported was one PAH at a low concentration. There were, however, numerous semi-volatile TICs detected.

Various pesticides were detected at very low concentrations in the pond water samples. There were no PCBs detected.

The highest TOC, COD and TPH values detected in the pond waters were 30.5, 86 and 1.25 mg/l, respectively.

Several inorganic elements were detected in the pond water samples at elevated levels compared to off-site ditch samples and canal samples. The highest concentrations of barium and chromium were detected at 2,890 and 34.8 µg/l, respectively. Calcium, sodium and chloride were also reported at elevated values. Filtered (passing 0.45 micron) samples were also collected and they revealed a significant decrease in the concentration of many metals. Analysis of filtered samples gives an indication of the portion of

contaminant that is in the water column versus the portion that is attached to suspended solids (greater than 0.45 microns in size) that can be filtered out of the water sample. The filtered results showed a 47% reduction in the barium level, down to 1,380 µg/l, and the chromium level was reduced to 9.1 µg/l. Although not considered elevated in the unfiltered sample, the levels of aluminum, iron, lead, magnesium, manganese and potassium also showed a decrease in concentration in the filtered sample. The calcium and sodium levels, however, showed no filtered reduction.

Ground Water

Ground water beneath the site was encountered at approximately 30 ft. below the ground surface in the upper Chicot Aquifer System, Abbeville Unit. The ground water flow direction under the site was found to be generally west-northwest with a gradient of 0.0002 ft/ft. Both of these observations of the local ground water flow are consistent with regional flow conditions.

There were no significant, positively identified contaminant trends resulting from the analytical results of the ground water samples obtained primarily from wells screened at 30' to 40'. There were, however, some contaminants present at elevated levels at individual locations. The elevated constituents were primarily metals (barium, chloride, chromium, lead, nickel, etc.).

The only significant organic compound detected was benzene, however it was detected in only 2 samples out of the 34 ground water samples collected. It was reported in MW-5 and MW-7 at values of 3 and 2 µg/l, respectively, which is less than its maximum contaminant level ("MCL") standard of 5 µg/l. Seven pesticides were detected at trace amounts during Phase 2 of the RI, but none of these were detected during Phase 1.

The total metals analysis reported chromium and lead at levels higher than their current drinking water standards. Chromium was reported at its highest concentration of 1,330 µg/l, which is well above its MCL of 100 µg/l and lead was reported at its highest concentration of 141 µg/l, which is above the promulgated "action level" of 15 µg/l. Antimony, beryllium and nickel were also detected above newly promulgated MCL values.

Obvious differences in the concentrations of metals existed between the total and dissolved (filtered) ground water samples. The filtered chromium and lead concentrations were at or below 12.6 and 1.0 µg/l, respectively. Nickel, on the other hand, maintained its high, elevated total metals concentrations in the filtered samples as well. Nickel's maximum values were reported at 659 µg/l in its total and 317 µg/l in its filtered analyses. Other constituents, considered to be elevated in the total metals analysis, such as aluminum, antimony, barium, beryllium and chloride, had their concentrations dramatically reduced when the samples were filtered.

An off-site, upgradient background monitoring well, MW-10, revealed high concentrations of numerous metals. The maximum values reported in any of the site monitoring wells for barium and lead were detected in this well. Other metals detected at high levels in the background well include aluminum, chromium and zinc.

The residential water supply wells (ten total, ranging in depths from 90' to 200') sampled during the RI apparently have not been impacted by contaminants from the PAB Oil site. These residential wells did not show evidence of elevated concentrations of any target compound or analyte that could be directly related to the site.

The most noticeable results from the residential water analyses were the arsenic results. Arsenic was detected in every residential well at concentrations up to 30.5 µg/l (arsenic MCL is 50 µg/l). The source of these elevated values remains unknown. It is evident that they are not related to past operations at the site. The site's highest level of arsenic was 10.7 µg/l. Additionally, the two residential wells reporting the highest values are located south-southwest of the site, which is not in a downgradient position.

EXPOSURE ROUTES

Three potential contaminant migration routes were identified at the PAB Oil site; air, surface water and ground water. The air pathway for contaminant migration is believed to be inapplicable at the PAB Oil site. Based on information obtained from the ESI and during the RI, there appears to be no significant levels of contaminants in the air. In addition, air monitoring data during excavations at a nearby Superfund site, Gulf Coast Vacuum, on wastes similar to those found at the PAB Oil site, did not reveal significant air emissions.

The surface water pathway is considered to be a potential route of contaminant migration. Several site-related contaminants appear to be migrating off-site via the site's surface water drainage system. It is believed that all overflow/excess water from the disposal pits and ponds and the majority of site surface runoff exit the site, heading west, through the drainage ditches adjacent to the site access road.

The ground water pathway is considered to be a potential route of contaminant migration. Although there were not positively identified contaminant trends in this Class II ground water, there were some compounds and/or elements which have been observed to be present at elevated levels at various locations. The elevated constituents were primarily metals (barium, chloride, chromium, lead, nickel, etc.) with the exception of a few detects of benzene and chloroform.

The largest potential impact on the integrity of the ground water under the site will most likely result from potential leachate/infiltration migrating from the disposal pits, while lesser impacts could potentially occur from surficially contaminated soils such as those found in the former tank battery area.

There are several residents located just west of the site, between the site boundary and Route 167. There are other residences located both north and south along Route 167, and along Parish Road P-3-26, which passes about 1/4 mile southeast of the site. There are no permanent dwellings north of the site, although there is one resident who lives in a trailer near the southwest corner of the sand quarry. These nearby residents might be exposed to site contaminants by using ground water from residential wells or they could be exposed to surface water and sediments in the drainage ditches. The closest major population center, with about 3,500 residents, is the city of Abbeville, located about 3 miles south of the site.

Under current site conditions, there are no people who live or work on-site. Therefore, a trespasser is most representative of the population most likely to be exposed on-site under current conditions. Potential exposure would be from direct contact, ingestion, and inhalation of site contaminants.

In the future, it is possible the site might be developed for residential, agricultural or industrial use. As the site currently exists, development for agricultural uses with possible on-site residence by farmers is considered most likely, since the surrounding land is primarily used for pasture land and residences.

VI. SUMMARY OF SITE RISKS

A baseline risk assessment ("BRA") was conducted to analyze the potential adverse health effects (both current and future) resulting from human exposure to hazardous substances in surface soil, sludge, sediment, ground water and surface water at the PAB Oil site. The BRA provides the basis for taking action and indicates the exposure pathways that need to be addressed by the remedial action. It serves as the baseline indicating what risks could exist if no action were taken at the site. This section of the ROD reports the results of the BRA conducted for this site.

By definition, a BRA evaluates risk under the no-action alternative (that is, in the absence of any remedial actions to control or mitigate releases or exposures). The BRA for this site was prepared utilizing data from the RI. The methods used in the development of the risk assessment are based on general EPA guidance (Office of Emergency and Remedial Response. Risk Assessment Guidance for Superfund. Vol. I. Human Health Evaluation Manual (Part A). 1989. also known as "RAGS"), the NCP,

and in accordance with site-specific guidance developed by Region VI. In addition, an environmental risk assessment was conducted to evaluate risks to environmental species. These reports can be found in the Administrative Record.

CHEMICALS OF POTENTIAL CONCERN

Analytical data from sludge, soil, ground water, surface water and sediments were evaluated to identify chemicals of potential concern at this site. Any chemical detected in any sample was considered to be a possible chemical of concern. Chemicals were eliminated from consideration if they are essential nutrients and are nontoxic at the levels encountered on site or if they were infrequently detected. Seventy-five chemicals selected as contaminants of potential concern are listed in Table #1.

An exposure point concentration (used for risk calculations) is the arithmetic mean concentration of a chemical in a medium, averaged over the area in which exposure is expected to occur. Because of the uncertainty associated with the exposure point concentrations, the upper 95th confidence limit of the arithmetic mean (UCL95) is generally used to provide a degree of conservatism. If the calculated value of the UCL95 exceeded the maximum value used to calculate the UCL95 at an exposure point, then the maximum value (rather than the UCL95) was used. Chemicals which were analyzed for but not detected in a sample at a level higher than the normal detection limit were labeled as "undetected". For purposes of calculating exposure point concentrations, if a chemical was detected at least once in a medium, the chemical was assumed to be present in all samples of that medium, and non-detects were evaluated using one-half the "undetected" value. The resulting exposure point concentration values used in the PAB Oil risk assessment are presented in Table #2.

EXPOSURE SCENARIOS EVALUATED

The purpose of the exposure assessment was to identify and evaluate the mechanisms by which people might be exposed to the chemicals of concern at the PAB Oil site. Based on a review of site conditions including land use, contamination patterns and human activity patterns, the populations most likely to be exposed are:

- Current on-site trespassers.
- Current off-site residents (adults and children).
- Future on-site resident farmers (adults and children).

The most important exposure pathways are judged to be:

- Ingestion of and dermal contact with contaminated surface soil, sludge and sediments.

- Ingestion of homegrown vegetables, beef and milk raised in contaminated soil or sludge.
- Ingestion of ground water, along with dermal contact with water (while bathing) and inhalation exposure to VOCs released from ground water to indoor air.
- Dermal exposure to surface water in pits, ponds, marshes and ditches.

The exposure scenarios quantified in this risk assessment are summarized in Table #3.

The magnitude of human exposures to the chemicals of concern at the PAB Oil site is described as the potential dose or intakes by each receptor. In general, standard exposure factors, as defined in the Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors (OSWER Directive 9285.6-03), were used for this determination. In addition, variability among individuals usually leads to a wide distribution of intake values. In most cases, input variables in the risk equation were chosen so that the resulting intake is about equal to the 95th percentile of the dose distribution curve. This is referred to as the Reasonable Maximum Exposure ("RME"). For future residential populations, the variables were also chosen to estimate the average ("AVG") intake (about the 50th percentile of the distribution). This approach, commonly referred as the "central tendency", provides a range of risk estimates, AVG to RME, for future residential exposures. The key assumptions used to calculate the AVG and RME intake factors and the actual calculated values are presented in Tables #4 and #5 respectively.

TOXICITY ASSESSMENT

The purpose of the toxicity assessment was to weigh available evidence regarding the potential for contaminants to cause adverse effects in exposed individuals. The toxicity assessment involved two steps: hazard identification and dose-response assessment. The hazard identification determined whether exposure to a chemical could cause an increase in the incidence of a particular adverse health effect (carcinogenic or non-carcinogenic) and whether an adverse health effect would likely occur in humans. The second step, dose-response assessment, quantitatively evaluated the toxicity information and characterized the relationship between the dose of the chemical received and the incidence of adverse health effects in the exposed population.

Toxicity values (i.e., reference doses for non-carcinogens and slope factors for carcinogens) are used in the risk characterization to estimate the likelihood of adverse effects occurring in humans at different exposure levels and are specific to exposure routes. The EPA has established a weight-of-evidence classification system for carcinogens as follows:

* Group A - Human carcinogen
* Group B1 or B2 - Probable human carcinogen; B1 indicates that limited data are available and B2 indicates sufficient evidence in animals and inadequate or no evidence in humans
* Group C - Possible human carcinogen
* Group D - Not classifiable as to human carcinogenicity
* Group E - Evidence of non-carcinogenicity for humans

Slope factors ("SFs") have been developed by EPA's Carcinogenic Assessment Group for estimating excess lifetime cancer risks associated with exposure to potentially carcinogenic contaminant(s) of concern. SFs, which are expressed in units of $(mg/kg\text{-}day)^{-1}$, are multiplied by the estimated intake of a potential carcinogen, in mg/kg-day, to provide an upper-bound estimate of the excess lifetime cancer risk associated with exposure at that intake level. The term "upper bound", reflects the conservative estimate of the risks calculated from the SF. Use of this approach makes underestimation of the actual cancer risk highly unlikely. SFs are derived from the results of human epidemiological studies or chronic animal bioassays to which animal-to-human extrapolation and uncertainty factors have been applied (e.g., to account for the use of animal data to predict effects on humans).

Reference doses ("RfDs") have been developed by EPA for indicating the potential for adverse health effects from exposure to contaminant(s) of concern exhibiting non-carcinogenic effects. RfDs, which are expressed in units of mg/kg-day, are estimates of lifetime daily exposure levels for humans, including sensitive individuals. Estimated intakes of contaminant(s) of concern from environmental media (e.g., the amount of a contaminant(s) of concern ingested from contaminated drinking water) can be prepared to the RfD. RfDs are derived from human epidemiological studies or animal studies to which uncertainty factors have been applied (e.g., to account for the use of animal data to predict effects on humans).

Table #6 provides a brief summary of the characteristic cancer effects of chemicals of concern at the PAB Oil site, and lists available oral and inhalation SFs and cancer weight-of-evidence categories. Table #7 provides a summary of the characteristic non-cancer effects and lists available RfD values and confidence categories for all verified RfDs for all of the chemicals of concern at this site.

RISK CHARACTERIZATION

Human Health Risks

Cancer Risks

The risk of cancer from exposure to a chemical is described in terms of the probability that an individual exposed for his or her

lifetime will develop cancer. Typically, cancer risks of $1x10^{-6}$ (one in a million) or lower are considered to be so small that they are of no practical concern. Higher cancer risk levels may be cause for concern, and EPA typically requires site remediation if risks exceed $1x10^{-4}$. Estimated cancer risks from exposures to the chemicals of potential concern at PAB Oil are summarized in Table #8.

Cancer risk for current trespassers, mainly from exposure to sludge and surface water in the Northeast Pit and South Pit, is estimated to be about $2x10^{-4}$. The main contributors to this risk are the carcinogenic PAHs, PCBs, beryllium and pesticides.

Cancer risk to current off-site residents associated with exposure to sediment and surface water is about $1x10^{-5}$. This risk is predominantly due to beryllium in the surface water. Excess cancer risk to hypothetical future on-site residents in the Pit area is estimated to be $9x10^{-4}$. This risk is contributed mainly by exposure to PAHs in soil, primarily via food chain intake ($3x10^{-4}$), and by arsenic and beryllium in the ground water ($5x10^{-4}$). If the Northwest and Northeast Pits were excavated and the sludge spread on the land surface, the excess cancer risk to residents would be significantly higher ($2x10^{-2}$). This risk is attributable mainly to direct contact and food chain exposure to PCBs, PAHs and dioxins.

These risks to residents are associated with exposures in and about the area of their home and yard. Assuming that older children (above 7 years old) and adults leave their yard area and are also exposed at pits, ponds, marshes and ditches located on site, the total cancer risk may be approximated by summing the risk to residents in their yard and home ($9x10^{-4}$) and the risk to trespassers ($2x10^{-4}$). If residents are exposed at pits, ponds, marshes and ditches more frequently than was assumed for trespassers (60 days per year), the excess risk would be proportionately higher.

Noncancer Risks

Evaluation of noncarcinogenic risk is accomplished by comparing a calculated intake with an acceptable intake for each chemical and for each pathway that contributes to a population's exposure. The ratio of the calculated intake versus the acceptable intake is termed the Hazard Index (HI). Hazard Indices calculated for all the exposure scenarios quantified at PAB Oil are summarized in Table #9. An HI of 1.0 or more shows an intake greater than the acceptable level and indicates the need for remedial action.

Noncancer risks do not appear to be of concern for current off-site

residents. Current on-site trespassers may have increased risk of noncancer effects due mainly to dermal exposure to pesticides in the South Pit. For hypothetical future on-site residents, hazard index values for the primary contributors are estimated to be 10 for adults and 20 for children under current site conditions. This risk is due primarily to arsenic, antimony, chromium, nickel and vanadium in the drinking water, with lower but sometimes significant contribution from barium in soil. If the sludge from the Pits was spread on the land surface, noncancer risks to adults and children would be 20 and 30, respectively. This additional risk is associated mainly with organics (di-n-octylphthalate, acetone, PAHs) which tend to accumulate in the food chain, with a significant contribution from barium in sludge as well.

The likely effect of exposures to lead from site contamination were estimated using EPA's Uptake/Biokinetic model. Using the geometric mean of lead concentrations in the sludge pits (239 mg/kg), blood lead levels are predicted to average 1.8 µg/dL for children exposed at the pit area, with very low probability that any levels would exceed 10 µg/dL. If sludge were excavated from the Northwest and Northeast Pits, the blood lead levels of exposed children would average 3.5 µg/dL, with only a 0.1% chance that an individual would exceed 10 µg/dL. This indicates that lead exposure from either surface soil or sludge is not of major concern.

Uncertainties Associated With The Human Health Risk Calculation

There are a number of stages in the risk assessment process where precise evaluations are not possible. These include uncertainties regarding the true concentrations of chemicals in environmental media, the amount of contaminants taken in by humans and the likely health consequences of the resulting exposure. In particular, the following items are sources of uncertainty in this risk assessment.

- Likely to Underestimate Risk

  - Lack of toxicity data for numerous chemicals (e.g., TICs).
  - Inability to quantify some pathways (e.g., dermal contact with PAHs, dermal contact with metals in soil, uptake of metals into the food chain).

- Likely to Overestimate Risk

  - Use of conservative human exposure assumptions.
  - Use of conservative toxicity values.

- Might Either Overestimate or Underestimate Risk

  - Evaluation of nondetects using one-half the detection limit

(this is especially important for chemicals with a high frequency of nondetects, such as PAHs, beryllium and pesticides).

- Use of simple models to predict uptake of organics into the food chain.

As noted, some of these limitations may lead to an underestimate of risk, some are more likely to overestimate than underestimate risk and some introduce uncertainty that may either overestimate or underestimate risk. Consequently, the quantitative risk estimates

derived for this site should be considered approximate, with a significant range of uncertainty.

Environmental Assessment

A screening-level environmental assessment was performed for the PAB Oil site. No rare, threatened or endangered species are associated with the site and nearby areas. Local species of wildlife of minor recreational importance and migratory waterfowl are the only ecological resources of potential significance associated with this site. No jurisdictional wetlands are present on the site or in nearby areas. Nearby surface water bodies (ditches and canals) are semi-permanent and are unlikely to support regionally significant aquatic communities.

Areas, contaminants and potentially exposed populations of concern are as follows:

- Aquatic life exposed to iron in surface water in the salt water pond and southeast marsh area.
- Aquatic life exposed to chromium, lead and manganese in sediment in the salt water pond and lead and mercury in the off-site ditch.
- Rabbits ingesting vegetation contaminated with barium from soil in the southeast marsh area.

Higher trophic level organisms that may feed on rabbits in the southeast marsh area are unlikely to experience adverse effects from exposure to barium. Migratory waterfowl are unlikely to be exposed to the relatively low toxicity of chemicals present in the two larger water bodies on site (salt water pond and northwest pond) for sufficient time to experience a dose potentially associated with adverse effects.

Based on the data collected during the RI and BRA, actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

REMEDIAL ACTION OBJECTIVES

The remedial action objectives ("RAO") consist of media-specific goals for protecting human health and the environment and specify:

- The contaminant(s) of concern,
- Exposure route(s) and receptor(s) and
- An acceptable contaminant level.

The medium-specific chemical concentrations that are protective of human health and the environment are termed the remediation goals. The remediation goals, according to 40 CFR 300.430 (e)(2)(i) "shall establish acceptable exposure levels that are protective of human health and the environment". The following requirements must be considered during the development of the remediation goals:

- Applicable or relevant and appropriate requirements ("ARARs") related to:
  - acceptable exposure levels for systemic toxicants,
  - acceptable exposure levels for carcinogens,
  - technical limitations and
  - uncertainty factors.
- Maximum Contaminant Level Goals (MCLGs) established under the Safe Drinking Water Act that are set at levels above zero.
- Maximum Contaminant Level (MCLs) when the MCLGs are set at zero or are not relevant and appropriate.
- When the attainment of chemical-specific ARARs will result in a cumulative risk in excess of $1x10^{-4}$.
- Water quality criteria established under the Clean Water Act.
- Alternate concentration limits ("ACLs") may be established in accordance with CERCLA Section 121(d)(2)(B)(ii).
- Sensitive habitats of species protected under the Endangered Species Act.

In the following sections, the RAOs for each media at the site are discussed. The remediation goals are then set, expressed in terms of the chemical of concern, exposure routes, potential receptors, ARARs and allowable exposure levels.

Surface Water

The RAOs for the site surface waters are to prevent oral and dermal exposure to both humans and environmental species and to mitigate the migration of contaminants via surface runoff or through infiltration to the ground water. A secondary objective is to

remove the water from the pits and ponds in order to effectively remediate the underlying sludge/sediment.

The contaminants of human health concern in the site surface waters are beryllium, barium, benzene and toluene. These limits are to be utilized as the remedial goals for the treatment and release of this media. Beryllium was identified in the BRA as the main contributor to a human health risk (via dermal exposure under the current trespasser and off-site residential land use scenarios) from the site surface water. This risk resulted from the detection of beryllium in only one of 18 samples. The single value detected, 2.5B µg/l in the northeast pit, is well below the 275 µg/l daily maximum allowed by the LDEQ for discharge.

Barium, benzene and toluene were not found to contribute significantly to a health risk but values detected during the RI did exceed anticipated discharge limits. All other constituents detected during the RI are below the anticipated LDEQ discharge limits. Additionally, iron levels in the surface waters of the salt water pond and the southeast marsh area were detected above ambient water quality criteria ("AWQC") levels.

Table #10 presents the contaminants of concern as discussed above, with respect to their on-site detected concentrations and remedial goals.

Estimates of the volume of water to be initially treated are tabulated below. These volumes are based on a single removal action. Additional volumes of precipitation collected during any remedial action on the site sludge and associated soils will be estimated under those individual options.

Location	Water Volume (gallons)
Salt Water Pond	4,500,000
Northwest Pond	800,000
Northeast Pit	1,300,000
South Pit	1,300,000

Sludge and Associated Soils

Figure #3 depicts the locations of the disposal pits and the areas of contaminated sediment/soil in the salt water pond and the former tank farm area.

For protection of human health, the RAOs for the waste pit sludge and associated soils are to prevent migration of contaminants to the ground water and surface water and to minimize the public's

exposure to the material. In the human health BRA, an excess cancer risk (greater than $1x10^{-4}$) for future on-site residents exposed to the sludge in the waste pits was identified. The contaminants contributing most to that risk were the carcinogenic PAHs ("cPAHs") and arsenic through oral and dermal contact pathways. Pesticides, PCBs and Dioxin/TCDD-Equivalents also were determined to contribute to the risk for future residents and/or current trespassers.

The pesticides and PCBs are not included as RAOs, due to the uncertainty associated with the development of the related risks. PCBs were detected in only 2 of 40 sludge samples and the pesticide risk is based entirely on non-detected values. The TCDD-Equivalent risk is also not included as an RAO, as the Agency for Toxic Substance and Disease Registry ("ATSDR") normally recommends that cleanup of material is not required unless the TCDD-Equivalent values are above a calculated value of 1.0 µg/kg. This procedure has also been adopted by EPA Region 6. None of the samples analyzed during the RI had calculated TCDD-Equivalents above this level. Specific clean-up goals for these parameters are therefore not developed. The material is, however, still being evaluated for remediation since all of the site media that was found to contribute a risk due to pesticides, PCBs or TCDD-Equivalents also has a risk contributed to it for other constituents.

Noncarcinogenic risks (hazard index greater than 1) from exposure to the sludge and/or soil, mainly from barium and the noncarcinogenic PAHs, were also calculated for future on-site residents. Acetone and di-n-octylphthalate were also identified in the BRA as contributing to the total risk of the sludge to on-site residents. The risk posed by these compounds is due to up-take into the food chain. Both of these compounds are common laboratory contaminants and a firm conclusion that their detection is due to site-related contamination is not possible. Specific remedial goals for these compounds are therefore not developed. The material is, however, still being evaluated for remediation since the sludge has additional risks to it as a result of the other constituents.

The environmental BRA identified potential risks to those aquatic organisms that may be exposed to sediments in the salt water pond. This risk is due to the levels of chromium, lead, manganese and mercury detected during the RI. Lead and mercury levels were also of potential concern to aquatic organisms in the ditch leaving the site. Barium soil levels in the southeast marsh area were identified as causing a potential risk to rabbit populations based on consumption of possibly contaminated vegetation. Based on the limited nature of the elevated elements in these locations, separate remedial goals are not established for the environmental exposure. The barium remedial goal is established utilizing human health concerns. With the exception of the "No Action" alternative, for which the current risks will remain, the remedial alternatives discussed in the following

sections of this ROD do not provide for the retaining of any of the surface water impoundments. An aquatic environment will therefore no longer be present and aquatic remedial goals for soils and sediment will not be applicable.

Table #11 presents the contaminants of concern as discussed above, with respect to their on-site detected concentrations and remedial goals.

The estimated volumes of waste materials in each area are presented below. The sludge volumes are based on the surface area of the pits and the estimated thickness of the sludge. The associated soil volumes were estimated on the assumption that two feet of soil around and under the northwest and northeast pits will be remediated and one foot of soil around and under the south pit. The internal berms and the top 1 ft of soil at the northwest corner of the northwest pit berm will also be remediated. The results of the sampling conducted on the soils indicated that several of the key contaminants contributing to health risks in the sludge (for example, carcinogenic and noncarcinogenic PAHs) are also present in these soils.

Source Designation	Volume (yd^3)
Northwest Pit Sludge	9,200
Northeast Pit Sludge & Scum	5,400
South Pit Sludge	900
Underlying Soils	10,800
Salt Water Pond Sediment	520
Tank Soils	40
Interior NW Pit Berm Soil	60

Ground water

To protect human health, the prevention of ingesting contaminated ground water from this Class II ground water source is the primary RAO for this media. The BRA evaluated the health-based risks for future on-site residents who would use the site ground water as a drinking water source. The evaluation indicated that a number of inorganic constituents pose potential health risks through ingestion of ground water.

Active ground water treatment is not warranted at this time for several reasons: 1) it not believed that the sporadic presence of ground water contaminants is a result of site activities. (This belief is based on the fact that the naturally occurring inorganic contaminants detected sporadically in the ground water were also detected in similar concentrations in the upgradient background well and because the natural soils underlying the sludge pits do not appear to be contaminated with inorganics which indicates a lack of migration), 2) the inorganic contaminants detected and driving the potential risk are all associated with the solids that can be filtered out of the ground water samples and not with the ground water itself, and 3) due to the sporadic frequency and location of the elevated detections, the area that may require treatment can not be fully defined.

All of the alternatives considered, with the exception of the "No Action" alternative, include future ground water monitoring. The purpose for the ground water monitoring is to evaluate effectiveness of the implemented remedial action and to confirm EPA's determination that active ground water remediation is not warranted at this time.

VII. DESCRIPTION OF ALTERNATIVES

A Feasibility Study ("FS") was conducted to develop and evaluate alternatives to meet the RAOs for the PAB Oil site. Remedial alternatives were assembled from applicable remedial technology process options and were initially evaluated for effectiveness, implementability, and cost based on engineering judgement. The alternatives selected for detailed analysis were evaluated and compared to the nine criteria required by the NCP (see Section VIII. of this ROD). As a part of the remedial alternative evaluation process, the NCP requires that a no-action alternative be considered at every site. The no-action alternative serves as a point of comparison for the other alternatives.

The RAOs set for the PAB Oil site (discussed in the Summary of Site Risks) are the concentration levels below which the media can be left in-place without treatment. This applies to all media except surface water, which must be removed regardless of contaminant concentrations to allow for the excavation of contaminated sediments and to provide space for the excavation, treatment and disposal of contaminated sludges and soils.

The following alternatives to address contamination at the site were evaluated in detail. Three additional alternatives (described as Alternatives 2, 3C, and 6 in the FS) were screened out earlier in the evaluation process because of shortcomings described in detail in the FS and are not presented here.

* Alternative 1A: No Action

* Alternative 1B: Limited Action/Institutional Controls.

* Alternative 3A: Surface Water Treatment, Excavation, Solidification/Stabilization, On-site Disposal, Clay Cover, Ground Water ("GW") Monitoring.

* Alternative 3B: Surface Water Treatment, Excavation, Solidification/Stabilization, Off-site Disposal, Limited GW Monitoring.

* Alternative 4: Surface Water Treatment, Excavation, Biological Treatment, Residuals Solidification/Stabilization, On-site Disposal, Clay Cover, GW Monitoring.

* Alternative 5A: Surface Water Treatment, Excavation, On-site Incineration, Ash and Soil Solidification/Stabilization, On-site Disposal, Clay Cover, GW Monitoring.

* Alternative 5B: Surface Water Treatment, Excavation, Off-site Incineration, Off-site Disposal of Ash, Limited GW Monitoring.

COMMON ELEMENTS

The descriptions and evaluations of remedial alternatives included in this ROD basically differ only in their treatment of the contaminated sludges and associated soils.

For the reasons discussed in the previous section, the treatment of ground water is not being considered as an implementable response action and was not carried forward through the detailed development of alternatives. However, because some inorganic contaminants were detected in the ground water and several potential alternatives will result in wastes being left on-site in a disposal unit, a ground water monitoring program will be implemented in all of the evaluated alternatives.

As part of the ground water monitoring program that is included in each of the following alternatives (with the exception of the "No

Action" alternative), additional development of the existing ground water monitoring wells and installation of new wells is planned. The purpose of this effort is to ensure that monitoring wells are placed in appropriate locations to monitor potential migration of contaminants from the disposal unit into the Abbeville Unit of the Upper Chicot Aquifer. Alternatives that include leaving wastes in an on-site disposal unit will have at least 30-years of ground water monitoring. Those alternatives that include final off-site disposal of treated wastes will have 5-years of ground water monitoring. If future monitoring indicates the selected remedy does not prevent the potential for ingestion of contaminated ground water, EPA will investigate the need for active remediation of the ground water.

In addition, preliminary screening of alternatives to address surface water contamination revealed that institutional control or containment measures would be ineffective in preventing human exposure or off-site migration, therefore, removal and treatment would be necessary. Therefore, all remedial alternatives discussed below contain an evaluation of the same surface water removal and treatment program.

The surface water removal and treatment program will consist of pumping the existing surface water through a treatment process of flocculation/sedimentation followed by sand filters and granular activated carbon units with final discharge to the site drainage ditch. The discharge will be sampled to ensure compliance with water quality criteria established by LDEQ in accordance with Section 303 of the Clean Water Act. All future surface water runoff that comes into contact with any site contaminants during the remedial action will also be collected and treated by the same process.

EPA conducted a stabilization/solidification ("S/S") treatability study as part of the RI/FS. Information obtained from this study will be useful in planning the future S/S treatability studies to be conducted during the design of the alternatives that include S/S as part of the remedy (Alts. 3A, 3B, 4, and 5A). The results of the S/S treatability study indicated limited, although hard to quantify, success at permanently stabilizing the organic chemicals of concern (cPAHs) contained in the waste material found in the disposal pits.

Finally, all alternatives that result in treated waste remaining on-site at levels that prohibit the future, unrestricted use of the property will trigger the statutory requirement for a 5-Year Review. This review is conducted every 5 years as a check to ensure that the implemented remedy is still protective and performing as designed.

It is also important to note that because the wastes found on-site are not, by definition or characterization, "hazardous wastes" as

defined by the Resource Conservation and Recovery Act ("RCRA"), then RCRA is not an "applicable" ARAR (ARARs are "applicable or relevant and appropriate requirements" that all CERCLA remedial actions must comply with). Therefore, none of the alternatives evaluated during the FS will have to meet the requirements of the RCRA Land Disposal Restrictions which only apply to "hazardous wastes". Several "action-specific" portions of RCRA are considered "relevant and appropriate", however, and are discussed later during the comparative analysis and selected remedy sections of the ROD.

All of the treatment alternatives evaluated as part of the FS will meet all other ARARs (such as the surface water discharge limits established to meet local water quality criteria) and will conform, where appropriate, to relevant RCRA treatment and design requirements. In addition, according to disposal manifests obtained during the RI, the wastes found at this site consist mostly of, if not all, "non-hazardous oil field wastes" presently regulated by the State of Louisiana under Statewide Order 29-B. For this reason, EPA and the State of Louisiana have determined that this State regulation required consideration as an ARAR during the evaluation of the potential remedial alternatives.

All cost and implementation times are estimates. The costs have a degree of accuracy of +50% to -30% pursuant to the "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA - Interim Final" OSWER Directive 9355.3-01, October 1988.

A brief description of the six alternatives evaluated to address the contamination at the site follows.

Alternative 1A: No Action

Capitol Cost: $0
Annual Operation and Maintenance: $0
Total Costs (present worth): $0
Time of Implementation:
Design/Remedial Action: 0 months
Ground water/Surface Water Monitoring: 0 years

The No Action alternative is required by the NCP (40 CFR 300) for consideration. No action assumes that nothing would be done to restrict site access, address the contaminants of concern, or monitor contaminant migration. This alternative will not provide overall protection of human health and the environment; compliance with ARARs; long-term or short effectiveness; or, reduce toxicity, mobility or volume of hazardous substances and, therefore is not favored by EPA.

Alternative 1B: Limited Action/Institutional Controls

Capital Cost: $152,000
Operation and Maintenance (annual): $78,300
Total Cost (present worth): $1,034,000
Time of Implementation:
Design/Remedial Action: 4 months
Ground Water/Surface Water Monitoring: at least 30 years

Description

For this alternative, there would be no remediation of the surface water, the waste pit sludges and associated soils or the ground water. The site would be fenced and institutional controls, in the form of deed notices and signs, would be used to advise future property owners and potential trespassers of the potential health risks from exposures to any of these wastes and associated soils. Long-term ground water and surface water monitoring would be conducted to monitor for changes in current conditions.

Alternative 3A: Surface Water Treatment, Excavation, Solidification/Stabilization, On-site Disposal, Clay Cover, Ground Water Monitoring

Capital Cost: $7,073,000
Operation and Maintenance (annual): $83,500
Total Cost (present worth): $8,032,000
Time of Implementation:
Design/Remedial Action: 20-22 months
Ground Water Monitoring: at least 30 years

Description

This alternative provides for complete removal, treatment and disposal of all impounded site surface water. The effluent from the treatment system would be monitored for parameters and limits set forth by the LDEQ.

Following the site surface water treatment, contaminated sludge and associated soils would be excavated and placed in an on-site mixing bin or pug mill. Batches of the contaminated material would be mixed with appropriate S/S agents as determined by a treatability study(ies) performed during the remedial design phase of the alternative. Upon completion of treatment, the material will be removed from the mixing bin or pug mill and disposed of in a new on-site excavation (final disposal unit), located in the former salt water pond. Following disposal, a compacted clay cover would be placed over the final disposal unit. A fence would be constructed around the final disposal unit to prevent potential

disturbances. The excavated and/or drained pits and ponds would be backfilled up to grade level with common soil backfill, graded and seeded. Ground water monitoring would be implemented to detect any changes in the current level of constituents in the ground water beneath the site.

Alternative 3B: Surface Water Treatment, Excavation, Solidification/Stabilization, Off-site Disposal, Limited Ground Water Monitoring

Capital Cost: $14,155,000
Operation and Maintenance (annual): $81,000
Total Cost (present worth): $14,485,000
Time of Implementation:
Design/Remedial Action: 20-22 months
Ground Water Monitoring: 5 years

Description

This alternative provides for complete removal, treatment and disposal of all impounded site surface water. The effluent from the treatment system would be monitored for parameters and limits set forth by the LDEQ.

Following the site surface water treatment, contaminated sludge and associated soils would be excavated and placed in an on-site mixing bin or pug mill. Batches of the contaminated material would be mixed with appropriate S/S agents as determined by a treatability study(ies) performed during the remedial design phase of the alternative. Upon completion of treatment, the treated material would be loaded into trucks, hauled off-site and disposed of in an off-site, permitted, hazardous waste landfill which is in compliance with EPA's off-site policy.

Although no contaminated material would remain on-site, limited ground water monitoring will continue following the implementation of the alternative in order to evaluate the overall effectiveness of the site remediation and to identify any changes in the current levels of constituents in the ground water.

Alternative 4: Surface Water Treatment, Excavation, Biological Treatment, Residuals Solidification/Stabilization, On-site Disposal, Clay Cover, Ground Water Monitoring

Capital Cost: $12,083,000
Operation and Maintenance (annual): $85,900
Total Cost (present worth): $13,113,000
Time of Implementation:
Design/Remedial Action: 37-39 months
Ground Water Monitoring: at least 30 years

Description

This alternative would involve treating and discharging all impounded site surface water. Following surface water treatment, the contaminated site sludge and associated soils would be excavated and biologically treated to reduce the organic content to the remediation goals. Following biological treatment, the treated waste will be further treated by S/S to reduce the remaining contaminants of concern to the remediation goals. This alternative will achieve at least a 90-99% reduction in concentration and/or mobility of all contaminants of concern as suggested by the NCP.

Upon completion of final treatment by S/S, the material will be disposed of in an on-site disposal unit. Following disposal, a compacted clay cover would be placed over the final disposal unit. A fence would be constructed around the final disposal unit to prevent potential disturbances. The excavated and/or drained pits and ponds would be backfilled up to grade level with common soil backfill, graded and seeded. Long-term ground water monitoring would be implemented to detect any changes in the current level of constituents in the ground water beneath the site.

Alternative 5A: Surface Water Treatment, Excavation, On-site Incineration of Sludge, Ash and Soils Solidification/Stabilization, On-site Disposal, Clay Cover, Ground Water Monitoring

Capital Cost: $20,069,000
Operation and Maintenance (annual): $84,900
Total Cost (present worth): $21,070,000
Time of Implementation:
Design/Remedial Action: 30-32 months
Ground Water Monitoring: at least 30 years

Description

This alternative provides for the complete removal, treatment and disposal of all impounded site surface water. Additionally, all of the site sludge would be incinerated on-site while the resulting ash and remaining contaminated soil would be solidified/stabilized and disposed of in an on-site disposal unit. A fence would be constructed around the final disposal unit to prevent potential disturbances. The excavated and/or drained pits and ponds would be backfilled up to grade level with common soil backfill, graded and seeded. Long-term ground water monitoring would be implemented to detect any changes in the current level of constituents in the ground water beneath the site.

In compliance with all ARARs, stack testing would be conducted during the trial burn(s) and the operation of the incinerator. Fuel storage facilities would have to comply with local codes. Compared with all of the previously described alternatives, this alternative would involve a somewhat more complex series of

operations, including: sampling and testing of the waste by the candidate incinerator operators, scheduling the service, mobilizing and erecting the incinerator and support facilities on the site, start-up/shakedown test burn(s), agency approval, sludge conditioning as necessary for feed conveyance, incineration of the waste, demobilization of the incinerator and site closure.

Alternative 5B: Surface Water Treatment, Excavation, Off-site Incineration at TSD Facility, Off-site Disposal of Ash, Limited Ground Water Monitoring

Capital Cost: $67,227,000
Operation and Maintenance (annual): $81,000
Total Cost (present worth): $67,557,000
Time of Implementation:
Design/Remedial Action: 16-18 months
Ground Water Monitoring: 5 years

Description

This alternative would involve treating and discharging all impounded site surface water as previously discussed in Alternative 3A. Following surface water treatment, the contaminated site sludge and associated soil would be excavated and transported by truck to off-site, permitted, treatment, storage and disposal ("TSD") facilities for incineration. The ash would be disposed of in an approved manner by the TSD facility operator. Over 1,800 truckloads of sludge/soil material would be removed from the site.

The excavated and/or drained pits and ponds would be backfilled up to grade with common soil backfill, graded and seeded. Although no contaminated material would remain on-site, limited ground water monitoring would continue following the implementation of the alternative in order to evaluate the overall effectiveness of the site remediation and to identify any changes in the current levels of constituents in the ground water.

VIII. SUMMARY OF THE COMPARATIVE ANALYSIS OF ALTERNATIVES

The EPA uses nine criteria to evaluate alternatives for addressing a Superfund site. These nine criteria are categorized into three groups: threshold, primary balancing, and modifying. The threshold criteria must be met in order for an alternative to be eligible for selection. The primary balancing criteria are used to weigh major tradeoffs among alternatives. The modifying criteria are taken into account after state and public comment is received on the Proposed Plan of Action.

NINE CRITERIA

The nine criteria used in evaluating all of the alternatives are as follows:

Threshold Criteria

Overall Protection of Human Health and the Environment addresses the way in which an alternative would reduce, eliminate, or control the risks posed by the site to human health and the environment. The methods used to achieve an adequate level of protection vary but may include treatment and engineering controls. Total elimination of risk is often impossible to achieve. However, a remedy must minimize risks to assure that human health and the environment are protected.

Compliance with ARARs, or "applicable or relevant and appropriate requirements," assures that an alternative will meet all related federal, state, and local requirements.

Primary Balancing Criteria

Long-term Effectiveness and Permanence addresses the ability of an alternative to reliably provide long-term protection for human health and the environment after the remediation goals have been accomplished.

Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment assesses how effectively an alternative will address the contamination on a site. Factors considered include the nature of the treatment process; the amount of hazardous materials that will be destroyed by the treatment process; how effectively the process reduces the toxicity, mobility, or volume of waste; and the type and quantity of contamination that will remain after treatment.

Short-term Effectiveness addresses the time it takes for remedy implementation. Remedies often require several years for implementation. A potential remedy is evaluated for the length of time required for implementation and the potential impact on human health and the environment during implementation.

Implementability addresses the ease with which an alternative can be accomplished. Factors such as availability of materials and services are considered.

Cost (including capital costs and projected long-term operation and maintenance costs) is considered and compared to the benefit that will result from implementing the alternative.

Modifying Criteria

State Acceptance allows the State to review the proposed plan and offer comments to the EPA. A State may agree with, oppose or have no comment on the proposed remedy.

Community Acceptance allows for a public comment period for interested persons or organizations to comment on the proposed remedy. EPA considers these comments in making its final remedy selection. The comments are addressed in the responsiveness summary which is part of this ROD.

SUMMARY OF THE COMPARATIVE ANALYSIS OF ALTERNATIVES

The comparative analysis was conducted to evaluate the relative performance of each alternative, compared to the other alternatives, in relation to each specific evaluation criterion.

Protection of Human Health and the Environment

The No Action alternative (Alt. 1A) does not provide protection of human health and the environment as described in the BRA analysis, therefore, it will not be discussed further in the criteria analysis. The Limited Action/Institutional Controls alternative (Alt. 1B), provides a reduction of the human health risks associated with the site by reducing the potential for direct contact with the site contaminants. The alternative does not however, reduce the potential for migration of contaminants from the site and also does not reduce environmental risks.

The S/S alternative with on-site disposal (Alt. 3A), provides protection of human health and the environment by reducing the mobility of inorganic and organic contaminants although the extent to which mobility would be reduced is unknown at this time. Direct contact is eliminated by land disposal following the treatment. On-site disposal requires engineering and institutional controls and long term monitoring and maintenance to evaluate continued protection.

On-site S/S with off-site disposal (Alt. 3B), provides protection by reducing the mobility of inorganic and organic contaminants and removing the materials from the site. This eliminates the need for engineering controls and long term monitoring and maintenance. Alternative 3B offers greater protection over Alternative 3A since contaminants would not remain at the site. There would remain a risk from the treated material, however, the risk would be transferred to the potential receptors at the final disposal location. Through proper management this risk can be minimized.

The biological treatment alternative (Alt. 4), provides protection by significantly reducing the organic contaminants. The risks associated with the inorganic contaminants would be reduced by S/S. On-site disposal requires engineering and institutional controls and long term monitoring and maintenance to evaluate continued protection. Since some contaminants would remain on site, the overall protection would be between that obtained from Alternative 3A and Alternative 3B.

The on-site incineration alternative (Alt. 5A), provides protection by removing and destroying the organic materials. The risks associated with the remaining metals and inorganic matter would be reduced by S/S. On-site disposal requires engineering and institutional controls as well as long term monitoring and maintenance to evaluate continued protection. The overall protection is anticipated to be slightly higher than that of Alternative 4 because it is assumed that incineration would destroy nearly all of the organic contamination whereas bioremediation technologies generally only reduce organic contaminant concentrations to slightly higher levels than that achieved by incineration.

The off-site incineration alternative (Alt. 5B), provides the greatest level of protection by removing all hazardous materials from the site and eliminating the need for long term maintenance and monitoring. Alternative 5B offers greater protection over Alternative 5A since contaminants would not remain at the site. There would remain a risk from the treatment residual, however, the risk would be transferred to the potential receptors at the final disposal location. Through proper management this risk can be minimized.

Compliance with Applicable Relevant and Appropriate Requirements (ARARs)

The Limited Action\Institutional Controls alternative (Alt.1B) requires no remedial action and therefore compliance with ARARs is not applicable. The remaining alternatives (Alt. 3A, 3B, 4, 5A, 5B) would all be performed in full compliance with all chemical- and action-specified ARARs and other criteria, advisories and guidelines which are applicable (i.e., surface water discharge limits established by LDEQ) or considered relevant and appropriate.

Action-specific ARARs to be considered as relevant and appropriate would include the standards set by the Federal government for the operation of hazardous waste incinerators, 40 CFR §264, Subpart O, for bioremediation landfarming under Subpart M, and for Subpart G, which requires the proper closure of hazardous waste units to the extent that all material will be stabilized and disposed of to a

level that would be protective of human health and the environment. In addition, Statewide Order 29-B contains action-specific requirements for waste pit closure, including specific chemical limits for remaining soil contaminant concentrations. If designed properly, none of the active treatment alternatives would have trouble complying with these relevant and appropriate ARARs.

There are no location-specific ARARs for the site.

Long-Term Effectiveness and Permanence

The Limited Action\Institutional Controls alternative (Alt. 1B) does not address the source of contamination. The barriers placed around the source can be bypassed and would require long term maintenance. This alternative is not effective for protection of environmental receptors.

The S/S alternatives (Alt. 3A & 3B) can potentially immobilize organic and inorganic contaminants, however, final total concentrations in the waste are not expected to be reduced below remedial goals. The contaminants are immobilized but not necessarily reduced or destroyed giving a lessor degree on permanence than the alternatives that actively destroy all or a part of the organic contaminants. Previous studies have shown difficulty in effectively and permanently stabilizing wastes with high levels of organic contamination. Actual S/S treatability studies conducted on the PAB Oil site wastes did not confirm the effective and permanent stabilization of the organic chemical of concern, PAHs.

Both on-site and off-site disposal will minimize the potential for future ground water contamination by encapsulating the waste, however, both will require monitoring and maintenance to evaluate the potential for future releases. Alternative 3A requires the monitoring and maintenance at the on-site disposal unit compared to similar activities at an off-site facility.

Based on historical studies on similar wastes, the biological treatment alternative (Alt. 4) is expected to significantly reduce (90-99%) the level of organic contaminants in the waste material prior to the stabilization of the inorganic contaminants. This alternative would therefore provide greater long-term effectiveness and permanence than Alternatives 3A and 3B. Long-term maintenance would still be required because the disposal unit containing the stabilized material will need care to ensure it continues to function properly.

The incineration alternatives (Alt. 5A & 5B) would remove and destroy organic contaminants. Additional treatment (S/S) for inorganic contaminants would be needed. With the destruction of the organics, the long-term effectiveness of these alternatives would be slightly greater than Alternative 4 because it is not

expected that bioremediation technologies could reduce the organic concentrations to levels that total thermal destruction can achieve. For the site, Alternative 5B offers greater long-term effectiveness over Alternative 5A since contaminants would not remain and long term monitoring would not be required. The monitoring of the overall effectiveness of the treatment process would still be performed at the final disposal location.

Reduction of Toxicity, Mobility and Volume Through Treatment

The Limited Action\Institutional Controls alternative (Alt.1B) does not treat or destroy the contaminants and does not satisfy the NCP's preference for treatment. The hazards posed by the principal site contaminants are not reduced.

The remaining alternatives (Alt. 3A, 3B, 4, 5A, 5B) allow for all waste to be treated and the mobility of the contaminants to be reduced. In addition to reducing the mobility, biological treatment (Alt. 4) and incineration (Alt. 5A & 5B) would significantly reduce and/or eliminate the toxicity resulting from the organic contaminants. The S/S process would not reduce the organic concentration and would not necessarily reduce the toxicity of the contaminants in the treated matrix. Some reduction in toxicity may be achieved by changing the form of an inorganic constituent, however, this reduction will be realized in all the alternatives.

The total volume of waste will be reduced with the incineration alternatives (Alt. 5A & 5B). The volume of contaminated media, however, will actually be increased with Alternatives 3A, 3B, and 4. This volume increase is due to the fact that the S/S and bioremediation alternatives inherently involve the addition of additives during the process to enhance treatment effectiveness.

Short Term Effectiveness

The Limited Action\Institutional Controls alternative (Alt.1B) does not increase the risk to the community or pose any significant risk to the site workers but does not alleviate the potential impact on the environment from existing conditions. The duration of implementation for this alternative is less than for any other.

The remaining alternatives (Alt. 3A, 3B, 4, 5A, 5B) require excavation of the hazardous materials but do not pose any uncontrollable risks to site workers. The alternatives which retain the hazardous materials on the site (Alt. 3A, 4, 5A) pose less of a short-term threat to the community than the alternatives which require off-site transportation (Alt. 3B & 5B) through the community to an off-site treatment or disposal facility due to the inherent risks associated with transporting hazardous materials. The incineration alternatives (Alt. 5A & 5B) both require close

control of the process to limit air emissions. Implementation duration of these alternatives ranges from 16 to 39 months, not including ground water monitoring.

Implementability

The S/S (Alt. 3A & 3B) and the biological treatment (Alt.4) alternatives are readily implemented due to no unusual approvals or coordination. All services and materials are readily available. However, the duration of Alternative 4 depends on biological activity which can be difficult to control.

The incineration alternatives (Alt. 5A & 5B) also have readily available services and materials. Implementing on-site incineration (Alt. 5A) remedies very often involve time consuming administration obstacles such as trial burns and community education exercises, while off-site incineration (Alt.5B) only requires the use of a TSD facility which is in compliance with EPA's off-site disposal policy. Available incinerator capacity for the volume of waste present could be a factor in the scheduling of the off-site incineration.

Those alternatives with off-site disposal (Alt. 3B & 5B) are more easily implemented than those which require on site construction of a land disposal unit (Alt. 3A, 4, & 5A).

Cost

The estimated costs for the remedial alternatives range from 1 million for the Limited Action/Institutional Controls alternative (Alt.1B) to 67.5 million for the off-site incineration alternative (Alt.5B). The least expensive alternative that provides treatment of the contaminants is the stabilization and on-site disposal alternative (Alt.3A).

State Agency Acceptance

The Louisiana Department of Environmental Quality is in agreement with the selection of Alternative 4 as the preferred remedy for the PAB Oil site (see Appendix #3). No comments regarding the other alternatives were provided.

Community Acceptance

EPA solicited input from the community on the remediation alternatives proposed to address sediment and surface soil contamination at the PAB Oil site. The comments received from the public, both local citizens and potentially responsible parties, indicate that the community is supportive of the proposed remedy. All comments received during the public comment period and the EPA responses are in the attached Responsiveness Summary.

IX. THE SELECTED REMEDY

Based on consideration of the requirements of CERCLA, the comparative analysis of alternatives, and public comments, the EPA has determined that Alternative 4 (Surface water treatment, biological treatment, residual S/S, on-site disposal, ground water monitoring) will best provide a remedy that is protective of human health and the environment.

As discussed in Section IV of this ROD, the specific remedial objectives determined to be necessary at the PAB Oil site are:

1. Prevent direct contact, ingestion, and migration of the disposal pit sludges and associated soils.

2. Prevent direct contact with contaminated surface waters.

3. Prevent the potential for human exposure to contaminated ground water.

The selected remedy (Alternative 4) will meet these objectives by:

- treating all sludges and associated soils found at the site with contaminant concentrations above the RAOs (as described at the end of Section VI. and Table #11 of this ROD) using bioremediation, followed by stabilization/solidification and on-site disposal and monitoring.

- treating, monitoring, and discharging all surface water presently located on-site, as well as any future surface water contacting contaminated media during the remedial action, using activated carbon and sand filtration units.

- monitoring ground water through the use of new and existing monitoring wells to ensure that contamination source treatment actions are successful and ground water quality degradation does not occur.

Since all contaminated sludges and associated soils above the RAOs will undergo treatment, the long-term effectiveness and permanence of the selected remedy is expected to be excellent. There are not expected to be any unmanageable short-term risks associated with this remedy, and this remedy complies with all ARARs. The selected remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable, and will be cost effective. The selected remedy will also satisfy the preference for treatment as a principal element. In addition, both the public and State have indicated acceptance of the selected remedy. Therefore, the selected remedy provides the best balance among alternatives with respect to the criteria used to evaluate remedies.

The primary balancing criteria that weighed heaviest and contributed most to the selection of Alternative 4 over the other evaluated alternatives were the long-term effectiveness and permanence criteria and cost criteria. All of the active treatment alternatives could basically provide a significant and adequate degree of reduction of toxicity, mobility, or volume through treatment as well as short-term effectiveness and implementability. It became clear, however, from the results of the RI/FS (as well as the S/S treatability study), that the alternatives involving bioremediation and incineration provided a greater degree of long-term effectiveness and permanence than the alternatives that contain S/S as the primary treatment process. The bioremediation and incineration technologies actually destroy the organic contaminants as opposed to simply immobilizing them in a solid matrix. In addition, the estimated cost of the bioremediation alternative (approximately $13 million) versus the estimated cost of the cheapest incineration alternative (> $20 million), while providing a similar degree of long-term effectiveness and permanence, significantly favored selection of Alternative 4.

Based on other successful bioremediation studies that have been conducted on wastes similar to those found at the PAB Oil site, it is expected that bioremediation will successfully degrade the organic contaminants present at the site. The selected remedy requires that detailed treatability studies be performed during the Remedial Design (or earlier if appropriate) to determine the optimum conditions for biotreatment of the wastes and residual S/S and final disposal. Treatability studies for S/S were performed during the RI/FS and data from those studies will be useful in designing the S/S portion of the remedy.

A more detailed description of the selected remedy follows, including major estimated cost assumptions. It should be noted that certain engineering considerations of the remedy may change as a result of the treatability study findings and/or during the remedial design. The only significant change anticipated regards the actual bioremediation process to be implemented. The treatability study will help determine the most cost effective bioremediation process to be used to meet the RAOs and it may differ from the solid-phase bioreactor process outlined in the following discussion. A more detailed cost estimation for the selected remedy is included as Appendix #4.

Engineering Remedial Design

♦ The engineering remedial action plans will include: Work Plan, Health and Safety Plan, Sampling and Analysis Plan, Quality Assurance Project Plan, and Operation and Maintenance Plan.

♦ The engineering remedial design will include intermediate reports for review and 100 percent Final Construction Plans and Specifications ready for bidding.

Site Preparation

♦ The clearing, grubbing and stripping of site vegetation (grasses, bushes, small trees) will be performed on three acres of the site including the site drainage ditch, the former tank farm area, the berms associated with the disposal pits and ponds and the pond islands/mounds.

♦ Site fencing includes a 6-ft high chain link fence with 3 strands of barbed wire and a 20-ft rolling gate at the site entrance. This fence will be constructed around the entire site for health, safety and security precautions during the site remedial activities. This fence will be removed after completion of the remedial action. An additional fence will be constructed around the final disposal unit prior to the removal of the perimeter fence.

♦ A concrete decontamination pad with curbs will be constructed for trucks and other large equipment. A sump, a wastewater storage tank with a pump and a high pressure steam sprayer will be utilized at the decontamination pad. The collected decontamination water will be treated in the same manner as the site surface water.

♦ Improvements to the existing main site access road will be required in order for it to be upgraded to a haul road capable of continuous heavy load traffic in wet conditions. The cost estimate also includes upgrades to other site access routes around the site and for providing a suitable base for a common working area.

♦ A pre-engineered steel storage building will be constructed. The cost estimate assumed a 100 ft by 100 ft steel building with a small corner office and large drive-in doors. It also includes a 100 ft by 100 ft, 8 inch thick, concrete slab on grade.

♦ An electric hook-up will be made and a non-potable water supply well will be installed to provide the site with the necessary utilities for the remedial activities.

Surface Water Treatment

♦ All impounded surface water on site will be treated. Confirmation sampling at the time of remediation may allow water in the northwest pond and possibly the salt water pond to be partially drained without treatment. The treatment system effluent will be monitored. The parameters and sample frequency will meet suggested guidelines set forth by the LDEQ.

♦ Granulated activated carbon ("GAC") units and high flow rate sand filters will be purchased for the remediation. Other major components of the treatment system (pumps, hoses, etc.) will be leased, since they can be obtained locally and will only be used periodically during the remaining remedial activities.

♦ The GAC units will not need to have the carbon replaced during the duration of the remediation (original carbon will not be spent). At the completion of the project, the used carbon will be vacuumed out of the GAC units with a vacuum truck and placed with the site material (sludge, etc.) to be treated and disposed.

♦ The filter sand and removed solids will be placed with the site material (sludge, etc.) to be treated and disposed.

♦ Two treatment trains will be operating simultaneously. GAC units will be in parallel, not series.

♦ A total of 300 gpm (both treatment trains combined) operating for 22 hours/day on a total of 9,187,000 gallons (on-site water plus accumulated rain water) will take 24 days. The total volume of water to be treated takes into account the local average annual precipitation rate of 59 inches per year (0.16 inches per day) falling on the estimated surface area of ponds, pits and inside berms (510,600 ft^2).

♦ The O&M costs include additional water treatment required after initial pump-down and during the remaining portions of the remedial action. Treatment is assumed to occur on an average of one week during every month of the remedial implementation phase.

Sludge/Soil Excavation and Transport

♦ The estimated volumes of sludge/soil/sediment to be treated are listed below:

Site Source Designation	Biological Treatment (yd^3)	Solidification/ Stabilization (yd^3)
Northwest Pit Sludge	9,200	9,200
Northeast Pit Sludge and Scum	5,400	5,400
South Pit Sludge	900	900
Underlying Pit Soils*	10,800	
Salt Water Pond Sediments**	520	520
Tank Soils*	40	40
Interior NW Pit Berm Soil*	60	60
TOTAL	26,900	16,100

* Volumes stated are in-place volumes; no bulking or swell factor was accounted for.

** Sediments are treated as sludges and are discussed as such.

♦ Confirmation samples will be taken from the underlying soil in each remedial area prior to excavation/treatment completion in

order to verify that all of the contaminated material above the remedial action objectives has been excavated for treatment.

Biological Treatment

♦ Cost estimates for the selected remedy were made on the assumption that biological treatment of the sludge and contaminated soil will be accomplished utilizing an aerobic, solid-phase bioreactor. This system was considered to be more advantageous than a land treatment system due to the limited available acreage on-site and longer estimated time frames to achieve treatment goals. It is important to note here that the final bioremediation treatment process and associated costs implemented at the PAB Oil site will be determined based upon results from the treatability studies and other design considerations.

♦ For cost assumption purposes, it is assumed that two five-unit sets of aerobic, solid-phase bioreactors will be used. Both sets of bioreactors will be utilized initially for treating contaminated sludge. Then, when contaminated soil is ready for treatment, one five-unit set of bioreactors will be converted for the required conditions necessary for the specific treatment of soil. Each bioreactor tank would hold a maximum of 40 yd^3 of contaminated media with a retention time of 5 to 10 days. Therefore, a potential volume of up to 400 yd^3 of material may be treated in one work week. These details would have to be further defined in a treatability study. Little volume reduction will be realized from biological treatment, however, the resulting residue from the treated sludge will have considerably less oil content which may improve residue handling operations.

♦ It is assumed that biological treatment of most of the soils underlying the pits will be sufficient in reducing contaminant levels such that no further treatment (i.e., S/S) will be required. This will be possible because the RI data did not show elevated levels of inorganics in this media which would require treatment using S/S. The resulting residue therefore would be disposed of directly into the on-site disposal unit after consideration is given to the strength of the material to support the disposal unit cap. The sludge and other associated soil residue with elevated inorganic contaminants, however, will require S/S prior to disposal in the on-site disposal unit.

♦ According to the FS, costs for biological treatment of the contaminated sludge and soil have been estimated to be $160 per cubic yard. This includes mobilization, material handling, treatment operations and demobilization. To obtain this cost, comparisons were made of the contaminated media from this site to previous projects at other sites in which similar contaminated

media has been successfully treated under similar conditions. Biological treatability studies have not yet been performed on the contaminated media from this site, so more definitive costs and design parameters cannot be estimated.

Residuals Solidification/Stabilization

♦ The biologically treated residuals will be stabilized and placed as backfill in a final disposal unit to be created in the east-northeast portion of the salt water pond. Confirmation samples will be collected from the treated material in order to verify that treatment design criteria are met (as further discussed later in this section of the ROD). The final disposal unit will have, as a minimum, a 2 ft thick compacted clay cover or other suitable cover as determined by the treatability studies.

♦ A treatability study performed on the sludge at the site indicated that sufficient treatment of inorganics can be obtained through S/S. This estimate assumes that the optimum S/S agent mix utilized in the treatability study will also be used for the residuals. This S/S agent mix consists of 95% portland cement (94 pcf), 3% S.D.-1 (organo-philic clay) (93.5 pcf), 1% flyash (75 pcf) and 1% of equal amounts of slag powder and $FeCl_3$ (100 pcf). Additional treatability study work is included as part of the engineering remedial design to further evaluate the binder mix including the evaluation of commercial or proprietary binders. A major determination to be made during the treatability study is the degree to which the residuals will require organic stabilization (i.e., immobilization). This factor will have a great impact on the final binder design and cost.

♦ The total volume of biologically treated residuals requiring S/S is estimated at 16,100 yd^3. Sludge, assumed to have a unit weight of 100 pcf, accounts for 16,000 yd^3 of the total residuals requiring additional treatment. The remaining 100 yd^3 is soil, assumed to have a unit weight of 120 pcf. Therefore, the total weight of residuals to be solidified, stabilized is estimated at 21,800 tons.

♦ The S/S agent will be mixed at a rate of 25% by dry weight. Therefore, an estimated 5,450 tons of S/S agent will be required.

♦ The $85 per yd^3 unit cost of S/S the residuals ($65 per yd^3 of residual and $20 per yd^3 for labor) includes the on-site delivered cost of the S/S agents ($190 per ton) and the manual mixing (by a trackhoe mixer) of the S/S agents with the residuals and water, if necessary, from the site water well.

Backfill Pits and Final Disposal Unit

♦ The estimated quantities of S/S material and soil backfill are listed as follows:

Item	Quantity (yd^3)
Contaminated Residuals Requiring S/S	16,100
Contaminated Residuals After S/S Treatment	20,900
Contaminated Residuals After Bio. Treatment Only	10,800
Final Disposal Unit	31,700
Width of Unit Bottom (in feet)	225
Length of Unit Bottom (in feet)	355
Volume (w/1:1 sidewalls and 10 ft deep)	31,700
Clean, On-Site Backfill Material	
Salt Water Pond Berms/Islands/Mounds	2,700
Outer Disposal Pit Berms	3,500
Final Disposal Unit (Clay)	31,700
	37,900
2' Compacted Clay Cover	
Final Disposal Unit (255 ft x 385 ft)	7,300
6" Topsoil	
Final Disposal Unit (255 ft x 385 ft)	1,800
Disposal Pits (425 ft x 275 ft)	2,200
Remainder of Pond Area and Misc. Areas	6,800
Common Soil (Needed for backfill)	
Final Disposal Unit (240 ft x 330 ft)	0
Disposal Pits	37,900
Salt Water Pond & NW Pond	13,100
Total Common/Clay Soil Needed	58,300
	58,300
On-Site Common/Clay Soil	-37,900
Off-Site Common Soil Borrow	20,400

The volumes required for backfill include the volumes of material necessary to fill the disposal pits and ponds up to ground level following sludge and soil removal. The existing berms will be leveled and pushed into the pits and ponds for use as backfill.

♦ The unit costs to backfill the pits and final disposal unit reflect both the purchase and placement costs of suitable off-site borrow consisting of common soil ($10/yd^3), clay (used as a 2-foot thick cover) and topsoil ($20/yd^3). Both the common and the clay soil types are to be compacted. There is suitable clay on-site due to the excavation of the final disposal unit to avoid off-site purchase; therefore, the clay placement unit cost ($5/yd^3) includes placement and compaction only.

♦ Geotechnical testing will be required for the placement of the S/S residuals in the final disposal unit. The compacted common and clay soil backfill will also require testing. Permeability testing of field and laboratory prepared samples will be required for backfilling the final disposal unit. Other geotechnical testing performed on the final disposal unit will include Proctor compaction, Attenberg limits and in-situ soil density and moisture content determination.

Ground Water

♦ Four additional shallow (40 ft), 2 inch PVC ground water monitoring wells will be installed on or adjacent to the site to monitor the up- and down-gradient ground water quality near the final disposal unit and the entire site as a whole.

♦ The unit cost of $4,000 per well includes all labor and materials to install and develop each well. The price also includes the oversight of one geologist/engineer.

♦ In an effort to reduce the high suspended solids content encountered previously, prolonged pumping/purging (at least 200 gallons per well) will initially be performed on 12 of the 16 site monitoring wells. These wells will be sampled during the O&M activities. It is assumed that the four wells adjacent to the pits will be abandoned to facilitate remediation.

♦ The purged water will not require collection for off-site disposal.

Operation and Maintenance

♦ O&M costs assume an annual engineer's inspection and report of the condition of the clay cap, mowing of vegetation and erosion repair and revegetation of ten percent of the cap area every five years for a period of 30 years.

♦ The site ground water will be monitored by sampling 12 site monitoring wells twice a year for 30 years.

♦ The unit cost of $63,000 per year for monitoring well sampling and analysis includes two sampling events. The costs within each sampling event include analytical costs, estimated at $1,750 per well, travel and other direct costs for two technicians for a total of eight days travel and field work.

♦ The $1,750 per well analytical cost includes analyzing for TCL volatile organics, TCL base neutral/extractables and total and dissolved TAL metals. The analytical reporting is to be in the U.S. EPA CLP report format.

♦ Semi-annual engineer's reports will be developed throughout the 30 year ground water monitoring period to evaluate and present the most recently collected ground water quality data.

All of the above specifics identified in the description of the selected remedy are presented for cost assumption purposes. These specifics will be better defined during the final design.

TREATMENT GOALS

As discussed earlier, Tables #10 and #11 describe the established RAOs for surface waters and sludges and associated soils at the PAB Oil site. All contaminated media found at the site above these RAOs will be collected and treated as described by the selected remedy. Treatment goals have been established to determine if the selected remedial actions are effective before on-site disposal (sludges and associated soils) or discharge (surface water) can occur.

SURFACE WATER

The treatment goals for surface water are the same as the RAOs. The treatment goals are based on Federal and State Water Quality Standards and discharge limitations established by the State of Louisiana. As mentioned earlier, pre-RA monitoring may indicate certain areas of the site that contain surface waters below the RAOs. This surface water will not require treatment and can be directly discharged into the site drainage ditch. The areas that contain surface water with contaminant concentrations above the RAOs will be treated to at least the RAO levels before discharge. The State of Louisiana will be responsible for establishing the final discharge limitations prior to treatment of the surface water, thus, these treatment goals may be added to and/or changed from those stated in Table #10.

SLUDGES AND ASSOCIATED SOILS

The treatment goals for the sludges and associated soils are based on the statutory objectives of reducing the toxicity and/or mobility of the contaminants, to the maximum extent practicable, as well as reducing actual or potential risk to human health and the environment to within acceptable values. The specific treatment goals for the PAB Oil selected remedy are as follows:

- To use biological treatment to reduce the total organics, measured as total petroleum hydrocarbons (TPHs), to the condition at which biological treatment is considered no longer effective (as defined by future treatability studies) for all sludges and associated soils which are visibly contaminated and/or with initial total cPAH concentrations above the RAO of 3 ppm and TPH concentrations above 1% (10,000 ppm). This will ensure treatment to the maximum extent practicable and maximize the benefit of S/S treatment if necessary for organics.

- When optimum treatment is achieved, TPH concentrations will be reduced at least 90% or to 10,000 ppm (factoring in adjustments for dilution) and cPAH concentrations will be reduced to within the acceptable risk range of 10^{-6} to 10^{-4}. In addition, total noncarcinogenic PAHs will be reduced to a HI<1. These risk evaluations are made with respect to a potential residential land use scenario, without consideration of the benefits of any cover or containment. If these bioremediation treatment goals are not demonstrated during the treatability studies or at any time during the remedial action once implemented, then: (1) the effectiveness of subsequent S/S treatment must be evaluated and shown to be effective in permanently immobilizing residual organic contaminants for preventing potential risk from direct ingestion and/or protecting ground water degradation; and (2) other alternative organic treatment or disposal options are evaluated and compared with the results from (1).

- To reduce the toxicity and/or mobility, through S/S, of any site soil or bioremediation residual with inorganic concentrations above the RAOs (arsenic, 10 ppm and barium, 5,400 ppm). In addition, any bioremediated residual with PAH concentrations remaining above the RAO of 3ppm or HI>1.0 will also be addressed during the S/S treatment process. Measurement of S/S effectiveness with regard to toxicity and/or mobility will be adjusted for dilution and will comply with the Region 6 draft S/S Effectiveness Definition attached to the ROD. (see Appendix #5).

In addition, for other previously unidentified carcinogenic compounds (those compounds that were not listed in the RAOs or treatment goals as compounds of concern) that upon confirmatory sampling after excavation or treatment, become identifiable and exhibit a total risk greater than 10^{-6}, must also be addressed. For noncarcinogenic compounds, maximum concentrations left untreated will be those with an HI less than or equal to 1.0.

GROUND WATER

As mentioned earlier, ground water will be monitored for at least 30 years after completion of the remedial action as part of the O&M and 5-Year Review activities at this site. If at any time during this monitoring EPA determines that source treatment actions were ineffective in preventing ground water quality degradation which poses a risk to existing or future users, then additional investigative and treatment alternative actions will be implemented. These additional actions would be implemented under a separate Operable Unit and ROD.

Criteria to be evaluated will include statistical changes in ground water contaminant concentrations, the identification and characterization (including risk assessments) of contaminant plume(s) attributed to the site, and comparisons with appropriate drinking water standards. The ground water monitoring program will be developed during the Remedial Design and contained in the Operation and Maintenance Plan.

X. STATUTORY DETERMINATIONS

EPA's primary responsibility at Superfund sites is to select remedial actions that are protective of human health and the environment. Section 121 of CERCLA also requires that the selected remedial action for the site comply with applicable or relevant and appropriate environmental standards established under Federal and State environmental laws, unless a waiver is granted. The selected remedy must also be cost effective and utilize treatment or resource recovery technologies to the maximum extent practicable. The statute also contains a preference for remedies that include treatment as a principal element. The following sections discuss how the selected remedy for the PAB Oil site meets the statutory requirements.

Protection of Human Health and the Environment

In order to protect human health and the environment, the contaminated sludges, associated soils, and surface water that exceed RAOs will undergo a combination of excavation, treatment and

final containment. These media will be treated and contained to meet the performance standards, or treatment goals, set forth in the ROD. These performance standards will assure that the site risks fall within the acceptable excess cancer risk range of 10^{-4} to 10^{-6} and noncarcinogenic hazard index will be reduced to less than 1.0. The performance standards will also assure that 1) direct contact with contaminated sludges, associated soils and surface water will cease, 2) contaminants will cease to act as a potential surface and ground water contamination source, and 3) ground water monitoring will enable EPA to monitor the remedy's effectiveness and prevent the future possibility for human exposure to potentially contaminated ground water.

The selected remedy protects human health and the environment by reducing levels of contaminants through treatment and containment. Of all the alternatives evaluated for the contaminated media at the site, the selected remedy provides the best, cost effective protection to human health and the environment. No unacceptable short-term risks will be caused by implementing this remedy.

Compliance With ARARs

Each component of the selected remedy will meet all applicable or relevant and appropriate requirements. The ARARs are presented below:

Chemical-Specific ARARs

1. **State and Federal Water Quality Standards (Section 303, Clean Water Act, 1987, as amended and 33 LAC 11).** Applicable because the discharge of the treated surface water from the pits, ponds and collected rain water will be discharged to the site drainage ditch which eventually enters an off-site water body.

2. **National Ambient Air Quality Standards (40 CFR 50.6)(NAAQS).** Relevant and appropriate during excavation, biological treatment and S/S.

Action-Specific ARARs

1. **Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities (40 CFR 264).** Relevant and appropriate during storage, biological treatment and S/S. In particular, Subpart G,L,M, and N are relevant and appropriate during waste treatment and related operations, disposal, and long-term monitoring.

The portions of these subparts that are ARARs for the selected remedy are further defined below:

A. Requirements for placement of a cap over waste as required by 40 CFR 264.310(a), 264.117(c), and 264.310(b).

B. Closure of land treatment units as required by 40 CFR 264.280.

C. Operation of land treatment units as required by 40 CFR 264.271 and 264.273.

D. Surface water control as required by 40 CFR 264.251(c)(d) and 264.301(c)(d).

2. **Amendment to Louisiana Statewide Order No. 29-B, dated October 20, 1990.** The State of Louisiana has identified Sections 129.B.6 and 129.M.7 as relevant and appropriate for the selected remedy because they address pit closure and land treatment requirements for non-hazardous oil field waste (as defined by Statewide Order 29-B) which were disposed at the PAB Oil site.

As discussed in EPA's August 1988 CERCLA Compliance with Other Laws Manual (EPA/540/G-89/006), action-specific ARARs should be refined as appropriate during remedial design, when specific information regarding size and operation of treatment facilities becomes available.

Cost Effectiveness

EPA believes that the selected remedy is cost effective in mitigating the threat of direct contact and reducing the potential for ground water contamination from site wastes. Section 300.430(f)(ii)(D) of the NCP requires EPA to determine cost effectiveness by evaluating the following three of the five balancing criteria to determine overall effectiveness: long-term effectiveness and permanence, reduction of toxicity, mobility or volume through treatment, and short-term effectiveness. Overall effectiveness is then compared to cost to ensure that the remedy is cost effective.

The estimated present worth cost for the selected remedy is $13,113,000. This alternative costs almost $5,000,000 more than the stabilization alternative (with on-site disposal) yet the selected remedy is significantly more effective and protective of human health and the environment due to the significant differences in reduction in toxicity and level of permanence achieved with organic destruction versus immobilization. Also, the selected

remedy provides a similar degree of overall protectiveness as the more costly incineration alternatives ($13,113,000 vs. $21,070,000 and $67,557,000 respectively).

Utilization of Permanent Solutions and Treatment or Resource Recovery Technologies to the Maximum Extent Practicable

EPA believes the selected remedy represents the maximum extent to which permanent solutions and treatment/resource recovery technologies can be utilized in a cost effective manner for the PAB Oil site.

Of those alternatives that are protective of human health and the environment, and comply with ARARs, EPA has determined that the selected remedy provides the best balance of trade offs in terms of long-term effectiveness and permanence, reduction in toxicity, mobility, or volume achieved through treatment, short-term effectiveness, implementability, costs, the statutory preference for treatment as a principal element, and taking into consideration State and community acceptance.

Preference for Treatment as a Principal Element

The statutory preference for remedies that employ treatment of principal threats as a principal element will be satisfied through implementation of the selected remedy. This remedy will utilize bioremediation to address organic contamination of the sludges and associated soils, stabilization to address the inorganic contamination (and any residual organic contamination above the RAOs remaining after the bioremediation step, and GAC/sand filters to address the contaminated surface water.

XI. DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan was released for public comment in March 1993. The Proposed Plan identified Alternative 4, surface water treatment, excavation, bioremediation, residual S/S, and on-site disposal as the preferred alternative for the PAB Oil site. EPA reviewed all written and verbal comments submitted during the public comment period. Upon review of these comments, it was determined that, with the exception of the change of the arsenic remedial goal from 14 ppm to 10 ppm for sludges and associated soils, no significant changes to the remedy, as originally identified in the proposed plan, were necessary.

Background data is being used to establish the remedial goal for arsenic in the sludges and associated soils because native soils in the area of the PAB Oil site contain naturally occurring arsenic at levels above the $1x10^{-6}$ point of departure (0.36 ppm). EPA had

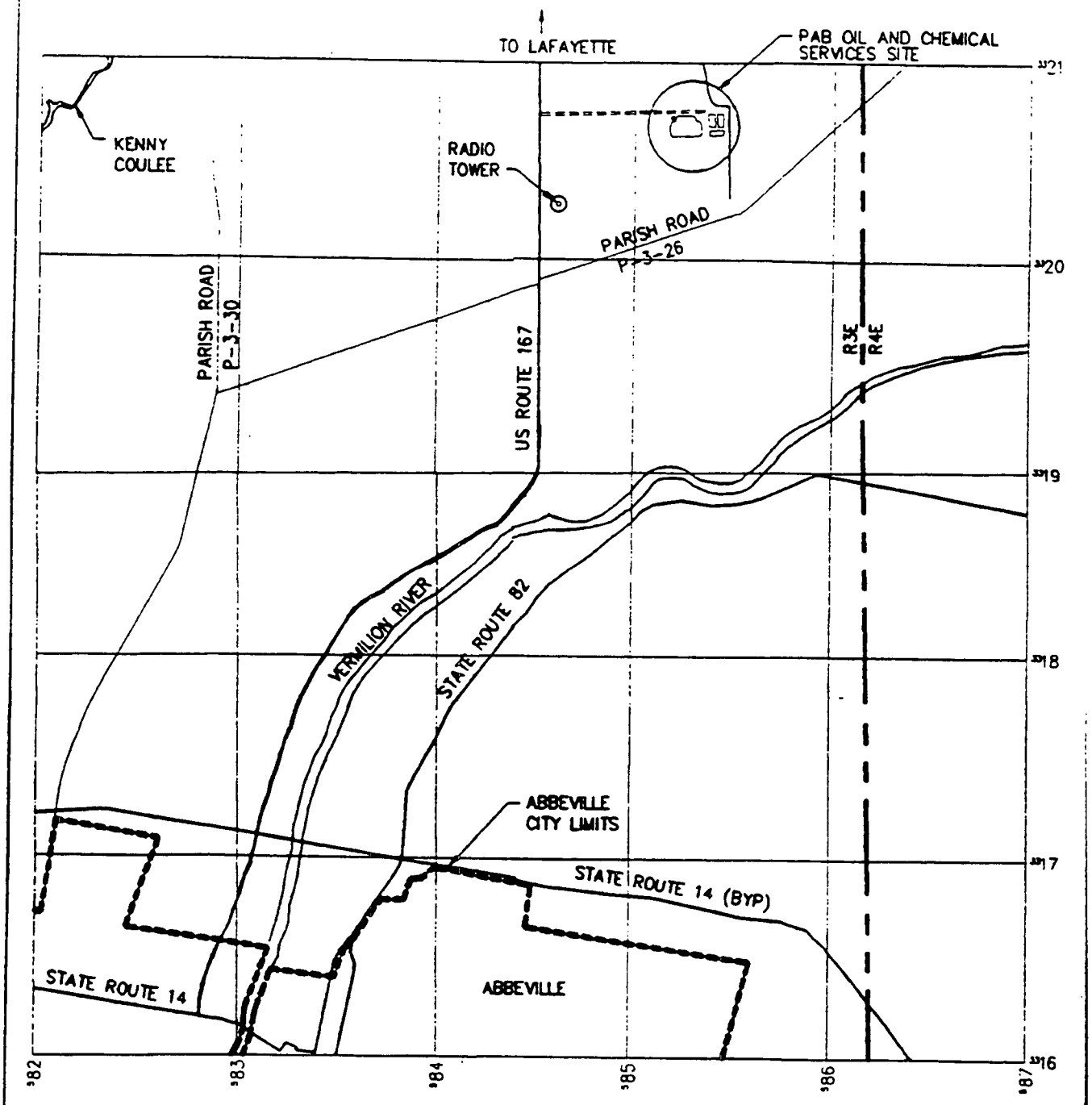
originally proposed the arsenic remedial goal of 14 ppm based on the "maximum" background soil sample collected during the RI. Both the State of Louisiana and the local citizens have commented that Statewide Order 29-B contains a limit of 10 ppm for arsenic in soils upon closure of a waste pit containing non-hazardous oil field waste.

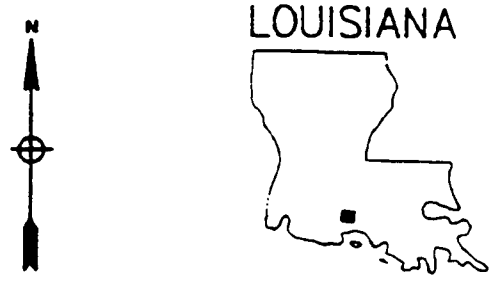
Further statistical evaluation of the background soil data indicates that the arsenic 95% UCL of the arithmetic mean would be less (approx. 8.2 ppm) than the established State criteria of 10 ppm. For this reason, EPA has determined that the appropriate remedial goal for arsenic in the sludges and associated soils would be changed to 10 ppm.

Because the existing PAB Oil site background soil data base includes three discrete samples whose values were greater than this revised remedial goal (10.3 ppm, 11.0 ppm, and 14.1 ppm), appropriate methods will need to be developed to evaluate attainment of this goal during the post-excavation confirmatory sampling process to ensure that minor, infrequent exceedances do not result in unnecessary remediation. The procedures to be used during the confirmatory sampling process will be developed in accordance with Methods for Evaluating the Attainment of Cleanup Standards, Volume 1: Soils and Solid Media, EPA 230/02-89/042.

FIGURE #1

Figure #1





QUADRANGLE LOCATION

2500' 0 2500' 5000'

SCALE: 1"=2500'

SITE LOCATION MAP PAB OIL AND CHEMICAL SERVICES VERMILION PARISH, LOUISIANA

010885\PAB36

FIGURE #2

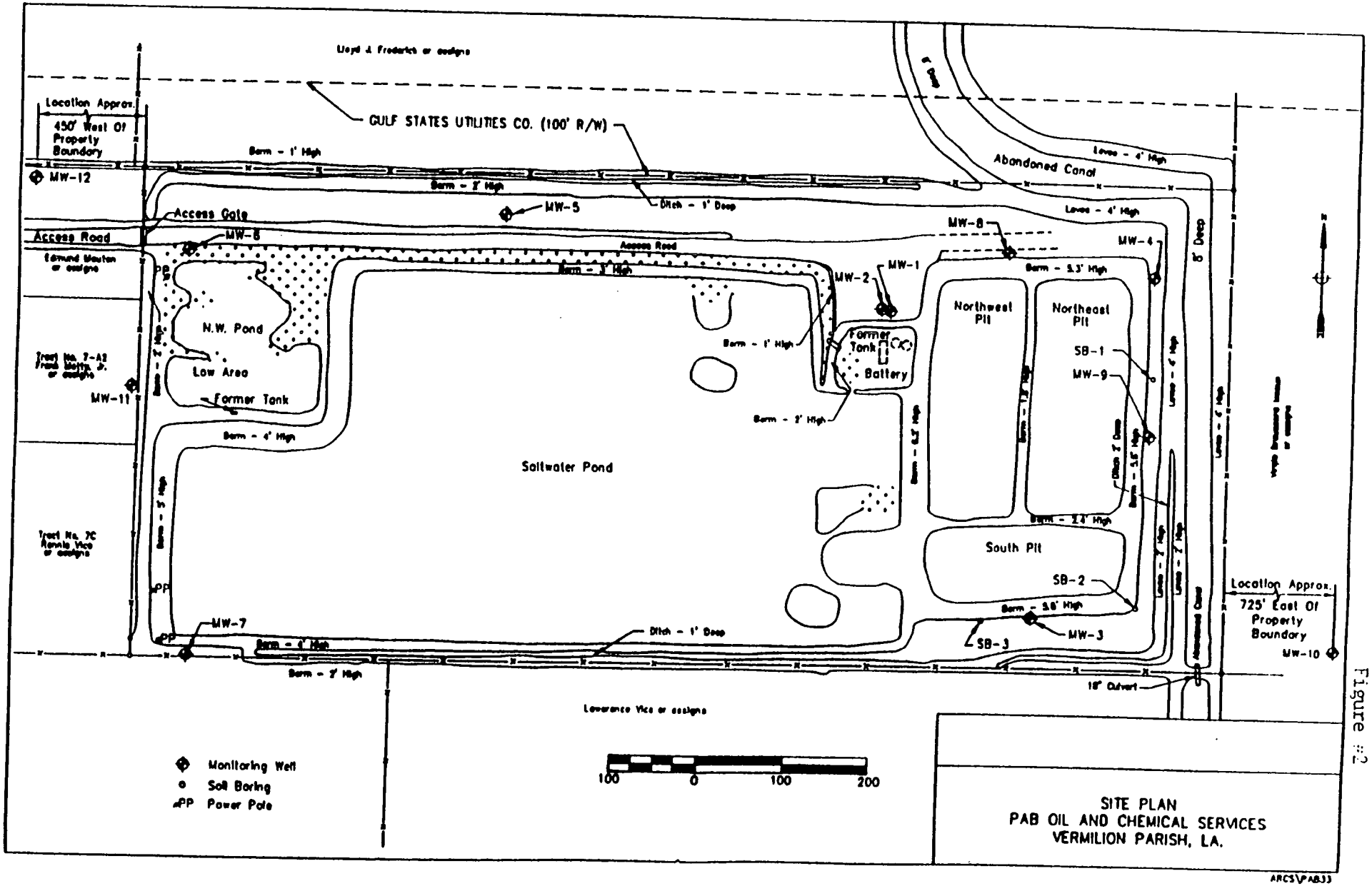

Lloyd J. Frederick or assigns
GULF STATES UTILITIES CO. (100' R/W)
Location Approx. 450' West Of Property Boundary
MW-12
Berm - 1' High
Berm - 2' High
Ditch - 1' Deep
MW-5
Access Gate
Access Road
MW-8
Edmund Mouton or assigns
Abandoned Canal
Levee - 4' High
MW-4
MW-1
MW-2
Berm - 5.3' High
Northwest Pit
Northeast Pit
SB-1
MW-9
Former Tank
Battery
N.W. Pond
Low Area
Former Tank
MW-11
Tract No. 7-A1 Frank Motta, Jr. or assigns
Berm - 4' High
Saltwater Pond
Berm - 5.5' High
Ditch 3' Deep
Berm - 2.4' High
South Pit
SB-2
Tract No. 7C Rennie Vice or assigns
Location Approx. 725' East Of Property Boundary
MW-10
MW-7
Ditch - 1' Deep
SB-3
MW-3
18" Culvert
Lawrence Vice or assigns
Monitoring Well
Soil Boring
PP Power Pole
100 0 100 200
SITE PLAN
PAB OIL AND CHEMICAL SERVICES
VERMILION PARISH, LA.
ARCS\PAB33

Figure #2

FIGURE #3

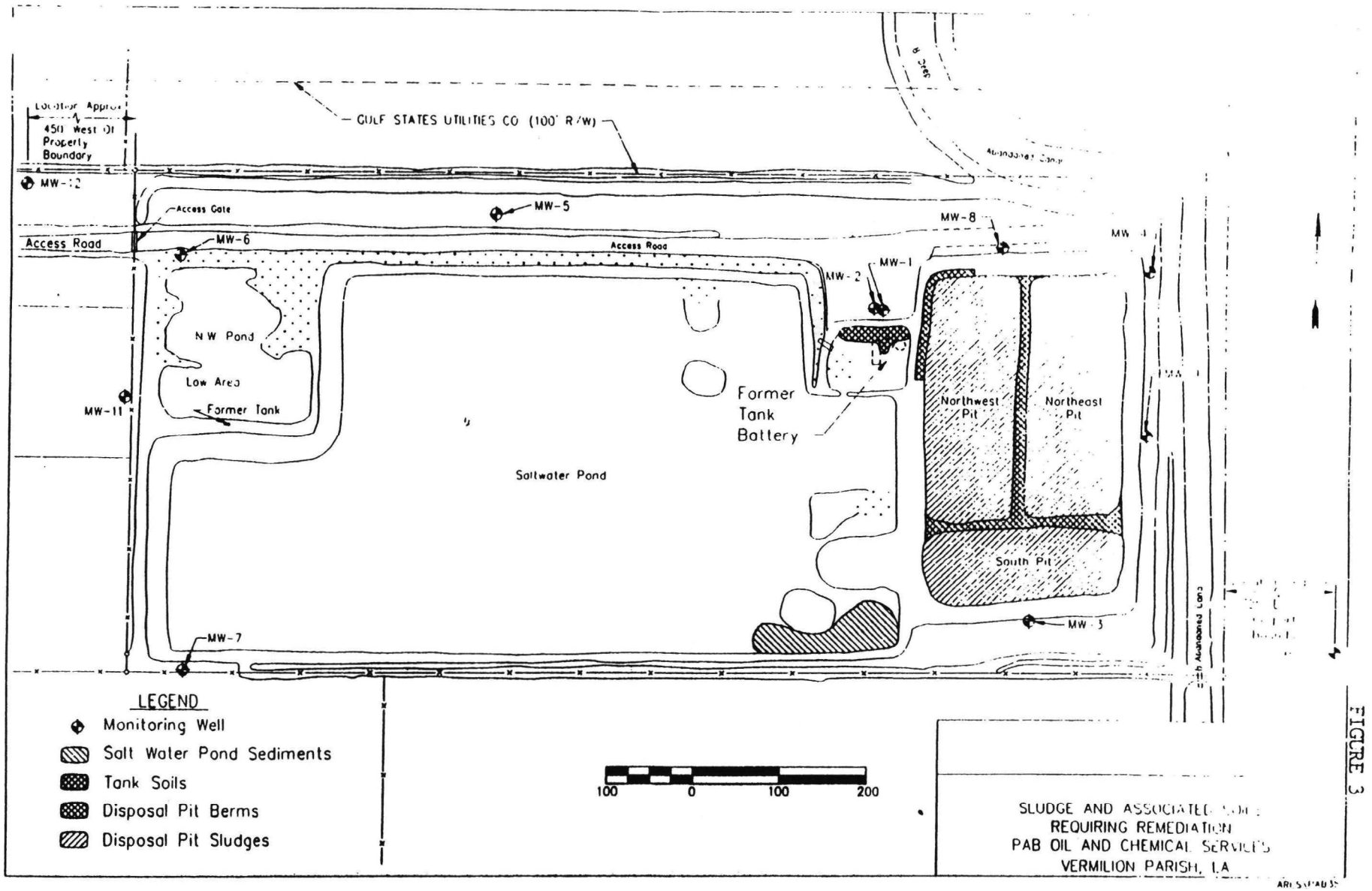

GULF STATES UTILITIES CO (100' R/W)
450' West Of Property Boundary
MW-12
Access Gate
Access Road
MW-6
MW-5
MW-8
MW-4
Access Road
MW-1
MW-2
NW Pond
Low Area
Former Tank
MW-11
Former Tank Battery
Saltwater Pond
Northwest Pit
Northeast Pit
South Pit
MW-3
MW-7
LEGEND
Monitoring Well
Salt Water Pond Sediments
Tank Soils
Disposal Pit Berms
Disposal Pit Sludges
100
0
100
200
SLUDGE AND ASSOCIATED
REQUIRING REMEDIATION
PAB OIL AND CHEMICAL SERVICES
VERMILION PARISH, LA

FIGURE 3

TABLE #1

CHEMICALS OF POTENTIAL CONCERN AT PAB OIL

Volatiles
- Acetone
- Benzene
- Butanone, 2-
- Chloroform
- Dichloroethane, 1,1-
- Ethylbenzene
- Methylene chloride
- Tetrachloroethene
- Toluene
- Xylene (total)

Semivolatiles
- Benzoic acid
- Dibenzofuran
- Dichlorobenzene, 1,2-
- Dimethylphenol, 2,4-
- Methylphenol, 2-
- Methylphenol, 4-
- Phenol
- Bis (2-ethylhexyl) phthalate
- Butylbenzylphthalate
- Di-n-butylphthalate
- Di-n-octylphthalate
- Diethylphthalate

PAHs
- Acenaphthene
- Acenaphthylene
- Anthracene
- Benzo (a) anthracene
- Benzo (a) pyrene
- Benzo (b) fluoranthene
- Benzo (g,h,i) perylene
- Benzo (k) fluoranthene
- Chrysene
- Fluoranthene
- Fluorene
- Indeno (1,2,3-cd) pyrene
- Methylnaphthalene, 2-
- Naphthalene
- Phenanthrene
- Pyrene

Pesticides/PCBs
- Aldrin
- Alpha-BHC
- Alpha chlordane
- Arochlor-1260
- Beta-BHC
- DDD, 4,4'-
- DDE, 4,4'-
- DDT, 4,4'-
- Delta-BHC
- Dieldrin
- Endosulfan I
- Endosulfan II
- Endosulfan sulfate
- Endrin
- Endrin aldehyde
- Endrin ketone
- Gamma chlordane
- Gamma-BHC
- Heptachlor
- Heptachlor epoxide
- Methoxychlor

Inorganics
- Aluminum
- Antimony
- Arsenic
- Barium
- Beryllium
- Cadmium
- Chromium
- Cobalt
- Cyanide
- Lead
- Mercury
- Nickel
- Silver
- Thallium
- Vanadium

Dioxins/Furans
- TCDD-equivalent

TABLE #2

TABLE 2

The following worksheets provide detail on the calculations of exposure point concentrations. Each worksheet consists of chemical sample concentrations and a summary of statistics (i.e., average, upperbound) for that exposure point.

The following provides a page reference to each.

File Name	Exposure Point	Medium	Page
S-NWEDGE	Northwest Pit	Sludge	A1-3
S-NEEDGE	Northeast Pit	Sludge	A1-5
S-NESW	Northeast Pit	Surface Water	A1-7
S-SEDGE	South Pit	Sludge	A1-9
S-SSW	South Pit	Surface Water	A1-11
S-SWPSED	Salt Water Pond	Sediment	A1-13
S-SWPSW	Salt Water Pond	Surface Water	A1-15
S-SEMSED	Southeast Marsh	Soil	A1-17
S-SEMSW	Southeast Marsh	Surface Water	A1-19
S-NWMSED	Northwest Pond/Ditch	Sediment	A1-21
S-NWMSW	Northwest Pond/Ditch	Surface Water	A1-23
S-OFFSED	Off-Site Drainage Ditch	Sediment	A1-25
S-OFFSW	Off-Site Drainage Ditch	Surface Water	A1-27
S-A1GW	Pit Area	Groundwater	A1-29
S-A1SOIL	Pit Area	Soil	A1-31
S-NEDGE	Pit Area	Sludge	A1-33
PAB BCFS	--	Vegetables, Beef, Milk	A1-35

TABLE 2

DATA STATISTICS

EXPOSURE POINT: NORTHWEST PIT
MEDIUM: SLUDGE
UNITS: MG/KG
U MULTIPLIER: 0.5

DATE: 07/14/92
FILENAME S-NWEDGE

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
1	Acetone	20	39	8	16	8.2E+00	8.2E+00	3.0E-02	2.7E+00	4.0E+00	6.3E+01	8.2E+00
2	Benzene	29	39	13	16	6.6E+00	6.6E+00	3.2E-02	2.4E+00	3.3E+00	5.6E+01	6.6E+00
3	Butanone, 2-	15	39	2	16	3.1E+00	1.7E+00	3.2E-02	1.2E+00	1.6E+00	9.0E+00	1.7E+00
4	Chloroform	14	39	6	16	3.1E+00	3.8E-01	1.1E-02	9.9E-01	1.4E+00	1.4E+01	3.8E-01
5	Dichloroethane, 1,1-	0	39	0	16	3.1E+00	0.0E+00	3.2E-02	1.2E+00	1.6E+00	9.7E+00	ND
6	Ethylbenzene	31	39	15	16	1.5E+01	1.5E+01	1.6E-02	6.6E+00	8.7E+00	1.1E+03	1.5E+01
7	Methylene chloride	19	39	8	16	5.3E+00	5.3E+00	3.2E-02	1.4E+00	2.0E+00	8.3E+00	5.3E+00
8	Tetrachloroethene	0	39	0	16	3.1E+00	0.0E+00	3.2E-02	1.2E+00	1.6E+00	9.7E+00	ND
9	Toluene	33	39	15	16	2.7E+01	2.7E+01	2.3E-02	9.4E+00	1.3E+01	2.6E+03	2.7E+01
10	Xylene (total)	32	39	14	16	7.5E+01	7.5E+01	3.2E-02	3.8E+01	4.9E+01	2.1E+04	7.5E+01
11	Benzoic acid	0	6	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND
12	Dibenzofuran	8	41	4	17	3.3E+01	3.3E+01	2.6E-01	8.2E+00	1.2E+01	3.0E+01	3.0E+01
13	Dichlorobenzene, 1,2-	2	41	2	17	1.2E+02	1.3E+00	2.6E-01	1.3E+01	2.5E+01	8.6E+01	1.3E+00
14	Dimethylphenol, 2,4-	0	41	0	17	1.2E+02	0.0E+00	2.6E-01	1.4E+01	2.6E+01	5.8E+01	ND
15	Methylphenol, 2-	0	41	0	17	1.2E+02	0.0E+00	2.6E-01	1.4E+01	2.6E+01	5.8E+01	ND
16	Methylphenol, 4-	0	41	0	17	1.2E+02	0.0E+00	2.6E-01	1.4E+01	2.6E+01	5.8E+01	ND
17	Phenol	2	41	2	17	1.2E+02	6.3E+00	2.6E-01	1.3E+01	2.5E+01	5.0E+01	6.3E+00
18	Acenaphthene	6	41	4	17	3.3E+01	3.3E+01	2.6E-01	7.9E+00	1.1E+01	2.8E+01	2.8E+01
19	Acenaphthylene	1	41	0	17	1.2E+02	0.0E+00	2.6E-01	1.4E+01	2.6E+01	5.8E+01	5.8E+01
20	Anthracene	7	41	5	17	3.4E+01	3.4E+01	2.1E-01	1.0E+01	1.4E+01	5.1E+01	3.4E+01
21	Benzo(a)anthracene	3	41	3	17	1.2E+02	1.1E+00	2.6E-01	1.3E+01	2.5E+01	8.5E+01	1.1E+00
22	Benzo(a)pyrene	1	41	0	17	1.2E+02	0.0E+00	2.6E-01	1.4E+01	2.6E+01	5.8E+01	5.8E+01
23	Benzo(b)fluoranthene	0	41	0	17	1.2E+02	0.0E+00	2.6E-01	1.4E+01	2.6E+01	5.8E+01	ND
24	Benzo(g,h,i)perylene	0	41	0	17	1.2E+02	0.0E+00	2.6E-01	1.4E+01	2.6E+01	5.8E+01	ND
25	Benzo(k)fluoranthene	0	41	0	17	1.2E+02	0.0E+00	2.6E-01	1.4E+01	2.6E+01	5.8E+01	ND
26	Chrysene	14	41	4	17	1.2E+02	4.2E+00	2.6E-01	1.3E+01	2.5E+01	6.3E+01	4.2E+00
27	Fluoranthene	8	41	6	17	1.2E+02	4.2E+00	2.6E-01	1.3E+01	2.5E+01	5.7E+01	4.2E+00
28	Fluorene	25	41	13	17	5.5E+01	5.5E+01	5.0E-01	1.3E+01	1.9E+01	4.6E+01	4.6E+01
29	Indeno(1,2,3-cd)pyrene	0	41	0	17	1.2E+02	0.0E+00	2.6E-01	1.4E+01	2.6E+01	5.8E+01	ND
30	Methylnaphthalene, 2-	36	42	18	18	5.4E+02	5.4E+02	5.5E-02	1.2E+02	1.8E+02	1.7E+04	5.4E+02
31	Naphthalene	34	41	17	17	2.0E+02	2.0E+02	2.8E-01	6.1E+01	8.5E+01	1.4E+03	2.0E+02
32	Phenanthrene	35	42	18	18	1.3E+02	1.3E+02	5.2E-02	2.7E+01	4.1E+01	6.9E+02	1.3E+02
33	Pyrene	23	41	13	17	1.2E+02	1.2E+01	1.3E-01	1.1E+01	2.3E+01	3.5E+01	1.2E+01
34	Bis(2-ethylhexyl)phthalate	28	42	15	18	2.7E+01	2.7E+01	5.0E-02	6.9E+00	9.8E+00	6.2E+01	2.7E+01
35	Butylbenzylphthalate	1	41	1	17	1.2E+02	7.0E+00	2.6E-01	1.4E+01	2.6E+01	5.9E+01	7.0E+00
36	Di-n-butylphthalate	1	41	1	17	1.2E+02	3.4E+00	2.6E-01	1.4E+01	2.5E+01	5.6E+01	3.4E+00
37	Di-n-octylphthalate	2	41	1	17	1.2E+02	2.0E+00	2.6E-01	1.3E+01	2.5E+01	5.6E+01	2.0E+00
38	Diethylphthalate	0	41	0	17	1.2E+02	0.0E+00	2.6E-01	1.4E+01	2.6E+01	5.8E+01	ND
39	Aldrin	9	39	6	16	4.2E-02	4.2E-02	1.1E-03	9.8E-03	1.5E-02	3.4E-02	3.4E-02
40	Alpha Chlordane	11	40	10	17	1.7E-02	1.5E-02	1.2E-03	5.1E-03	7.3E-03	9.3E-03	9.3E-03
41	Alpha-BHC	9	39	8	16	1.7E-02	4.0E-03	5.7E-04	2.8E-03	4.6E-03	4.3E-03	4.0E-03
42	Beta-BHC	2	40	1	17	1.7E-02	5.0E-03	1.1E-03	2.9E-03	4.6E-03	4.1E-03	4.1E-03
43	DDD, 4,4-	1	40	0	17	3.3E-02	0.0E+00	2.1E-03	5.2E-03	8.5E-03	6.9E-03	6.9E-03
44	DDE, 4,4-	9	40	8	17	3.3E-02	1.8E-02	1.6E-03	8.1E-03	1.2E-02	1.5E-02	1.5E-02
45	DDT, 4,4-	13	40	12	17	7.9E-02	7.9E-02	2.6E-03	1.2E-02	2.0E-02	1.9E-02	1.9E-02
46	Delta-BHC	2	40	2	17	1.7E-02	3.9E-03	1.7E-04	2.8E-03	4.5E-03	4.9E-03	3.9E-03
47	Dieldrin	6	38	5	15	3.3E-02	6.8E-03	4.7E-04	5.8E-03	9.6E-03	1.1E-02	6.8E-03
48	Endosulfan I	4	36	4	17	1.7E-02	1.2E-02	1.1E-03	3.6E-03	5.5E-03	5.7E-03	5.7E-03
49	Endosulfan II	7	36	6	17	4.9E-02	4.9E-02	6.3E-04	7.1E-03	1.2E-02	1.2E-02	1.2E-02
50	Endosulfan sulfate	7	40	5	17	3.9E-02	3.9E-02	2.1E-03	9.8E-03	1.5E-02	1.9E-02	1.9E-02
51	Endrin	7	40	6	17	3.3E-02	1.9E-02	2.3E-03	7.1E-03	1.1E-02	1.1E-02	1.1E-02
52	Endrin aldehyde	1	29	1	17	3.3E-02	1.3E-02	2.1E-03	5.8E-03	9.2E-03	8.5E-03	8.5E-03
53	Endrin ketone	3	36	3	17	3.3E-02	8.8E-03	2.1E-03	5.6E-03	8.8E-03	7.9E-03	7.9E-03
54	Gamma-BHC	1	40	0	17	1.7E-02	0.0E+00	1.1E-03	2.7E-03	4.4E-03	3.8E-03	3.8E-03
55	Gamma Chlordane	9	40	9	17	1.7E-02	1.7E-02	3.2E-04	3.7E-03	5.9E-03	7.1E-03	7.1E-03
56	Heptachlor	2	40	1	17	2.0E-02	2.0E-02	1.1E-03	3.8E-03	6.2E-03	5.9E-03	5.9E-03

DATA STATISTICS

EXPOSURE POINT: NORTHWEST PIT
MEDIUM: SLUDGE
UNITS: MG/KG
U MULTIPLIER: 0.5

DATE: 07/14/92
FILENAME S-NWEDGE

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
57	Heptachlor epoxide	3	40	1	17	1.7E-02	8.0E-04	8.0E-04	2.6E-03	4.3E-03	3.6E-03	8.0E-04
58	Methoxychlor	3	40	2	17	1.7E-01	8.7E-02	1.1E-02	3.0E-02	4.7E-02	4.3E-02	4.3E-02
59	Aroclor-1260	2	40	0	17	3.3E-01	0.0E+00	2.1E-02	4.6E-02	7.7E-02	5.5E-02	5.5E-02
60	Aluminum	37	37	15	15	1.2E+04	1.2E+04	3.1E+03	6.3E+03	7.4E+03	7.7E+03	7.7E+03
61	Antimony	0	24	0	6	7.4E+00	0.0E+00	4.3E+00	5.6E+00	6.5E+00	6.6E+00	ND
62	Arsenic	26	37	15	15	2.5E+01	2.5E+01	7.1E+00	1.5E+01	1.8E+01	1.9E+01	1.9E+01
63	Barium	37	37	15	15	4.7E+04	4.7E+04	1.3E+04	2.4E+04	2.9E+04	3.0E+04	3.0E+04
64	Beryllium	9	37	5	15	7.9E-01	7.9E-01	1.3E-01	3.6E-01	4.5E-01	5.1E-01	5.1E-01
65	Cadmium (soil)	19	37	13	15	1.2E+01	1.2E+01	6.5E-01	4.5E+00	6.1E+00	9.3E+00	9.3E+00
66	Cadmium (water)	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND
67	Chromium	37	37	15	15	9.3E+02	9.3E+02	1.0E+02	3.3E+02	4.3E+02	4.9E+02	4.9E+02
68	Cobalt	26	37	15	15	4.1E+01	4.1E+01	1.2E+01	2.2E+01	2.6E+01	2.7E+01	2.7E+01
69	Cyanide	1	16	0	8	2.5E+00	0.0E+00	1.2E+00	1.7E+00	2.1E+00	2.2E+00	2.2E+00
70	Lead	33	37	15	15	2.8E+03	2.8E+03	5.5E+01	5.5E+02	8.7E+02	1.6E+03	1.6E+03
71	Mercury	27	37	14	15	2.6E+00	2.6E+00	1.2E-01	9.1E-01	1.2E+00	1.6E+00	1.6E+00
72	Nickel	23	37	14	15	2.0E+01	2.0E+01	3.7E+00	1.3E+01	1.5E+01	1.6E+01	1.6E+01
73	Silver	8	37	6	15	3.6E+00	3.6E+00	3.2E-01	1.2E+00	1.5E+00	1.7E+00	1.7E+00
74	Thallium	3	37	3	15	1.2E+00	1.2E+00	2.9E-01	5.0E-01	6.2E-01	6.3E-01	6.3E-01
75	Vanadium	26	37	15	15	2.2E+01	2.2E+01	1.1E+01	1.7E+01	1.9E+01	1.9E+01	1.9E+01
76	TCDD Equivalent	17	17	2	2	5.1E-05	5.1E-05	4.0E-05	4.6E-05	8.0E-05	8.1E-05	5.1E-05

TABLE 2

DATA STATISTICS

EXPOSURE POINT: NORTHEAST PIT
MEDIUM: SLUDGE
UNITS: MG/KG
U MULTIPLIER: 0.5

DATE: 07/14/92
FILENAME S-NEEDGE

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
1	Acetone	20	39	10	15	2.6E+01	2.6E+01	2.5E-02	9.9E+00	1.5E+01	2.4E+02	2.6E+01
2	Benzene	29	39	13	15	3.5E+01	3.5E+01	7.0E-03	1.6E+01	2.1E+01	2.6E+04	3.5E+01
3	Butanone, 2-	15	39	9	15	3.0E+00	3.0E+00	7.0E-03	1.5E+00	1.9E+00	1.3E+01	3.0E+00
4	Chloroform	14	39	6	15	5.5E+00	8.7E-01	7.0E-03	1.9E+00	2.8E+00	9.3E+01	8.7E-01
5	Dichloroethane, 1,1-	0	39	0	15	5.5E+00	0.0E+00	7.0E-03	2.3E+00	3.1E+00	1.1E+02	ND
6	Ethylbenzene	31	39	13	15	6.6E+01	6.6E+01	7.0E-03	2.7E+01	3.6E+01	9.0E+04	6.6E+01
7	Methylene chloride	19	39	8	15	6.3E+00	6.3E+00	7.0E-03	2.3E+00	3.2E+00	8.2E+01	6.3E+00
8	Tetrachloroethene	0	39	0	15	5.5E+00	0.0E+00	7.0E-03	2.3E+00	3.1E+00	1.1E+02	ND
9	Toluene	33	39	13	15	1.2E+02	1.2E+02	7.0E-03	3.9E+01	5.3E+01	2.2E+06	1.2E+02
10	Xylene (total)	32	39	12	15	2.8E+02	2.8E+02	7.0E-03	1.2E+02	1.6E+02	1.1E+07	2.8E+02
11	Benzoic acid	0	11	0	7	1.7E+02	0.0E+00	9.8E+01	1.2E+02	1.4E+02	1.5E+02	ND
12	Dibenzofuran	8	41	4	16	3.4E+01	9.3E+00	4.6E-01	1.5E+01	2.0E+01	6.9E+01	9.3E+00
13	Dichlorobenzene, 1,2-	2	41	0	16	3.4E+01	0.0E+00	4.6E-01	1.6E+01	2.1E+01	7.4E+01	3.4E+01
14	Dimethylphenol, 2,4-	0	41	0	16	3.4E+01	0.0E+00	4.6E-01	1.6E+01	2.1E+01	7.4E+01	ND
15	Methylphenol, 2-	0	41	0	16	3.4E+01	0.0E+00	4.6E-01	1.6E+01	2.1E+01	7.4E+01	ND
16	Methylphenol, 4-	0	41	0	16	3.4E+01	0.0E+00	4.6E-01	1.6E+01	2.1E+01	7.4E+01	ND
17	Phenol	2	41	0	16	3.4E+01	0.0E+00	4.6E-01	1.6E+01	2.1E+01	7.4E+01	ND
18	Acenaphthene	6	41	1	16	3.4E+01	1.9E+01	4.6E-01	1.7E+01	2.1E+01	8.0E+01	3.4E+01
19	Acenaphthylene	1	41	1	16	3.4E+01	5.4E+00	4.6E-01	1.7E+01	2.1E+01	7.7E+01	1.9E+01
20	Anthracene	7	41	2	16	3.4E+01	1.5E+01	4.6E-01	1.6E+01	2.0E+01	7.2E+01	5.4E+00
21	Benzo(a)anthracene	3	41	0	16	3.4E+01	0.0E+00	4.6E-01	1.7E+01	2.1E+01	7.9E+01	1.5E+01
22	Benzo(a)pyrene	1	41	1	16	3.4E+01	1.8E+00	4.6E-01	1.7E+01	2.1E+01	8.0E+01	3.4E+01
23	Benzo(b)fluoranthene	0	41	0	16	3.4E+01	0.0E+00	4.6E-01	1.7E+01	2.1E+01	1.0E+02	1.8E+00
24	Benzo(g,h,i)perylene	0	41	0	16	3.4E+01	0.0E+00	4.6E-01	1.7E+01	2.1E+01	8.0E+01	ND
25	Benzo(k)fluoranthene	0	41	0	16	3.4E+01	0.0E+00	4.6E-01	1.7E+01	2.1E+01	8.0E+01	ND
26	Chrysene	14	41	8	16	3.4E+01	2.0E+01	4.7E-02	1.3E+01	1.7E+01	1.7E+02	2.0E+01
27	Fluoranthene	8	41	2	16	3.4E+01	1.5E+01	4.6E-01	1.7E+01	2.1E+01	7.4E+01	1.5E+01
28	Fluorene	25	41	11	16	6.1E+01	6.1E+01	4.6E-01	2.7E+01	3.6E+01	1.9E+02	6.1E+01
29	Indeno(1,2,3-cd)pyrene	0	41	0	16	3.4E+01	0.0E+00	4.6E-01	1.7E+01	2.1E+01	8.0E+01	ND
30	Methylnaphthalene, 2-	36	42	15	16	4.5E+02	4.5E+02	2.5E-02	1.8E+02	2.5E+02	1.1E+06	4.5E+02
31	Naphthalene	34	41	15	16	2.0E+02	2.0E+02	1.0E-02	8.1E+01	1.1E+02	6.1E+05	2.0E+02
32	Phenanthrene	35	42	15	16	1.8E+02	1.8E+02	8.5E-02	6.0E+01	8.6E+01	8.4E+03	1.8E+02
33	Pyrene	23	41	8	16	3.4E+01	2.0E+01	4.6E-01	1.4E+01	1.9E+01	6.3E+01	2.0E+01
34	Bis(2-ethylhexyl)phthalate	28	42	11	16	1.0E+02	1.0E+02	6.5E-02	2.2E+01	3.2E+01	6.4E+02	1.0E+02
35	Butylbenzylphthalate	1	41	0	16	3.4E+01	0.0E+00	4.6E-01	1.7E+01	2.1E+01	8.0E+01	3.4E+01
36	Di-n-butylphthalate	1	41	0	16	3.4E+01	0.0E+00	4.6E-01	1.7E+01	2.1E+01	8.0E+01	3.4E+01
37	Di-n-octylphthalate	2	41	1	16	3.4E+01	6.0E-02	6.0E-02	1.7E+01	2.1E+01	2.5E+02	6.0E-02
38	Diethylphthalate	0	41	0	16	3.4E+01	0.0E+00	4.6E-01	1.7E+01	2.1E+01	8.0E+01	ND
39	Aldrin	9	39	3	15	3.4E+01	8.0E-03	2.4E-03	1.2E+01	1.8E+01	3.5E+07	8.0E-03
40	Alpha Chlordane	11	40	1	15	3.4E+01	1.2E-03	1.2E-03	1.2E+01	1.8E+01	4.4E+08	1.2E-03
41	Alpha-BHC	9	39	1	15	3.4E+01	6.8E-04	6.8E-04	1.2E+01	1.8E+01	6.2E+08	6.8E-04
42	Beta-BHC	2	40	1	15	3.4E+01	9.0E-03	2.4E-03	1.2E+01	1.8E+01	3.8E+08	9.0E-03
43	DDD, 4,4-	1	40	1	15	3.4E+01	6.4E-04	6.4E-04	1.2E+01	1.8E+01	4.2E+07	6.4E-04
44	DDE, 4,4-	9	40	1	15	3.4E+01	3.4E-03	3.4E-03	1.2E+01	1.8E+01	1.7E+07	3.4E-03
45	DDT, 4,4-	13	40	1	15	3.4E+01	7.2E-04	7.2E-04	1.2E+01	1.8E+01	3.9E+07	7.2E-04
46	Delta-BHC	2	40	0	15	3.4E+01	0.0E+00	2.4E-03	1.2E+01	1.8E+01	3.0E+08	3.4E+01
47	Dieldrin	6	38	1	15	3.4E+01	8.2E-04	8.2E-04	1.2E+01	1.8E+01	3.6E+07	8.2E-04
48	Endosulfan I	4	36	0	15	3.4E+01	0.0E+00	2.4E-03	1.2E+01	1.8E+01	3.0E+08	3.4E+01
49	Endosulfan II	7	36	1	15	3.4E+01	3.4E-02	4.7E-03	1.2E+01	1.8E+01	1.1E+07	3.4E-02
50	Endosulfan sulfate	7	40	2	15	3.4E+01	2.5E-01	9.9E-04	1.2E+01	1.8E+01	2.4E+07	2.5E-01
51	Endrin	7	40	1	15	3.4E+01	3.1E-03	3.1E-03	1.2E+01	1.8E+01	1.8E+07	3.1E-03
52	Endrin aldehyde	1	29	0	8	4.2E-02	0.0E+00	4.7E-03	1.7E-02	2.7E-02	5.9E-02	4.2E-02
53	Endrin ketone	3	36	0	15	3.4E+01	0.0E+00	4.7E-03	1.2E+01	1.8E+01	1.4E+07	3.4E+01
54	Gamma-BHC	1	40	1	15	3.4E+01	3.2E-04	3.2E-04	1.2E+01	1.8E+01	1.0E+09	3.2E-04
55	Gamma Chlordane	9	40	0	15	3.4E+01	0.0E+00	2.4E-03	1.2E+01	1.8E+01	2.2E+08	3.4E+01
56	Heptachlor	2	40	1	15	3.4E+01	3.9E-04	3.9E-04	1.2E+01	1.8E+01	8.8E+08	3.9E-04

DATA STATISTICS

EXPOSURE POINT: NORTHEAST PIT
MEDIUM: SLUDGE
UNITS: MG/KG
U MULTIPLIER: 0.5

DATE: 07/14/92
FILENAME S-NEEDGE

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
57	Heptachlor epoxide	3	40	2	15	3.4E+01	1.2E-02	2.1E-03	1.2E+01	1.8E+01	2.7E+08	1.2E-02
58	Methoxychlor	3	40	1	15	3.4E+01	5.5E-02	2.4E-02	1.2E+01	1.8E+01	4.4E+04	5.5E-02
59	Aroclor-1260	2	40	2	15	2.7E+01	2.7E+01	4.7E-02	5.9E+00	9.5E+00	8.4E+02	2.7E+01
60	Aluminum	37	37	14	14	1.1E+04	1.1E+04	1.3E+02	6.9E+03	8.4E+03	2.7E+04	1.1E+04
61	Antimony	0	24	0	12	4.3E+01	0.0E+00	5.7E+00	2.1E+01	2.8E+01	3.6E+01	ND
62	Arsenic	26	37	7	14	1.7E+01	1.1E+01	4.3E+00	9.8E+00	1.2E+01	1.2E+01	1.1E+01
63	Barium	37	37	14	14	4.8E+04	4.8E+04	6.1E+02	2.3E+04	3.0E+04	9.0E+04	4.8E+04
64	Beryllium	9	37	2	14	3.5E+00	6.9E-01	3.3E-01	1.5E+00	2.1E+00	2.8E+00	6.9E-01
65	Cadmium (soil)	19	37	6	14	7.0E+00	7.0E+00	6.5E-01	2.8E+00	3.7E+00	4.5E+00	4.5E+00
66	Cadmium (water)	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND
67	Chromium	37	37	14	14	8.6E+02	8.6E+02	8.0E+00	4.0E+02	5.4E+02	2.7E+03	8.6E+02
68	Cobalt	26	37	7	14	2.5E+01	2.5E+01	5.5E+00	1.4E+01	1.6E+01	1.7E+01	1.7E+01
69	Cyanide	1	16	1	4	2.0E+00	2.0E+00	5.0E-01	1.1E+00	1.9E+00	3.4E+00	2.0E+00
70	Lead	33	37	14	14	5.9E+02	5.9E+02	2.2E+01	2.7E+02	3.7E+02	6.7E+02	5.9E+02
71	Mercury	27	37	12	14	2.9E+00	2.9E+00	1.4E-01	8.4E-01	1.2E+00	1.9E+00	1.9E+00
72	Nickel	23	37	5	14	2.4E+01	2.4E+01	3.6E+00	1.2E+01	1.5E+01	1.7E+01	1.7E+01
73	Silver	8	37	0	14	7.0E+00	0.0E+00	2.8E-01	2.9E+00	4.0E+00	8.0E+00	7.0E+00
74	Thallium	3	37	0	14	7.1E+01	0.0E+00	4.3E-01	2.5E+01	3.8E+01	2.3E+03	7.1E+01
75	Vanadium	26	37	7	14	3.1E+01	3.1E+01	5.6E+00	1.6E+01	1.9E+01	2.0E+01	2.0E+01
76	TCDD Equivalent	17	17	5	5	4.5E-04	4.5E-04	1.0E-05	2.5E-04	4.0E-04	1.2E-01	4.5E-04

TABLE 2

DATA STATISTICS

EXPOSURE POINT: NORTHEAST PIT
MEDIUM: SURFACE WATER
UNITS: MG/L
U MULTIPLIER: 0.5

DATE: 07/14/92
FILENAME S-NESW

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
1	Acetone	4	17	2	2	8.5E-02	8.5E-02	3.4E-02	6.0E-02	2.2E-01	1.0E+01	8.5E-02
2	Benzene	2	16	1	2	6.5E-02	6.5E-02	2.5E-02	4.5E-02	1.7E-01	2.4E+01	6.5E-02
3	Butanone, 2-	0	17	0	2	1.0E-01	0.0E+00	5.0E-02	7.5E-02	2.3E-01	1.9E+00	ND
4	Chloroform	0	17	0	2	5.0E-02	0.0E+00	2.5E-02	3.8E-02	1.2E-01	9.6E-01	ND
5	Dichloroethane, 1,1-	1	17	0	2	5.0E-02	0.0E+00	2.5E-02	3.8E-02	1.2E-01	9.6E-01	5.0E-02
6	Ethylbenzene	3	17	2	2	5.6E-02	5.6E-02	1.7E-02	3.7E-02	1.6E-01	2.9E+02	5.6E-02
7	Methylene chloride	10	17	0	2	5.0E-02	0.0E+00	2.5E-02	3.8E-02	1.2E-01	9.6E-01	5.0E-02
8	Tetrachloroethene	3	17	1	2	3.6E-02	3.6E-02	2.5E-02	3.1E-02	6.5E-02	8.9E-02	3.6E-02
9	Toluene	3	17	2	2	7.3E-02	7.3E-02	1.2E-02	4.3E-02	2.3E-01	7.6E+07	7.3E-02
10	Xylene (total)	3	17	2	2	1.9E-01	1.9E-01	3.8E-02	1.1E-01	5.9E-01	1.9E+07	1.9E-01
11	Benzoic acid	2	15	1	2	2.5E-02	5.0E-03	5.0E-03	1.5E-02	7.8E-02	2.5E+06	5.0E-03
12	Dibenzofuran	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
13	Dichlorobenzene, 1,2-	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
14	Dimethylphenol, 2,4-	1	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
15	Methylphenol, 2-	1	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
16	Methylphenol, 4-	1	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
17	Phenol	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
18	Acenaphthene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
19	Acenaphthylene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
20	Anthracene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
21	Benzo(a)anthracene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
22	Benzo(a)pyrene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
23	Benzo(b)fluoranthene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
24	Benzo(g,h,i)perylene	1	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
25	Benzo(k)fluoranthene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
26	Chrysene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
27	Fluoranthene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
28	Fluorene	1	17	1	2	5.0E-03	4.0E-03	4.0E-03	4.5E-03	7.7E-03	7.6E-03	4.0E-03
29	Indeno(1,2,3-cd)pyrene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
30	Methylnaphthalene, 2-	2	17	1	2	1.8E-02	1.8E-02	5.0E-03	1.2E-02	5.3E-02	5.9E+02	1.8E-02
31	Naphthalene	2	17	1	2	2.3E-02	2.3E-02	5.0E-03	1.4E-02	7.1E-02	2.5E+04	2.3E-02
32	Phenanthrene	1	17	1	2	5.0E-03	3.0E-03	3.0E-03	4.0E-03	1.0E-02	2.7E-02	3.0E-03
33	Pyrene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
34	Bis(2-ethylhexyl)phthalate	4	17	1	2	5.0E-03	2.0E-03	2.0E-03	3.5E-03	1.3E-02	6.1E-01	2.0E-03
35	Butylbenzylphthalate	2	17	1	2	5.0E-03	2.0E-03	2.0E-03	3.5E-03	1.3E-02	6.1E-01	2.0E-03
36	Di-n-butylphthalate	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
37	Di-n-octylphthalate	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
38	Diethylphthalate	1	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
39	Aldrin	4	17	0	2	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	2.5E-05
40	Alpha Chlordane	1	17	0	2	2.5E-04	0.0E+00	2.5E-04	2.5E-04	2.5E-04	2.5E-04	2.5E-04
41	Alpha-BHC	1	17	1	2	6.0E-05	6.0E-05	2.5E-05	4.3E-05	1.5E-04	5.9E-03	6.0E-05
42	Beta-BHC	3	17	2	2	2.7E-03	2.7E-03	6.0E-04	1.7E-03	8.3E-03	2.4E+03	2.7E-03
43	DDD, 4,4-	0	17	0	2	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	ND
44	DDE, 4,4-	2	17	0	2	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	5.0E-05
45	DDT, 4,4-	2	17	0	2	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	5.0E-05
46	Delta-BHC	0	17	0	2	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	ND
47	Dieldrin	3	17	2	2	1.2E-04	1.2E-04	1.1E-04	1.2E-04	1.5E-04	1.4E-04	1.2E-04
48	Endosulfan I	2	17	0	2	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	2.5E-05
49	Endosulfan II	4	17	2	2	3.6E-04	3.6E-04	3.1E-04	3.4E-04	4.9E-04	4.5E-04	3.6E-04
50	Endosulfan sulfate	1	17	0	2	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	5.0E-05
51	Endrin	0	17	0	2	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	ND
52	Endrin aldehyde	1	1	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND
53	Endrin ketone	0	17	0	2	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	ND
54	Gamma-BHC	0	17	0	2	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	ND
55	Gamma Chlordane	1	17	0	2	2.5E-04	0.0E+00	2.5E-04	2.5E-04	2.5E-04	2.5E-04	2.5E-04
56	Heptachlor	0	16	0	2	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	ND

DATA STATISTICS

EXPOSURE POINT: NORTHEAST PIT
MEDIUM: SURFACE WATER
UNITS: MG/L
U MULTIPLIER: 0.5

DATE: 07/14/92
FILENAME S-NESW

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
57	Heptachlor epoxide	0	17	0	2	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	ND
58	Methoxychlor	1	17	1	2	8.3E-04	8.3E-04	2.5E-04	5.4E-04	2.4E-03	4.6E+00	8.3E-04
59	Aroclor-1260	0	17	0	2	5.0E-04	0.0E+00	5.0E-04	5.0E-04	5.0E-04	5.0E-04	ND
60	Aluminum	18	18	2	2	8.2E-01	8.2E-01	7.1E-01	7.6E-01	1.1E+00	1.0E+00	8.2E-01
61	Antimony	1	18	0	2	1.9E-02	0.0E+00	1.9E-02	1.9E-02	1.9E-02	1.9E-02	1.9E-02
62	Arsenic	5	18	0	2	1.5E-03	0.0E+00	1.5E-03	1.5E-03	1.5E-03	1.5E-03	1.5E-03
63	Barium	18	18	2	2	1.3E+00	1.3E+00	9.9E-01	1.1E+00	2.0E+00	2.0E+00	1.3E+00
64	Beryllium	1	18	1	2	2.5E-03	2.5E-03	1.0E-03	1.8E-03	6.5E-03	3.1E-01	2.5E-03
65	Cadmium (soil)	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND
66	Cadmium (water)	0	18	0	2	2.0E-03	0.0E+00	2.0E-03	2.0E-03	2.0E-03	2.0E-03	ND
67	Chromium	12	18	2	2	1.4E-02	1.4E-02	1.2E-02	1.3E-02	2.0E-02	1.8E-02	1.4E-02
68	Cobalt	3	18	1	2	7.3E-03	7.3E-03	2.5E-03	4.9E-03	2.0E-02	1.5E+01	7.3E-03
69	Cyanide	0	16	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
70	Lead	11	18	1	2	2.1E-03	2.1E-03	5.0E-04	1.3E-03	6.3E-03	9.7E+02	2.1E-03
71	Mercury	0	18	0	2	1.0E-04	0.0E+00	1.0E-04	1.0E-04	1.0E-04	1.0E-04	ND
72	Nickel	1	18	0	2	1.0E-02	0.0E+00	1.0E-02	1.0E-02	1.0E-02	1.0E-02	1.0E-02
73	Silver	1	18	0	2	2.5E-03	0.0E+00	2.5E-03	2.5E-03	2.5E-03	2.5E-03	2.5E-03
74	Thallium	0	18	0	2	1.5E-03	0.0E+00	1.5E-03	1.5E-03	1.5E-03	1.5E-03	ND
75	Vanadium	5	18	1	2	8.0E-03	8.0E-03	2.0E-03	5.0E-03	2.4E-02	2.3E+03	8.0E-03
76	TCDD Equivalent	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND

TABLE 2

DATA STATISTICS

EXPOSURE POINT: SOUTH PIT
MEDIUM: SLUDGE
UNITS: MG/KG
U MULTIPLIER: 0.5

DATE: 07/14/92
FILENAME S-SEDGE

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
1	Acetone	20	39	2	8	1.3E+01	1.1E-01	3.6E-02	5.1E+00	8.4E+00	5.3E+03	1.1E-01
2	Benzene	29	39	3	8	7.5E+00	7.5E+00	7.0E-03	3.0E+00	4.7E+00	2.6E+06	7.5E+00
3	Butanone, 2-	15	39	4	8	8.0E+01	8.0E+01	7.0E-03	2.8E+01	4.9E+01	1.4E+12	8.0E+01
4	Chloroform	14	39	2	8	6.3E+00	4.3E-01	7.0E-03	2.4E+00	4.1E+00	1.1E+06	4.3E-01
5	Dichloroethane, 1,1-	0	39	0	8	6.3E+00	0.0E+00	7.0E-03	2.7E+00	4.2E+00	1.8E+06	ND
6	Ethylbenzene	31	39	3	8	6.5E+00	6.5E+00	7.0E-03	2.7E+00	4.4E+00	2.0E+06	6.5E+00
7	Methylene chloride	19	39	3	8	5.0E+01	5.0E+01	7.0E-03	1.4E+01	2.6E+01	3.0E+09	5.0E+01
8	Tetrachloroethene	0	39	0	8	6.3E+00	0.0E+00	7.0E-03	2.7E+00	4.2E+00	1.8E+06	ND
9	Toluene	33	39	5	8	1.2E+01	1.2E+01	7.0E-03	3.6E+00	6.1E+00	4.5E+06	1.2E+01
10	Xylene (total)	32	39	6	8	3.5E+01	3.5E+01	7.0E-03	1.3E+01	2.2E+01	6.1E+09	3.5E+01
11	Benzoic acid	0	11	0	4	2.5E+02	0.0E+00	1.5E+02	1.9E+02	2.4E+02	2.5E+02	ND
12	Dibenzofuran	8	41	0	8	5.0E+01	0.0E+00	2.3E-01	2.2E+01	3.4E+01	2.7E+04	5.0E+01
13	Dichlorobenzene, 1,2-	2	41	0	8	5.0E+01	0.0E+00	2.3E-01	2.2E+01	3.4E+01	2.7E+04	5.0E+01
14	Dimethylphenol, 2,4-	0	41	0	8	5.0E+01	0.0E+00	2.3E-01	2.2E+01	3.4E+01	2.7E+04	ND
15	Methylphenol, 2-	0	41	0	8	5.0E+01	0.0E+00	2.3E-01	2.2E+01	3.4E+01	2.7E+04	ND
16	Methylphenol, 4-	0	41	0	8	5.0E+01	0.0E+00	2.3E-01	2.2E+01	3.4E+01	2.7E+04	ND
17	Phenol	2	41	0	8	5.0E+01	0.0E+00	2.3E-01	2.2E+01	3.4E+01	2.7E+04	5.0E+01
18	Acenaphthene	6	41	1	8	5.0E+01	3.6E+00	2.3E-01	2.1E+01	3.4E+01	2.5E+04	3.6E+00
19	Acenaphthylene	1	41	0	8	5.0E+01	0.0E+00	2.3E-01	2.2E+01	3.4E+01	2.7E+04	5.0E+01
20	Anthracene	7	41	0	8	5.0E+01	0.0E+00	2.3E-01	2.2E+01	3.4E+01	2.7E+04	5.0E+01
21	Benzo(a)anthracene	3	41	0	8	5.0E+01	0.0E+00	2.3E-01	2.2E+01	3.4E+01	2.7E+04	5.0E+01
22	Benzo(a)pyrene	1	41	0	8	5.0E+01	0.0E+00	2.3E-01	2.2E+01	3.4E+01	2.7E+04	5.0E+01
23	Benzo(b)fluoranthene	0	41	0	8	5.0E+01	0.0E+00	2.3E-01	2.2E+01	3.4E+01	2.7E+04	ND
24	Benzo(g,h,i)perylene	0	41	0	8	5.0E+01	0.0E+00	2.3E-01	2.2E+01	3.4E+01	2.7E+04	ND
25	Benzo(k)fluoranthene	0	41	0	8	5.0E+01	0.0E+00	2.3E-01	2.2E+01	3.4E+01	2.7E+04	ND
26	Chrysene	14	41	2	8	5.0E+01	9.6E-02	5.8E-02	2.2E+01	3.4E+01	8.0E+06	9.6E-02
27	Fluoranthene	8	41	0	8	5.0E+01	0.0E+00	2.3E-01	2.2E+01	3.4E+01	2.7E+04	5.0E+01
28	Fluorene	25	41	1	8	5.0E+01	6.0E+00	2.3E-01	2.1E+01	3.4E+01	2.5E+04	6.0E+00
29	Indeno(1,2,3-cd)pyrene	0	41	0	8	5.0E+01	0.0E+00	2.3E-01	2.2E+01	3.4E+01	2.7E+04	ND
30	Methylnaphthalene, 2-	36	42	3	8	5.0E+01	5.0E+01	2.3E-01	2.7E+01	4.1E+01	2.3E+05	5.0E+01
31	Naphthalene	34	41	2	8	5.0E+01	7.4E+00	2.3E-01	2.1E+01	3.4E+01	2.2E+04	7.4E+00
32	Phenanthrene	35	42	2	8	5.0E+01	7.8E+00	2.3E-01	2.1E+01	3.4E+01	2.3E+04	7.8E+00
33	Pyrene	23	41	2	8	5.0E+01	2.3E+00	2.3E-01	2.0E+01	3.3E+01	9.1E+04	2.3E+00
34	Bis(2-ethylhexyl)phthalate	28	42	2	8	5.0E+01	1.3E-01	9.5E-02	2.2E+01	3.4E+01	5.7E+05	1.3E-01
35	Butylbenzylphthalate	1	41	0	8	5.0E+01	0.0E+00	2.3E-01	2.2E+01	3.4E+01	2.7E+04	5.0E+01
36	Di-n-butylphthalate	1	41	0	8	5.0E+01	0.0E+00	2.3E-01	2.2E+01	3.4E+01	2.7E+04	5.0E+01
37	Di-n-octylphthalate	2	41	0	8	5.0E+01	0.0E+00	2.3E-01	2.2E+01	3.4E+01	2.7E+04	5.0E+01
38	Diethylphthalate	0	41	0	8	5.0E+01	0.0E+00	2.3E-01	2.2E+01	3.4E+01	2.7E+04	ND
39	Aldrin	9	39	0	8	5.0E+01	0.0E+00	1.2E-03	1.9E+01	3.3E+01	1.6E+19	5.0E+01
40	Alpha Chlordane	11	40	0	8	5.0E+01	0.0E+00	1.2E-03	1.9E+01	3.3E+01	1.6E+19	5.0E+01
41	Alpha-BHC	9	39	0	8	5.0E+01	0.0E+00	1.2E-03	1.9E+01	3.3E+01	1.6E+19	5.0E+01
42	Beta-BHC	2	40	0	8	5.0E+01	0.0E+00	1.2E-03	1.9E+01	3.3E+01	1.6E+19	5.0E+01
43	DDD, 4,4-	1	40	0	8	5.0E+01	0.0E+00	2.3E-03	1.9E+01	3.3E+01	4.4E+17	5.0E+01
44	DDE, 4,4-	9	40	0	8	5.0E+01	0.0E+00	2.3E-03	1.9E+01	3.3E+01	4.4E+17	5.0E+01
45	DDT, 4,4-	13	40	0	8	5.0E+01	0.0E+00	2.3E-03	1.9E+01	3.3E+01	4.4E+17	5.0E+01
46	Delta-BHC	2	40	0	8	5.0E+01	0.0E+00	1.2E-03	1.9E+01	3.3E+01	1.6E+19	5.0E+01
47	Dieldrin	6	38	0	8	5.0E+01	0.0E+00	2.3E-03	1.9E+01	3.3E+01	4.4E+17	5.0E+01
48	Endosulfan I	4	36	0	4	1.8E-02	0.0E+00	1.2E-03	5.5E-03	1.5E-02	4.9E-01	1.8E-02
49	Endosulfan II	7	36	0	4	3.4E-02	0.0E+00	2.3E-03	1.1E-02	2.9E-02	9.5E-01	3.4E-02
50	Endosulfan sulfate	7	40	0	8	5.0E+01	0.0E+00	2.3E-03	1.9E+01	3.3E+01	4.4E+17	5.0E+01
51	Endrin	7	40	0	8	5.0E+01	0.0E+00	2.3E-03	1.9E+01	3.3E+01	4.4E+17	5.0E+01
52	Endrin aldehyde	1	29	0	4	3.4E-02	0.0E+00	2.3E-03	1.1E-02	2.9E-02	9.5E-01	3.4E-02
53	Endrin ketone	3	36	0	4	3.4E-02	0.0E+00	2.3E-03	1.1E-02	2.9E-02	9.5E-01	3.4E-02
54	Gamma-BHC	1	40	0	8	5.0E+01	0.0E+00	1.2E-03	1.9E+01	3.3E+01	1.6E+19	5.0E+01
55	Gamma Chlordane	9	40	0	8	5.0E+01	0.0E+00	1.2E-03	1.9E+01	3.3E+01	1.6E+19	5.0E+01
56	Heptachlor	2	40	0	8	5.0E+01	0.0E+00	1.2E-03	1.9E+01	3.3E+01	1.6E+19	5.0E+01

DATA STATISTICS

EXPOSURE POINT: SOUTH PIT
MEDIUM: SLUDGE
UNITS: MG/KG
U MULTIPLIER: 0.5

DATE: 07/14/92
FILENAME S-SEDGE

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
57	Heptachlor epoxide	3	40	0	8	5.0E+01	0.0E+00	1.2E-03	1.9E+01	3.3E+01	1.6E+19	5.0E+01
58	Methoxychlor	3	40	0	8	5.0E+01	0.0E+00	1.2E-02	1.9E+01	3.3E+01	8.6E+11	5.0E+01
59	Aroclor-1260	2	40	0	8	2.5E+01	0.0E+00	2.3E-02	9.6E+00	1.7E+01	3.8E+07	2.5E+01
60	Aluminum	37	37	8	8	1.8E+04	1.8E+04	7.5E+03	1.4E+04	1.6E+04	1.8E+04	1.8E+04
61	Antimony	0	24	0	6	6.2E+01	0.0E+00	8.5E+00	3.2E+01	4.9E+01	1.2E+02	ND
62	Arsenic	26	37	4	8	2.4E+01	7.5E+00	5.0E+00	1.1E+01	1.6E+01	2.1E+01	7.5E+00
63	Barium	37	37	8	8	7.2E+03	7.2E+03	9.9E+02	3.4E+03	5.0E+03	8.7E+03	7.2E+03
64	Beryllium	9	37	2	8	5.0E+00	1.1E+00	4.9E-01	2.2E+00	3.4E+00	7.9E+00	1.1E+00
65	Cadmium (soil)	19	37	0	8	5.0E+00	0.0E+00	2.8E-01	2.2E+00	3.3E+00	1.8E+01	5.0E+00
66	Cadmium (water)	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND
67	Chromium	37	37	8	8	1.4E+02	1.4E+02	1.8E+01	8.1E+01	1.1E+02	2.2E+02	1.4E+02
68	Cobalt	26	37	4	8	2.1E+01	1.3E+01	8.0E+00	1.2E+01	1.5E+01	1.6E+01	1.3E+01
69	Cyanide	1	16	0	4	1.5E+00	0.0E+00	5.0E-01	1.1E+00	1.7E+00	2.8E+00	1.5E+00
70	Lead	33	37	4	8	3.4E+01	3.4E+01	1.8E+01	2.5E+01	3.0E+01	3.1E+01	3.1E+01
71	Mercury	27	37	1	8	4.0E-01	4.0E-01	7.0E-02	1.7E-01	2.4E-01	3.1E-01	3.1E-01
72	Nickel	23	37	4	8	2.1E+01	2.1E+01	1.2E+01	1.7E+01	1.9E+01	2.0E+01	2.0E+01
73	Silver	8	37	2	8	1.0E+01	2.2E+00	9.5E-01	4.4E+00	6.6E+00	1.5E+01	2.2E+00
74	Thallium	3	37	0	8	1.0E+02	0.0E+00	4.9E-01	3.7E+01	6.4E+01	5.2E+05	1.0E+02
75	Vanadium	26	37	4	8	3.8E+01	3.8E+01	1.8E+01	2.6E+01	3.0E+01	3.2E+01	3.2E+01
76	TCDD Equivalent	17	17	3	3	2.0E-05	2.0E-05	7.2E-06	1.2E-05	2.4E-05	1.4E-04	2.0E-05

TABLE 2

DATA STATISTICS

EXPOSURE POINT: SOUTH PIT
MEDIUM: SURFACE WATER
UNITS: MG/L
U MULTIPLIER: 0.5

DATE: 07/14/92
FILENAME S-SSW

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
1	Acetone	4	17	2	2	6.0E-03	6.0E-03	4.0E-03	5.0E-03	1.1E-02	1.7E-02	6.0E-03
2	Benzene	2	16	1	1	2.0E-01	2.0E-01	2.0E-01	2.0E-01	0.0E+00	0.0E+00	2.0E-01
3	Butanone, 2-	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
4	Chloroform	0	17	0	2	2.5E-03	0.0E+00	2.5E-03	2.5E-03	2.5E-03	2.5E-03	ND
5	Dichloroethane, 1,1-	1	17	1	2	4.0E-03	4.0E-03	2.5E-03	3.3E-03	8.0E-03	1.3E-02	4.0E-03
6	Ethylbenzene	3	17	1	2	1.1E-02	1.1E-02	2.5E-03	6.8E-03	3.4E-02	7.9E+03	1.1E-02
7	Methylene chloride	10	17	1	2	2.5E-03	2.0E-03	2.0E-03	2.3E-03	3.8E-03	3.8E-03	2.0E-03
8	Tetrachloroethene	3	17	2	2	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
9	Toluene	3	17	1	2	7.8E-02	7.8E-02	2.5E-03	4.0E-02	2.8E-01	9.3E+33	7.8E-02
10	Xylene (total)	3	17	1	2	4.7E-02	4.7E-02	2.5E-03	2.5E-02	1.7E-01	3.3E+22	4.7E-02
11	Benzoic acid	2	15	1	2	2.5E-02	2.4E-02	2.4E-02	2.5E-02	2.8E-02	2.7E-02	2.4E-02
12	Dibenzofuran	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
13	Dichlorobenzene, 1,2-	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
14	Dimethylphenol, 2,4-	1	17	1	2	2.2E-02	2.2E-02	5.0E-03	1.4E-02	6.7E-02	1.6E+04	2.2E-02
15	Methylphenol, 2-	1	17	1	2	9.5E-02	9.5E-02	5.0E-03	5.0E-02	3.3E-01	8.2E+22	9.5E-02
16	Methylphenol, 4-	1	17	1	2	3.7E-02	3.7E-02	5.0E-03	2.1E-02	1.2E-01	4.1E+10	3.7E-02
17	Phenol	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
18	Acenaphthene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
19	Acenaphthylene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
20	Anthracene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
21	Benzo(a)anthracene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
22	Benzo(a)pyrene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
23	Benzo(b)fluoranthene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
24	Benzo(g,h,i)perylene	1	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
25	Benzo(k)fluoranthene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
26	Chrysene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
27	Fluoranthene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
28	Fluorene	1	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
29	Indeno(1,2,3-cd)pyrene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
30	Methylnaphthalene, 2-	2	17	1	2	5.0E-03	4.0E-03	4.0E-03	4.5E-03	7.7E-03	7.8E-03	4.0E-03
31	Naphthalene	2	17	1	2	1.1E-02	1.1E-02	5.0E-03	8.0E-03	2.7E-02	6.7E-01	1.1E-02
32	Phenanthrene	1	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
33	Pyrene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
34	Bis(2-ethylhexyl)phthalate	4	17	1	2	5.0E-03	2.0E-03	2.0E-03	3.5E-03	1.3E-02	6.1E-01	2.0E-03
35	Butylbenzylphthalate	2	17	1	2	9.0E-02	9.0E-02	5.0E-03	4.8E-02	3.2E-01	2.7E+22	9.0E-02
36	Di-n-butylphthalate	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
37	Di-n-octylphthalate	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
38	Diethylphthalate	1	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
39	Aldrin	4	17	1	2	2.1E-04	2.1E-04	2.5E-05	1.2E-04	7.0E-04	1.5E+09	2.1E-04
40	Alpha Chlordane	1	17	0	2	2.5E-04	0.0E+00	2.5E-04	2.5E-04	2.5E-04	2.5E-04	2.5E-04
41	Alpha-BHC	1	17	0	2	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	2.5E-05
42	Beta-BHC	3	17	0	2	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	2.5E-05
43	DDD, 4,4-	0	17	0	2	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	ND
44	DDE, 4,4-	2	17	1	2	1.3E-04	1.3E-04	5.0E-05	9.0E-05	3.4E-04	4.8E-02	1.3E-04
45	DDT, 4,4-	2	17	1	2	1.1E-04	1.1E-04	5.0E-05	8.0E-05	2.7E-04	6.7E-03	1.1E-04
46	Delta-BHC	0	17	0	2	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	ND
47	Dieldrin	3	17	1	2	2.0E-04	2.0E-04	5.0E-05	1.3E-04	6.0E-04	5.8E+01	2.0E-04
48	Endosulfan I	2	17	0	2	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	2.5E-05
49	Endosulfan II	4	17	1	2	1.1E-04	1.1E-04	5.0E-05	8.0E-05	2.7E-04	6.7E-03	1.1E-04
50	Endosulfan sulfate	1	17	0	2	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	5.0E-05
51	Endrin	0	17	0	2	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	ND
52	Endrin aldehyde	1	1	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND
53	Endrin ketone	0	17	0	2	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	ND
54	Gamma-BHC	0	17	0	2	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	ND
55	Gamma Chlordane	1	17	0	2	2.5E-04	0.0E+00	2.5E-04	2.5E-04	2.5E-04	2.5E-04	2.5E-04
56	Heptachlor	0	16	0	1	2.5E-05	0.0E+00	2.5E-05	2.5E-05	0.0E+00	0.0E+00	ND

DATA STATISTICS

EXPOSURE POINT: SOUTH PIT
MEDIUM: SURFACE WATER
UNITS: MG/L
U MULTIPLIER: 0.5

DATE: 07/14/92
FILENAME S-SSW

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
57	Heptachlor epoxide	0	17	0	2	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	ND
58	Methoxychlor	1	17	0	2	2.5E-04	0.0E+00	2.5E-04	2.5E-04	2.5E-04	2.5E-04	2.5E-04
59	Aroclor-1260	0	17	0	2	5.0E-04	0.0E+00	5.0E-04	5.0E-04	5.0E-04	5.0E-04	ND
60	Aluminum	18	18	2	2	3.1E+00	3.1E+00	7.1E-01	1.9E+00	9.6E+00	2.4E+06	3.1E+00
61	Antimony	1	18	1	2	9.3E-02	9.3E-02	1.9E-02	5.6E-02	2.9E-01	1.0E+07	9.3E-02
62	Arsenic	5	18	1	2	1.9E-02	1.9E-02	1.5E-03	1.0E-02	6.5E-02	1.7E+16	1.9E-02
63	Barium	18	18	2	2	1.3E+01	1.3E+01	1.1E+00	7.1E+00	4.5E+01	2.4E+18	1.3E+01
64	Beryllium	1	18	0	2	1.0E-03	0.0E+00	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03
65	Cadmium (soil)	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND
66	Cadmium (water)	0	18	0	2	2.0E-03	0.0E+00	2.0E-03	2.0E-03	2.0E-03	2.0E-03	ND
67	Chromium	12	18	2	2	1.00E-01	1.00E-01	8.2E-03	5.4E-02	3.4E-01	4.8E+16	1.00E-01
68	Cobalt	3	18	1	2	1.7E-02	1.7E-02	2.5E-03	9.9E-03	5.8E-02	7.8E+07	1.7E-02
69	Cyanide	0	16	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
70	Lead	11	18	0	2	5.0E-03	0.0E+00	5.0E-04	2.8E-03	1.7E-02	8.8E+13	5.0E-03
71	Mercury	0	18	0	2	1.0E-04	0.0E+00	1.0E-04	1.0E-04	1.0E-04	1.0E-04	ND
72	Nickel	1	18	0	2	1.0E-02	0.0E+00	1.0E-02	1.0E-02	1.0E-02	1.0E-02	1.0E-02
73	Silver	1	18	0	2	2.5E-03	0.0E+00	2.5E-03	2.5E-03	2.5E-03	2.5E-03	2.5E-03
74	Thallium	0	18	0	2	1.5E-01	0.0E+00	1.5E-03	7.6E-02	5.4E-01	1.8E+65	ND
75	Vanadium	5	18	1	2	6.4E-02	6.4E-02	2.0E-03	3.3E-02	2.3E-01	1.8E+34	6.4E-02
76	TCDD Equivalent	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND

TABLE 2

DATA STATISTICS

EXPOSURE POINT: SALT WATER POND
MEDIUM: SEDIMENT
UNITS: MG/KG
U MULTIPLIER: 0.5

DATE: 07/14/92
FILENAME S-SWPSED

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
1	Acetone	22	25	8	8	1.5E-01	1.5E-01	4.6E-02	7.9E-02	1.0E-01	1.1E-01	1.1E-01
2	Benzene	0	25	0	8	1.2E-02	0.0E+00	4.5E-03	9.6E-03	1.1E-02	1.2E-02	ND
3	Butanone, 2-	0	25	0	8	1.2E-02	0.0E+00	8.0E-03	1.0E-02	1.1E-02	1.1E-02	ND
4	Chloroform	3	25	0	8	1.2E-02	0.0E+00	4.5E-03	9.6E-03	1.1E-02	1.2E-02	1.2E-02
5	Dichloroethane, 1,1-	0	25	0	8	1.2E-02	0.0E+00	4.5E-03	9.6E-03	1.1E-02	1.2E-02	ND
6	Ethylbenzene	0	25	0	8	1.2E-02	0.0E+00	4.5E-03	9.6E-03	1.1E-02	1.2E-02	ND
7	Methylene chloride	23	25	8	8	1.2E-01	1.2E-01	8.0E-03	7.0E-02	9.4E-02	2.5E-01	1.2E-01
8	Tetrachloroethene	0	25	0	8	1.2E-02	0.0E+00	4.5E-03	9.6E-03	1.1E-02	1.2E-02	ND
9	Toluene	0	25	0	8	1.2E-02	0.0E+00	4.5E-03	9.6E-03	1.1E-02	1.2E-02	ND
10	Xylene (total)	2	25	2	8	1.2E-02	6.5E-03	2.0E-03	8.0E-03	1.0E-02	1.6E-02	6.5E-03
11	Benzoic acid	5	14	0	1	2.8E+00	0.0E+00	2.8E+00	2.8E+00	0.0E+00	0.0E+00	2.8E+00
12	Dibenzofuran	0	25	0	8	6.0E-01	0.0E+00	2.0E-01	3.5E-01	4.3E-01	4.6E-01	ND
13	Dichlorobenzene, 1,2-	0	25	0	8	6.0E-01	0.0E+00	2.0E-01	3.5E-01	4.3E-01	4.6E-01	ND
14	Dimethylphenol, 2,4-	0	25	0	8	6.0E-01	0.0E+00	2.0E-01	3.5E-01	4.3E-01	4.6E-01	ND
15	Methylphenol, 2-	0	25	0	8	6.0E-01	0.0E+00	2.0E-01	3.5E-01	4.3E-01	4.6E-01	ND
16	Methylphenol, 4-	0	25	0	8	6.0E-01	0.0E+00	2.0E-01	3.5E-01	4.3E-01	4.6E-01	ND
17	Phenol	0	25	0	8	6.0E-01	0.0E+00	2.0E-01	3.5E-01	4.3E-01	4.6E-01	ND
18	Acenaphthene	0	25	0	8	6.0E-01	0.0E+00	2.0E-01	3.5E-01	4.3E-01	4.6E-01	ND
19	Acenaphthylene	0	25	0	8	6.0E-01	0.0E+00	2.0E-01	3.5E-01	4.3E-01	4.6E-01	ND
20	Anthracene	0	25	0	8	6.0E-01	0.0E+00	2.0E-01	3.5E-01	4.3E-01	4.6E-01	ND
21	Benzo(a)anthracene	0	25	0	8	6.0E-01	0.0E+00	2.0E-01	3.5E-01	4.3E-01	4.6E-01	ND
22	Benzo(a)pyrene	2	25	0	8	6.0E-01	0.0E+00	2.0E-01	3.5E-01	4.3E-01	4.6E-01	4.6E-01
23	Benzo(b)fluoranthene	0	25	0	8	6.0E-01	0.0E+00	2.0E-01	3.5E-01	4.3E-01	4.6E-01	ND
24	Benzo(g,h,i)perylene	0	25	0	8	6.0E-01	0.0E+00	2.0E-01	3.5E-01	4.3E-01	4.6E-01	ND
25	Benzo(k)fluoranthene	0	25	0	8	6.0E-01	0.0E+00	2.0E-01	3.5E-01	4.3E-01	4.6E-01	ND
26	Chrysene	1	25	1	8	6.0E-01	7.7E-02	7.7E-02	3.2E-01	4.2E-01	6.3E-01	7.7E-02
27	Fluoranthene	1	25	1	8	6.0E-01	2.5E-01	2.0E-01	3.4E-01	4.2E-01	4.5E-01	2.5E-01
28	Fluorene	0	25	0	8	6.0E-01	0.0E+00	2.0E-01	3.5E-01	4.3E-01	4.6E-01	ND
29	Indeno(1,2,3-cd)pyrene	0	25	0	8	6.0E-01	0.0E+00	2.0E-01	3.5E-01	4.3E-01	4.6E-01	ND
30	Methylnaphthalene, 2-	2	25	2	8	3.9E-01	2.5E-01	2.0E-01	2.9E-01	3.4E-01	3.5E-01	2.5E-01
31	Naphthalene	0	25	0	8	6.0E-01	0.0E+00	2.0E-01	3.5E-01	4.3E-01	4.6E-01	ND
32	Phenanthrene	1	25	1	8	3.9E-01	2.8E-01	2.0E-01	3.1E-01	3.5E-01	3.7E-01	2.8E-01
33	Pyrene	2	25	2	8	6.0E-01	3.1E-01	8.2E-02	3.2E-01	4.2E-01	6.0E-01	3.1E-01
34	Bis(2-ethylhexyl)phthalate	14	25	8	8	2.8E-01	2.8E-01	7.6E-02	1.9E-01	2.4E-01	3.2E-01	2.8E-01
35	Butylbenzylphthalate	1	25	1	8	6.0E-01	2.7E-01	2.0E-01	3.4E-01	4.2E-01	4.5E-01	2.7E-01
36	Di-n-butylphthalate	4	25	3	8	6.0E-01	2.9E-01	1.8E-01	3.1E-01	4.1E-01	4.5E-01	2.9E-01
37	Di-n-octylphthalate	0	25	0	8	6.0E-01	0.0E+00	2.0E-01	3.5E-01	4.3E-01	4.6E-01	ND
38	Diethylphthalate	0	25	0	8	6.0E-01	0.0E+00	2.0E-01	3.5E-01	4.3E-01	4.6E-01	ND
39	Aldrin	0	16	0	2	7.0E-03	0.0E+00	1.7E-03	4.4E-03	2.1E-02	2.7E+03	ND
40	Alpha Chlordane	0	16	0	2	7.0E-02	0.0E+00	1.7E-03	3.6E-02	2.5E-01	7.3E+36	ND
41	Alpha-BHC	0	16	0	2	7.0E-03	0.0E+00	1.7E-03	4.4E-03	2.1E-02	2.7E+03	ND
42	Beta-BHC	0	16	0	2	7.0E-03	0.0E+00	1.7E-03	4.4E-03	2.1E-02	2.7E+03	ND
43	DDD, 4,4-	0	16	0	2	1.4E-02	0.0E+00	3.3E-03	8.6E-03	4.3E-02	8.2E+03	ND
44	DDE, 4,4-	1	16	0	2	1.4E-02	0.0E+00	3.3E-03	8.6E-03	4.3E-02	8.2E+03	1.4E-02
45	DDT, 4,4-	1	16	0	2	1.4E-02	0.0E+00	3.3E-03	8.6E-03	4.3E-02	8.2E+03	1.4E-02
46	Delta-BHC	0	16	0	2	7.0E-03	0.0E+00	1.7E-03	4.4E-03	2.1E-02	2.7E+03	ND
47	Dieldrin	1	16	0	2	1.4E-02	0.0E+00	3.3E-03	8.6E-03	4.3E-02	8.2E+03	1.4E-02
48	Endosulfan I	0	16	0	2	7.0E-03	0.0E+00	1.7E-03	4.4E-03	2.1E-02	2.7E+03	ND
49	Endosulfan II	1	16	1	2	1.4E-02	1.5E-04	1.5E-04	7.1E-03	5.1E-02	1.1E+54	1.5E-04
50	Endosulfan sulfate	0	16	0	2	1.4E-02	0.0E+00	3.3E-03	8.6E-03	4.3E-02	8.2E+03	ND
51	Endrin	1	16	0	2	1.4E-02	0.0E+00	3.3E-03	8.6E-03	4.3E-02	8.2E+03	1.4E-02
52	Endrin aldehyde	0	2	0	1	3.3E-03	0.0E+00	3.3E-03	3.3E-03	0.0E+00	0.0E+00	ND
53	Endrin ketone	0	16	0	2	1.4E-02	0.0E+00	3.3E-03	8.6E-03	4.3E-02	8.2E+03	ND
54	Gamma-BHC	0	16	0	2	7.0E-03	0.0E+00	1.7E-03	4.4E-03	2.1E-02	2.7E+03	ND
55	Gamma Chlordane	0	16	0	2	7.0E-02	0.0E+00	1.7E-03	3.6E-02	2.5E-01	7.3E+36	ND
56	Heptachlor	0	16	0	2	7.0E-03	0.0E+00	1.7E-03	4.4E-03	2.1E-02	2.7E+03	ND

DATA STATISTICS

EXPOSURE POINT: SALT WATER POND
MEDIUM: SEDIMENT
UNITS: MG/KG
U MULTIPLIER: 0.5

DATE: 07/14/92
FILENAME S-SWPSED

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
57	Heptachlor epoxide	0	16	0	2	7.0E-03	0.0E+00	1.7E-03	4.4E-03	2.1E-02	2.7E+03	ND
58	Methoxychlor	0	16	0	2	7.0E-02	0.0E+00	1.7E-02	4.4E-02	2.1E-01	2.7E+04	ND
59	Aroclor-1260	0	16	0	2	1.4E-01	0.0E+00	3.3E-02	8.6E-02	4.3E-01	8.2E+04	ND
60	Aluminum	25	25	8	8	1.7E+04	1.7E+04	5.5E+03	1.1E+04	1.3E+04	1.5E+04	1.5E+04
61	Antimony	0	12	0	7	8.1E+00	0.0E+00	6.4E+00	7.3E+00	7.8E+00	7.8E+00	ND
62	Arsenic	25	25	8	8	1.5E+01	1.5E+01	3.5E+00	7.9E+00	1.1E+01	1.3E+01	1.3E+01
63	Barium	25	25	8	8	9.9E+03	9.9E+03	1.6E+03	5.1E+03	7.0E+03	1.1E+04	9.9E+03
64	Beryllium	19	25	5	8	1.0E+00	1.0E+00	3.8E-01	6.9E-01	8.5E-01	9.6E-01	9.6E-01
65	Cadmium (soil)	5	25	0	8	9.0E-01	0.0E+00	3.7E-01	7.7E-01	8.9E-01	9.9E-01	9.0E-01
66	Cadmium (water)	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND
67	Chromium	24	25	8	8	1.2E+02	1.2E+02	3.5E+01	7.3E+01	9.3E+01	1.1E+02	1.1E+02
68	Cobalt	25	25	8	8	1.6E+01	1.6E+01	9.7E+00	1.2E+01	1.4E+01	1.4E+01	1.4E+01
69	Cyanide	0	14	0	1	1.7E+00	0.0E+00	1.7E+00	1.7E+00	0.0E+00	0.0E+00	ND
70	Lead	25	25	8	8	5.2E+01	5.2E+01	2.2E+01	3.1E+01	3.8E+01	3.9E+01	3.9E+01
71	Mercury	4	25	1	8	2.3E-01	2.3E-01	9.0E-02	1.2E-01	1.5E-01	1.5E-01	1.5E-01
72	Nickel	25	25	8	8	2.0E+01	2.0E+01	1.0E+01	1.6E+01	1.9E+01	2.0E+01	2.0E+01
73	Silver	2	21	0	8	9.0E-01	0.0E+00	7.0E-01	8.2E-01	8.7E-01	8.7E-01	8.7E-01
74	Thallium	6	25	0	8	4.6E-01	0.0E+00	3.6E-01	4.1E-01	4.4E-01	4.4E-01	4.4E-01
75	Vanadium	25	25	8	8	4.9E+01	4.9E+01	1.7E+01	3.2E+01	3.9E+01	4.4E+01	4.4E+01
76	TCDD Equivalent	9	9	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	-

TABLE 2

DATA STATISTICS

EXPOSURE POINT: SALT WATER POND
MEDIUM: SURFACE WATER
UNITS: MG/L
U MULTIPLIER: 0.5

DATE: 07/14/92
FILENAME S-SWPSW

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
1	Acetone	4	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
2	Benzene	2	16	0	3	5.0E-03	0.0E+00	2.5E-03	3.3E-03	5.8E-03	1.5E-02	5.0E-03
3	Butanone, 2-	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
4	Chloroform	0	17	0	3	5.0E-03	0.0E+00	2.5E-03	3.3E-03	5.8E-03	1.5E-02	ND
5	Dichloroethane, 1,1-	1	17	0	3	5.0E-03	0.0E+00	2.5E-03	3.3E-03	5.8E-03	1.5E-02	5.0E-03
6	Ethylbenzene	3	17	0	3	5.0E-03	0.0E+00	2.5E-03	3.3E-03	5.8E-03	1.5E-02	5.0E-03
7	Methylene chloride	10	17	2	3	6.0E-03	6.0E-03	1.8E-03	3.4E-03	7.2E-03	1.2E-01	6.0E-03
8	Tetrachloroethene	3	17	0	3	5.0E-03	0.0E+00	2.5E-03	3.3E-03	5.8E-03	1.5E-02	5.0E-03
9	Toluene	3	17	0	3	5.0E-03	0.0E+00	2.5E-03	3.3E-03	5.8E-03	1.5E-02	5.0E-03
10	Xylene (total)	3	17	0	3	5.0E-03	0.0E+00	2.5E-03	3.3E-03	5.8E-03	1.5E-02	5.0E-03
11	Benzoic acid	2	15	0	2	2.5E-02	0.0E+00	2.5E-02	2.5E-02	2.5E-02	2.5E-02	2.5E-02
12	Dibenzofuran	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
13	Dichlorobenzene, 1,2-	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
14	Dimethylphenol, 2,4-	1	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
15	Methylphenol, 2-	1	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
16	Methylphenol, 4-	1	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
17	Phenol	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
18	Acenaphthene	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
19	Acenaphthylene	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
20	Anthracene	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
21	Benzo(a)anthracene	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
22	Benzo(a)pyrene	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
23	Benzo(b)fluoranthene	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
24	Benzo(g,h,i)perylene	1	17	1	3	5.5E-03	5.5E-03	5.0E-03	5.2E-03	5.7E-03	5.8E-03	5.5E-03
25	Benzo(k)fluoranthene	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
26	Chrysene	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
27	Fluoranthene	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
28	Fluorene	1	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
29	Indeno(1,2,3-cd)pyrene	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
30	Methylnaphthalene, 2-	2	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
31	Naphthalene	2	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
32	Phenanthrene	1	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
33	Pyrene	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
34	Bis(2-ethylhexyl)phthalate	4	17	1	3	1.1E-02	1.1E-02	5.0E-03	7.0E-03	1.3E-02	5.8E-02	1.1E-02
35	Butylbenzylphthalate	2	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
36	Di-n-butylphthalate	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
37	Di-n-octylphthalate	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
38	Diethylphthalate	1	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
39	Aldrin	4	17	2	3	7.0E-05	7.0E-05	2.5E-05	5.2E-05	9.2E-05	1.2E-03	7.0E-05
40	Alpha Chlordane	1	17	1	3	2.5E-04	7.8E-06	7.8E-06	1.7E-04	4.1E-04	6.9E+12	7.8E-06
41	Alpha-BHC	1	17	0	3	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	2.5E-05
42	Beta-BHC	3	17	0	3	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	2.5E-05
43	DDD, 4,4-	0	17	0	3	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	ND
44	DDE, 4,4-	2	17	1	3	5.0E-05	3.4E-06	3.4E-06	3.4E-05	8.0E-05	1.5E+05	3.4E-06
45	DDT, 4,4-	2	17	1	3	5.0E-05	4.4E-06	4.4E-06	3.5E-05	7.9E-05	1.7E+04	4.4E-06
46	Delta-BHC	0	17	0	3	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	ND
47	Dieldrin	3	17	0	3	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	5.0E-05
48	Endosulfan I	2	17	2	3	7.0E-05	7.0E-05	2.5E-05	5.5E-05	9.9E-05	1.6E-03	7.0E-05
49	Endosulfan II	4	17	1	3	5.0E-05	8.1E-06	8.1E-06	3.6E-05	7.7E-05	7.7E-01	8.1E-06
50	Endosulfan sulfate	1	17	1	3	5.0E-05	2.6E-06	2.6E-06	3.4E-05	8.0E-05	7.8E+07	2.6E-06
51	Endrin	0	17	0	3	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	ND
52	Endrin aldehyde	1	1	1	1	5.7E-06	5.7E-06	5.7E-06	5.7E-06	0.0E+00	0.0E+00	5.7E-06
53	Endrin ketone	0	17	0	3	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	ND
54	Gamma-BHC	0	17	0	3	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	ND
55	Gamma Chlordane	1	17	1	3	2.5E-04	6.8E-06	6.8E-06	1.7E-04	4.1E-04	3.3E+13	6.8E-06
56	Heptachlor	0	16	0	3	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	ND

DATA STATISTICS

EXPOSURE POINT: SALT WATER POND
MEDIUM: SURFACE WATER
UNITS: MG/L
U MULTIPLIER: 0.5

DATE: 07/14/92
FILENAME S-SWPSW

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
57	Heptachlor epoxide	0	17	0	3	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	ND
58	Methoxychlor	1	17	0	3	2.5E-04	0.0E+00	2.5E-04	2.5E-04	2.5E-04	2.5E-04	2.5E-04
59	Aroclor-1260	0	17	0	3	5.0E-04	0.0E+00	5.0E-04	5.0E-04	5.0E-04	5.0E-04	ND
60	Aluminum	18	18	4	4	2.6E+00	2.6E+00	1.4E-01	9.1E-01	2.3E+00	3.7E+02	2.6E+00
61	Antimony	1	18	0	4	2.0E-02	0.0E+00	1.5E-02	1.7E-02	2.0E-02	2.0E-02	2.0E-02
62	Arsenic	5	18	0	4	1.0E-03	0.0E+00	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03
63	Barium	18	18	4	4	2.9E+00	2.9E+00	1.4E+00	2.1E+00	3.1E+00	4.0E+00	2.9E+00
64	Beryllium	1	18	0	4	1.0E-03	0.0E+00	5.0E-04	6.3E-04	9.2E-04	1.0E-03	1.0E-03
65	Cadmium (soil)	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND
66	Cadmium (water)	0	18	0	4	2.5E-03	0.0E+00	1.0E-03	1.5E-03	2.3E-03	3.0E-03	ND
67	Chromium	12	18	4	4	3.5E-02	3.5E-02	5.5E-03	1.7E-02	3.3E-02	1.9E-01	3.5E-02
68	Cobalt	3	18	0	4	9.0E-03	0.0E+00	1.5E-03	3.4E-03	7.8E-03	3.8E-02	9.0E-03
69	Cyanide	0	16	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
70	Lead	11	18	4	4	9.1E-03	9.1E-03	4.6E-03	5.9E-03	8.4E-03	9.3E-03	9.1E-03
71	Mercury	0	18	0	4	1.0E-04	0.0E+00	1.0E-04	1.0E-04	1.0E-04	1.0E-04	ND
72	Nickel	1	18	0	4	1.3E-02	0.0E+00	4.0E-03	6.4E-03	1.1E-02	1.6E-02	1.3E-02
73	Silver	1	18	0	4	2.0E-03	0.0E+00	2.0E-03	2.0E-03	2.0E-03	2.0E-03	2.0E-03
74	Thallium	0	18	0	4	1.0E-03	0.0E+00	1.0E-03	1.0E-03	1.0E-03	1.0E-03	ND
75	Vanadium	5	18	0	4	2.5E-03	0.0E+00	1.0E-03	1.6E-03	2.5E-03	3.7E-03	2.5E-03
76	TCDD Equivalent	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND

TABLE 2

DATA STATISTICS

EXPOSURE POINT: SOUTHEAST MARSH
MEDIUM: SOIL
UNITS: MG/KG
U MULTIPLIER: 0.5

DATE: 07/14/92
FILENAME S-SEMSED

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
1	Acetone	34	51	1	6	2.6E-01	2.6E-01	5.5E-03	4.8E-02	1.3E-01	1.3E+00	2.6E-01
2	Benzene	0	51	0	6	8.0E-03	0.0E+00	3.0E-03	5.4E-03	7.0E-03	8.1E-03	ND
3	Butanone, 2-	0	51	0	6	1.6E-02	0.0E+00	5.5E-03	7.8E-03	1.1E-02	1.2E-02	ND
4	Chloroform	0	51	0	6	8.0E-03	0.0E+00	3.0E-03	5.4E-03	7.0E-03	8.1E-03	ND
5	Dichloroethane, 1,1-	0	51	0	6	8.0E-03	0.0E+00	3.0E-03	5.4E-03	7.0E-03	8.1E-03	ND
6	Ethylbenzene	0	51	0	6	8.0E-03	0.0E+00	3.0E-03	5.4E-03	7.0E-03	8.1E-03	ND
7	Methylene chloride	29	51	3	6	4.2E-02	4.2E-02	5.5E-03	1.9E-02	3.2E-02	8.9E-02	4.2E-02
8	Tetrachloroethene	1	51	1	6	9.0E-03	9.0E-03	3.0E-03	5.6E-03	7.4E-03	8.6E-03	8.6E-03
9	Toluene	0	51	0	6	8.0E-03	0.0E+00	3.0E-03	5.4E-03	7.0E-03	8.1E-03	ND
10	Xylene (total)	0	51	0	6	8.0E-03	0.0E+00	3.0E-03	5.4E-03	7.0E-03	8.1E-03	ND
11	Benzoic acid	0	6	0	2	2.1E+00	0.0E+00	2.0E+00	2.0E+00	2.5E+00	2.3E+00	ND
12	Dibenzofuran	0	51	0	6	4.4E-01	0.0E+00	1.8E-01	3.1E-01	4.1E-01	4.8E-01	ND
13	Dichlorobenzene, 1,2-	0	51	0	6	4.4E-01	0.0E+00	1.8E-01	3.1E-01	4.1E-01	4.8E-01	ND
14	Dimethylphenol, 2,4-	0	46	0	6	4.4E-01	0.0E+00	1.8E-01	3.1E-01	4.1E-01	4.8E-01	ND
15	Methylphenol, 2-	0	46	0	6	4.4E-01	0.0E+00	1.8E-01	3.1E-01	4.1E-01	4.8E-01	ND
16	Methylphenol, 4-	0	47	0	6	4.4E-01	0.0E+00	1.8E-01	3.1E-01	4.1E-01	4.8E-01	ND
17	Phenol	1	46	1	6	4.3E-01	4.2E-01	1.8E-01	3.0E-01	4.0E-01	4.8E-01	4.2E-01
18	Acenaphthene	0	51	0	6	4.4E-01	0.0E+00	1.8E-01	3.1E-01	4.1E-01	4.8E-01	ND
19	Acenaphthylene	0	51	0	6	4.4E-01	0.0E+00	1.8E-01	3.1E-01	4.1E-01	4.8E-01	ND
20	Anthracene	0	51	0	6	4.4E-01	0.0E+00	1.8E-01	3.1E-01	4.1E-01	4.8E-01	ND
21	Benzo(a)anthracene	3	51	0	6	4.4E-01	0.0E+00	1.8E-01	3.1E-01	4.1E-01	4.8E-01	4.4E-01
22	Benzo(a)pyrene	3	51	0	6	4.4E-01	0.0E+00	1.8E-01	3.1E-01	4.1E-01	4.8E-01	4.4E-01
23	Benzo(b)fluoranthene	3	51	0	6	4.4E-01	0.0E+00	1.8E-01	3.1E-01	4.1E-01	4.8E-01	4.4E-01
24	Benzo(g,h,i)perylene	2	51	0	6	4.4E-01	0.0E+00	1.8E-01	3.1E-01	4.1E-01	4.8E-01	4.4E-01
25	Benzo(k)fluoranthene	3	51	0	6	4.4E-01	0.0E+00	1.8E-01	3.1E-01	4.1E-01	4.8E-01	4.4E-01
26	Chrysene	4	51	0	6	4.4E-01	0.0E+00	1.8E-01	3.1E-01	4.1E-01	4.8E-01	4.4E-01
27	Fluoranthene	3	51	0	6	4.4E-01	0.0E+00	1.8E-01	3.1E-01	4.1E-01	4.8E-01	4.4E-01
28	Fluorene	0	51	0	6	4.4E-01	0.0E+00	1.8E-01	3.1E-01	4.1E-01	4.8E-01	4.4E-01
29	Indeno(1,2,3-cd)pyrene	2	51	0	6	4.4E-01	0.0E+00	1.8E-01	3.1E-01	4.1E-01	4.8E-01	ND
30	Methylnaphthalene, 2-	2	51	1	6	4.4E-01	4.3E-02	4.3E-02	2.8E-01	4.1E-01	1.3E+00	4.4E-01
31	Naphthalene	0	51	0	6	4.4E-01	0.0E+00	1.8E-01	3.1E-01	4.1E-01	4.8E-01	4.3E-02
32	Phenanthrene	3	51	0	6	4.4E-01	0.0E+00	1.8E-01	3.1E-01	4.1E-01	4.8E-01	ND
33	Pyrene	4	51	0	6	4.4E-01	0.0E+00	1.8E-01	3.1E-01	4.1E-01	4.8E-01	4.4E-01
34	Bis(2-ethylhexyl)phthalate	37	51	5	6	1.9E+00	1.9E+00	1.3E-01	6.5E-01	1.2E+00	3.7E+00	1.9E+00
35	Butylbenzylphthalate	4	51	0	6	4.4E-01	0.0E+00	1.8E-01	3.1E-01	4.1E-01	4.8E-01	4.4E-01
36	Di-n-butylphthalate	7	51	2	6	4.4E-01	4.8E-02	1.9E-02	2.5E-01	4.1E-01	5.2E+00	4.8E-02
37	Di-n-octylphthalate	0	51	0	6	4.4E-01	0.0E+00	1.8E-01	3.1E-01	4.1E-01	4.8E-01	ND
38	Diethylphthalate	6	51	0	6	4.4E-01	0.0E+00	1.8E-01	3.1E-01	4.1E-01	4.8E-01	ND
39	Aldrin	0	27	0	3	5.5E-03	0.0E+00	4.9E-03	5.1E-03	5.7E-03	5.8E-03	4.4E-01
40	Alpha Chlordane	0	27	0	3	5.5E-02	0.0E+00	4.9E-02	5.1E-02	5.7E-02	5.8E-02	ND
41	Alpha-BHC	0	27	0	3	5.5E-03	0.0E+00	4.9E-03	5.1E-03	5.7E-03	5.8E-03	ND
42	Beta-BHC	0	27	0	3	5.5E-03	0.0E+00	4.9E-03	5.1E-03	5.7E-03	5.8E-03	ND
43	DDD, 4,4-	0	27	0	3	1.1E-02	0.0E+00	1.0E-02	1.0E-02	1.1E-02	1.1E-02	ND
44	DDE, 4,4-	0	27	0	3	1.1E-02	0.0E+00	1.0E-02	1.0E-02	1.1E-02	1.1E-02	ND
45	DDT, 4,4-	0	27	0	3	1.1E-02	0.0E+00	1.0E-02	1.0E-02	1.1E-02	1.1E-02	ND
46	Delta-BHC	0	27	0	3	5.5E-03	0.0E+00	4.9E-03	5.1E-03	5.7E-03	5.8E-03	ND
47	Dieldrin	0	27	0	3	1.1E-02	0.0E+00	1.0E-02	1.0E-02	1.1E-02	1.1E-02	ND
48	Endosulfan I	1	27	0	3	5.5E-03	0.0E+00	4.9E-03	5.1E-03	5.7E-03	5.8E-03	5.5E-03
49	Endosulfan II	1	27	0	3	1.1E-02	0.0E+00	1.0E-02	1.0E-02	1.1E-02	1.1E-02	1.1E-02
50	Endosulfan sulfate	0	27	0	3	1.1E-02	0.0E+00	1.0E-02	1.0E-02	1.1E-02	1.1E-02	ND
51	Endrin	0	27	0	3	1.1E-02	0.0E+00	1.0E-02	1.0E-02	1.1E-02	1.1E-02	ND
52	Endrin aldehyde	0	2	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND
53	Endrin ketone	0	27	0	3	1.1E-02	0.0E+00	1.0E-02	1.0E-02	1.1E-02	1.1E-02	ND
54	Gamma-BHC	0	27	0	3	5.5E-03	0.0E+00	4.9E-03	5.1E-03	5.7E-03	5.8E-03	ND
55	Gamma Chlordane	0	27	0	3	5.5E-02	0.0E+00	4.9E-02	5.1E-02	5.7E-02	5.8E-02	ND
56	Heptachlor	0	27	0	3	5.5E-03	0.0E+00	4.9E-03	5.1E-03	5.7E-03	5.8E-03	ND

DATA STATISTICS

EXPOSURE POINT: SOUTHEAST MARSH
MEDIUM: SOIL
UNITS: MG/KG
U MULTIPLIER: 0.5

DATE: 07/14/92
FILENAME S-SEMSED

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
57	Heptachlor epoxide	0	27	0	3	5.5E-03	0.0E+00	4.9E-03	5.1E-03	5.7E-03	5.8E-03	ND
58	Methoxychlor	0	27	0	3	5.5E-02	0.0E+00	4.9E-02	5.1E-02	5.7E-02	5.8E-02	ND
59	Aroclor-1260	0	27	0	3	1.1E-01	0.0E+00	1.0E-01	1.0E-01	1.1E-01	1.1E-01	ND
60	Aluminum	51	51	6	6	2.3E+04	2.3E+04	9.3E+03	1.6E+04	2.0E+04	2.2E+04	2.2E+04
61	Antimony	7	19	1	3	4.9E+00	4.3E+00	3.1E+00	4.1E+00	5.7E+00	7.2E+00	4.3E+00
62	Arsenic	51	51	6	6	7.9E+00	7.9E+00	4.5E+00	6.6E+00	7.7E+00	8.0E+00	7.9E+00
63	Barium	51	51	6	6	4.4E+03	4.4E+03	2.1E+02	1.0E+03	2.4E+03	1.0E+04	4.4E+03
64	Beryllium	51	51	6	6	1.4E+00	1.4E+00	4.8E-01	9.5E-01	1.3E+00	1.5E+00	1.4E+00
65	Cadmium (soil)	8	51	3	6	1.1E+00	1.1E+00	2.3E-01	5.4E-01	8.0E-01	1.1E+00	1.1E+00
66	Cadmium (water)	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND
67	Chromium	51	51	6	6	3.1E+01	3.1E+01	1.4E+01	2.0E+01	2.5E+01	2.6E+01	2.6E+01
68	Cobalt	47	51	6	6	2.3E+01	2.3E+01	4.6E+00	1.2E+01	1.7E+01	2.4E+01	2.3E+01
69	Cyanide	0	7	0	3	1.7E+00	0.0E+00	1.2E+00	1.4E+00	1.8E+00	2.1E+00	ND
70	Lead	40	51	6	6	3.3E+01	3.3E+01	1.4E+01	2.2E+01	2.7E+01	3.0E+01	3.0E+01
71	Mercury	8	51	3	6	1.1E+00	1.1E+00	5.8E-02	3.0E-01	6.4E-01	3.5E+00	1.1E+00
72	Nickel	51	51	6	6	3.3E+01	3.3E+01	5.4E+00	1.7E+01	2.6E+01	4.8E+01	3.3E+01
73	Silver	17	49	1	6	2.3E+00	2.3E+00	4.9E-01	1.0E+00	1.6E+00	2.1E+00	2.1E+00
74	Thallium	1	51	0	6	6.5E-01	0.0E+00	2.5E-01	4.6E-01	6.0E-01	7.2E-01	6.5E-01
75	Vanadium	51	51	6	6	3.6E+01	3.6E+01	2.7E+01	3.1E+01	3.4E+01	3.4E+01	3.4E+01
76	TCDD Equivalent	9	9	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND

TABLE 2

DATA STATISTICS

EXPOSURE POINT: SOUTHEAST MARSH
MEDIUM: SURFACE WATER
UNITS: MG/L
U MULTIPLIER: 0.5

DATE: 07/14/92
FILENAME S-SEMSW

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
1	Acetone	4	17	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	5.0E-03
2	Benzene	2	16	0	1	2.5E-03	0.0E+00	2.5E-03	2.5E-03	0.0E+00	0.0E+00	2.5E-03
3	Butanone, 2-	0	17	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	ND
4	Chloroform	0	17	0	1	2.5E-03	0.0E+00	2.5E-03	2.5E-03	0.0E+00	0.0E+00	ND
5	Dichloroethane, 1,1-	1	17	0	1	2.5E-03	0.0E+00	2.5E-03	2.5E-03	0.0E+00	0.0E+00	2.5E-03
6	Ethylbenzene	3	17	0	1	2.5E-03	0.0E+00	2.5E-03	2.5E-03	0.0E+00	0.0E+00	2.5E-03
7	Methylene chloride	10	17	0	1	2.5E-03	0.0E+00	2.5E-03	2.5E-03	0.0E+00	0.0E+00	2.5E-03
8	Tetrachloroethene	3	17	0	1	2.5E-03	0.0E+00	2.5E-03	2.5E-03	0.0E+00	0.0E+00	2.5E-03
9	Toluene	3	17	0	1	2.5E-03	0.0E+00	2.5E-03	2.5E-03	0.0E+00	0.0E+00	2.5E-03
10	Xylene (total)	3	17	0	1	2.5E-03	0.0E+00	2.5E-03	2.5E-03	0.0E+00	0.0E+00	2.5E-03
11	Benzoic acid	2	15	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND
12	Dibenzofuran	0	17	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	ND
13	Dichlorobenzene, 1,2-	0	17	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	ND
14	Dimethylphenol, 2,4-	1	17	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	ND
15	Methylphenol, 2-	1	17	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	5.0E-03
16	Methylphenol, 4-	1	17	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	5.0E-03
17	Phenol	0	17	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	5.0E-03
18	Acenaphthene	0	17	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	ND
19	Acenaphthylene	0	17	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	ND
20	Anthracene	0	17	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	ND
21	Benzo(a)anthracene	0	17	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	ND
22	Benzo(a)pyrene	0	17	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	ND
23	Benzo(b)fluoranthene	0	17	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	ND
24	Benzo(g,h,i)perylene	1	17	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	5.0E-03
25	Benzo(k)fluoranthene	0	17	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	ND
26	Chrysene	0	17	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	ND
27	Fluoranthene	0	17	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	ND
28	Fluorene	1	17	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	5.0E-03
29	Indeno(1,2,3-cd)pyrene	0	17	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	ND
30	Methylnaphthalene, 2-	2	17	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	5.0E-03
31	Naphthalene	2	17	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	5.0E-03
32	Phenanthrene	1	17	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	5.0E-03
33	Pyrene	0	17	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	ND
34	Bis(2-ethylhexyl)phthalate	4	17	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	5.0E-03
35	Butylbenzylphthalate	2	17	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	5.0E-03
36	Di-n-butylphthalate	0	17	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	ND
37	Di-n-octylphthalate	0	17	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	ND
38	Diethylphthalate	1	17	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	5.0E-03
39	Aldrin	4	17	0	1	2.5E-05	0.0E+00	2.5E-05	2.5E-05	0.0E+00	0.0E+00	2.5E-05
40	Alpha Chlordane	1	17	0	1	2.5E-04	0.0E+00	2.5E-04	2.5E-04	0.0E+00	0.0E+00	2.5E-04
41	Alpha-BHC	1	17	0	1	2.5E-05	0.0E+00	2.5E-05	2.5E-05	0.0E+00	0.0E+00	2.5E-05
42	Beta-BHC	3	17	1	1	2.0E-04	2.0E-04	2.0E-04	2.0E-04	0.0E+00	0.0E+00	2.0E-04
43	DDD, 4,4-	0	17	0	1	5.0E-05	0.0E+00	5.0E-05	5.0E-05	0.0E+00	0.0E+00	ND
44	DDE, 4,4-	2	17	0	1	5.0E-05	0.0E+00	5.0E-05	5.0E-05	0.0E+00	0.0E+00	5.0E-05
45	DDT, 4,4-	2	17	0	1	5.0E-05	0.0E+00	5.0E-05	5.0E-05	0.0E+00	0.0E+00	5.0E-05
46	Delta-BHC	0	17	0	1	2.5E-05	0.0E+00	2.5E-05	2.5E-05	0.0E+00	0.0E+00	ND
47	Dieldrin	3	17	0	1	5.0E-05	0.0E+00	5.0E-05	5.0E-05	0.0E+00	0.0E+00	5.0E-05
48	Endosulfan I	2	17	0	1	2.5E-05	0.0E+00	2.5E-05	2.5E-05	0.0E+00	0.0E+00	2.5E-05
49	Endosulfan II	4	17	0	1	5.0E-05	0.0E+00	5.0E-05	5.0E-05	0.0E+00	0.0E+00	5.0E-05
50	Endosulfan sulfate	1	17	0	1	5.0E-05	0.0E+00	5.0E-05	5.0E-05	0.0E+00	0.0E+00	5.0E-05
51	Endrin	0	17	0	1	5.0E-05	0.0E+00	5.0E-05	5.0E-05	0.0E+00	0.0E+00	ND
52	Endrin aldehyde	1	1	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND
53	Endrin ketone	0	17	0	1	5.0E-05	0.0E+00	5.0E-05	5.0E-05	0.0E+00	0.0E+00	ND
54	Gamma-BHC	0	17	0	1	2.5E-05	0.0E+00	2.5E-05	2.5E-05	0.0E+00	0.0E+00	ND
55	Gamma Chlordane	1	17	0	1	2.5E-04	0.0E+00	2.5E-04	2.5E-04	0.0E+00	0.0E+00	2.5E-04
56	Heptachlor	0	16	0	1	2.5E-05	0.0E+00	2.5E-05	2.5E-05	0.0E+00	0.0E+00	ND

DATA STATISTICS

EXPOSURE POINT: SOUTHEAST MARSH
MEDIUM: SURFACE WATER
UNITS: MG/L
U MULTIPLIER: 0.5

DATE: 07/14/92
FILENAME S-SEMSW

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
57	Heptachlor epoxide	0	17	0	1	2.5E-05	0.0E+00	2.5E-05	2.5E-05	0.0E+00	0.0E+00	ND
58	Methoxychlor	1	17	0	1	2.5E-04	0.0E+00	2.5E-04	2.5E-04	0.0E+00	0.0E+00	2.5E-04
59	Aroclor-1260	0	17	0	1	5.0E-04	0.0E+00	5.0E-04	5.0E-04	0.0E+00	0.0E+00	ND
60	Aluminum	18	18	1	1	1.7E+00	1.7E+00	1.7E+00	1.7E+00	0.0E+00	0.0E+00	1.7E+00
61	Antimony	1	18	0	1	1.9E-02	0.0E+00	1.9E-02	1.9E-02	0.0E+00	0.0E+00	1.9E-02
62	Arsenic	5	18	1	1	6.4E-03	6.4E-03	6.4E-03	6.4E-03	0.0E+00	0.0E+00	6.4E-03
63	Barium	18	18	1	1	6.7E-01	6.7E-01	6.7E-01	6.7E-01	0.0E+00	0.0E+00	6.7E-01
64	Beryllium	1	18	0	1	1.0E-03	0.0E+00	1.0E-03	1.0E-03	0.0E+00	0.0E+00	1.0E-03
65	Cadmium (soil)	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND
66	Cadmium (water)	0	18	0	1	2.0E-03	0.0E+00	2.0E-03	2.0E-03	0.0E+00	0.0E+00	ND
67	Chromium	12	18	0	1	2.0E-03	0.0E+00	2.0E-03	2.0E-03	0.0E+00	0.0E+00	2.0E-03
68	Cobalt	3	18	1	1	8.8E-03	8.8E-03	8.8E-03	8.8E-03	0.0E+00	0.0E+00	8.8E-03
69	Cyanide	0	16	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	ND
70	Lead	11	18	1	1	1.9E-03	1.9E-03	1.9E-03	1.9E-03	0.0E+00	0.0E+00	1.9E-03
71	Mercury	0	18	0	1	1.0E-04	0.0E+00	1.0E-04	1.0E-04	0.0E+00	0.0E+00	ND
72	Nickel	1	18	0	1	1.0E-02	0.0E+00	1.0E-02	1.0E-02	0.0E+00	0.0E+00	1.0E-02
73	Silver	1	18	0	1	2.5E-03	0.0E+00	2.5E-03	2.5E-03	0.0E+00	0.0E+00	2.5E-03
74	Thallium	0	18	0	1	1.5E-03	0.0E+00	1.5E-03	1.5E-03	0.0E+00	0.0E+00	ND
75	Vanadium	5	18	1	1	7.9E-03	7.9E-03	7.9E-03	7.9E-03	0.0E+00	0.0E+00	7.9E-03
76	TCDD Equivalent	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND

DATA STATISTICS

EXPOSURE POINT: NORTHWEST POND/DITCH
MEDIUM: SEDIMENT
UNITS: MG/KG
U MULTIPLIER: 0.5

DATE: 07/14/92
FILENAME S-NWMSED

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
1	Acetone	22	25	6	7	8.2E-02	8.2E-02	7.5E-03	3.2E-02	5.2E-02	1.2E-01	8.2E-02
2	Benzene	0	25	0	7	8.0E-03	0.0E+00	3.5E-03	5.4E-03	6.5E-03	6.9E-03	ND
3	Butanone, 2-	0	25	0	7	8.8E-03	0.0E+00	5.5E-03	6.9E-03	7.8E-03	8.0E-03	ND
4	Chloroform	3	25	0	7	8.0E-03	0.0E+00	3.5E-03	5.4E-03	6.5E-03	6.9E-03	6.9E-03
5	Dichloroethane, 1,1-	0	25	0	7	8.0E-03	0.0E+00	3.5E-03	5.4E-03	6.5E-03	6.9E-03	ND
6	Ethylbenzene	0	25	0	7	8.0E-03	0.0E+00	3.5E-03	5.4E-03	6.5E-03	6.9E-03	ND
7	Methylene chloride	23	25	7	7	1.2E-01	1.2E-01	4.0E-03	4.1E-02	7.4E-02	1.0E+00	1.2E-01
8	Tetrachloroethene	0	25	0	7	8.0E-03	0.0E+00	3.5E-03	5.4E-03	6.5E-03	6.9E-03	ND
9	Toluene	0	25	0	7	8.0E-03	0.0E+00	3.5E-03	5.4E-03	6.5E-03	6.9E-03	ND
10	Xylene (total)	2	25	0	7	8.0E-03	0.0E+00	3.5E-03	5.4E-03	6.5E-03	6.9E-03	6.9E-03
11	Benzoic acid	5	14	0	3	2.8E+00	0.0E+00	2.2E+00	2.5E+00	3.0E+00	3.2E+00	2.8E+00
12	Dibenzofuran	0	25	0	7	5.8E-01	0.0E+00	1.9E-01	3.4E-01	4.6E-01	5.6E-01	ND
13	Dichlorobenzene, 1,2-	0	25	0	7	5.8E-01	0.0E+00	1.9E-01	3.4E-01	4.6E-01	5.6E-01	ND
14	Dimethylphenol, 2,4-	0	25	0	7	5.8E-01	0.0E+00	1.9E-01	3.4E-01	4.6E-01	5.6E-01	ND
15	Methylphenol, 2-	0	25	0	7	5.8E-01	0.0E+00	1.9E-01	3.4E-01	4.6E-01	5.6E-01	ND
16	Methylphenol, 4-	0	25	0	7	5.8E-01	0.0E+00	1.9E-01	3.4E-01	4.6E-01	5.6E-01	ND
17	Phenol	0	25	0	7	5.8E-01	0.0E+00	1.9E-01	3.4E-01	4.6E-01	5.6E-01	ND
18	Acenaphthene	0	25	0	7	5.8E-01	0.0E+00	1.9E-01	3.4E-01	4.6E-01	5.6E-01	ND
19	Acenaphthylene	0	25	0	7	5.8E-01	0.0E+00	1.9E-01	3.4E-01	4.6E-01	5.6E-01	ND
20	Anthracene	0	25	0	7	5.8E-01	0.0E+00	1.9E-01	3.4E-01	4.6E-01	5.6E-01	ND
21	Benzo(a)anthracene	0	25	0	7	5.8E-01	0.0E+00	1.9E-01	3.4E-01	4.6E-01	5.6E-01	ND
22	Benzo(a)pyrene	2	25	0	7	5.8E-01	0.0E+00	1.9E-01	3.4E-01	4.6E-01	5.6E-01	5.6E-01
23	Benzo(b)fluoranthene	0	25	0	7	5.8E-01	0.0E+00	1.9E-01	3.4E-01	4.6E-01	5.6E-01	ND
24	Benzo(g,h,i)perylene	0	25	0	7	5.8E-01	0.0E+00	1.9E-01	3.4E-01	4.6E-01	5.6E-01	ND
25	Benzo(k)fluoranthene	0	25	0	7	5.8E-01	0.0E+00	1.9E-01	3.4E-01	4.6E-01	5.6E-01	ND
26	Chrysene	1	25	0	7	5.8E-01	0.0E+00	1.9E-01	3.4E-01	4.6E-01	5.6E-01	5.6E-01
27	Fluoranthene	1	25	0	7	5.8E-01	0.0E+00	1.9E-01	3.4E-01	4.6E-01	5.6E-01	5.6E-01
28	Fluorene	0	25	0	7	5.8E-01	0.0E+00	1.9E-01	3.4E-01	4.6E-01	5.6E-01	ND
29	Indeno(1,2,3-cd)pyrene	0	25	0	7	5.8E-01	0.0E+00	1.9E-01	3.4E-01	4.6E-01	5.6E-01	ND
30	Methylnaphthalene, 2-	2	25	0	7	5.8E-01	0.0E+00	1.9E-01	3.4E-01	4.6E-01	5.6E-01	5.6E-01
31	Naphthalene	0	25	0	7	5.8E-01	0.0E+00	1.9E-01	3.4E-01	4.6E-01	5.6E-01	ND
32	Phenanthrene	1	25	0	7	5.8E-01	0.0E+00	1.9E-01	3.4E-01	4.6E-01	5.6E-01	5.6E-01
33	Pyrene	2	25	0	7	5.8E-01	0.0E+00	1.9E-01	3.4E-01	4.6E-01	5.6E-01	5.6E-01
34	Bis(2-ethylhexyl)phthalate	14	25	3	7	5.8E-01	1.3E-01	8.7E-02	2.9E-01	4.4E-01	8.7E-01	1.3E-01
35	Butylbenzylphthalate	1	25	1	7	5.8E-01	1.4E-01	1.4E-01	3.3E-01	4.6E-01	5.9E-01	1.4E-01
36	Di-n-butylphthalate	4	25	0	7	5.8E-01	0.0E+00	1.9E-01	3.4E-01	4.6E-01	5.6E-01	5.6E-01
37	Di-n-octylphthalate	0	25	0	7	5.8E-01	0.0E+00	1.9E-01	3.4E-01	4.6E-01	5.6E-01	ND
38	Diethylphthalate	0	25	0	7	5.8E-01	0.0E+00	1.9E-01	3.4E-01	4.6E-01	5.6E-01	ND
39	Aldrin	0	16	0	5	7.0E-03	0.0E+00	9.5E-04	4.1E-03	6.8E-03	6.1E-02	ND
40	Alpha Chlordane	0	16	0	5	7.0E-02	0.0E+00	9.5E-04	3.7E-02	6.9E-02	9.7E+04	ND
41	Alpha-BHC	0	16	0	5	7.0E-03	0.0E+00	9.5E-04	4.1E-03	6.8E-03	6.1E-02	ND
42	Beta-BHC	0	16	0	5	7.0E-03	0.0E+00	9.5E-04	4.1E-03	6.8E-03	6.1E-02	ND
43	DDD, 4,4-	0	16	0	5	1.4E-02	0.0E+00	1.9E-03	8.1E-03	1.4E-02	1.3E-01	ND
44	DDE, 4,4-	1	16	0	5	1.4E-02	0.0E+00	1.9E-03	8.1E-03	1.4E-02	1.3E-01	1.4E-02
45	DDT, 4,4-	1	16	0	5	1.4E-02	0.0E+00	1.9E-03	8.1E-03	1.4E-02	1.3E-01	1.4E-02
46	Delta-BHC	0	16	0	5	7.0E-03	0.0E+00	9.5E-04	4.1E-03	6.8E-03	6.1E-02	ND
47	Dieldrin	1	16	0	5	1.4E-02	0.0E+00	1.9E-03	8.1E-03	1.4E-02	1.3E-01	1.4E-02
48	Endosulfan I	0	16	1	5	7.0E-03	2.1E-04	2.1E-04	3.9E-03	6.9E-03	1.6E+00	ND
49	Endosulfan II	1	16	1	5	1.4E-02	1.7E-04	1.7E-04	7.8E-03	1.4E-02	1.5E+02	1.7E-04
50	Endosulfan sulfate	0	16	0	5	1.4E-02	0.0E+00	1.9E-03	8.1E-03	1.4E-02	1.3E-01	ND
51	Endrin	1	16	0	5	1.4E-02	0.0E+00	1.9E-03	8.1E-03	1.4E-02	1.3E-01	1.4E-02
52	Endrin aldehyde	0	2	0	2	1.9E-03	0.0E+00	1.9E-03	1.9E-03	1.9E-03	1.9E-03	ND
53	Endrin ketone	0	16	0	5	1.4E-02	0.0E+00	1.9E-03	8.1E-03	1.4E-02	1.3E-01	ND
54	Gamma-BHC	0	16	0	5	7.0E-03	0.0E+00	9.5E-04	4.1E-03	6.8E-03	6.1E-02	ND
55	Gamma Chlordane	0	16	0	5	7.0E-02	0.0E+00	9.5E-04	3.7E-02	6.9E-02	9.7E+04	ND
56	Heptachlor	0	16	0	5	7.0E-03	0.0E+00	9.5E-04	4.1E-03	6.8E-03	6.1E-02	ND

DATA STATISTICS

EXPOSURE POINT: NORTHWEST POND/DITCH
MEDIUM: SEDIMENT
UNITS: MG/KG
U MULTIPLIER: 0.5

DATE: 07/14/92
FILENAME S-NWMSED

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
57	Heptachlor epoxide	0	16	0	5	7.0E-03	0.0E+00	9.5E-04	4.1E-03	6.8E-03	6.1E-02	ND
58	Methoxychlor	0	16	0	5	7.0E-02	0.0E+00	9.5E-03	4.1E-02	6.8E-02	6.1E-01	ND
59	Aroclor-1260	0	16	0	5	1.4E-01	0.0E+00	1.9E-02	8.1E-02	1.4E-01	1.3E+00	ND
60	Aluminum	25	25	7	7	2.4E+04	2.4E+04	1.3E+04	1.8E+04	2.1E+04	2.2E+04	2.2E+04
61	Antimony	0	12	0	2	4.3E+00	0.0E+00	4.1E+00	4.2E+00	4.8E+00	4.6E+00	ND
62	Arsenic	25	25	7	7	2.8E+01	2.8E+01	3.7E+00	1.2E+01	1.8E+01	2.9E+01	2.8E+01
63	Barium	25	25	7	7	4.0E+03	4.0E+03	9.9E+01	1.1E+03	2.3E+03	3.2E+04	4.0E+03
64	Beryllium	19	25	7	7	1.5E+00	1.5E+00	7.0E-01	1.0E+00	1.2E+00	1.2E+00	1.2E+00
65	Cadmium (soil)	5	25	2	7	9.0E-01	9.0E-01	2.9E-01	6.2E-01	7.5E-01	8.8E-01	8.8E-01
66	Cadmium (water)	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND
67	Chromium	24	25	7	7	3.5E+01	3.5E+01	1.5E+01	2.4E+01	3.0E+01	3.4E+01	3.4E+01
68	Cobalt	25	25	5	7	1.8E+01	1.8E+01	1.9E+00	8.8E+00	1.3E+01	3.6E+01	1.8E+01
69	Cyanide	0	14	0	3	1.4E+00	0.0E+00	1.3E+00	1.4E+00	1.5E+00	1.5E+00	ND
70	Lead	25	25	7	7	1.5E+01	1.5E+01	9.1E+00	1.3E+01	1.4E+01	1.5E+01	1.5E+01
71	Mercury	4	25	0	7	7.8E-02	0.0E+00	4.0E-02	5.8E-02	6.9E-02	7.3E-02	7.3E-02
72	Nickel	25	25	7	7	2.8E+01	2.8E+01	7.5E+00	1.6E+01	2.1E+01	2.5E+01	2.5E+01
73	Silver	2	21	1	3	1.4E+00	1.4E+00	5.5E-01	8.7E-01	1.6E+00	8.9E+00	1.4E+00
74	Thallium	6	25	3	7	8.1E-01	8.1E-01	2.2E-01	4.6E-01	6.4E-01	8.7E-01	8.1E-01
75	Vanadium	25	25	7	7	4.3E+01	4.3E+01	2.4E+01	3.0E+01	3.5E+01	3.5E+01	3.5E+01
76	TCDD Equivalent	9	9	1	1	1.4E-06	1.4E-06	1.4E-06	1.4E-06	0.0E+00	0.0E+00	1.4E-06

TABLE 2

DATA STATISTICS

EXPOSURE POINT: NORTHWEST POND/DITCH
MEDIUM: SURFACE WATER
UNITS: MG/L
U MULTIPLIER: 0.5

DATE: 07/14/92
FILENAME S-NWMSW

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
1	Acetone	4	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
2	Benzene	2	16	0	3	2.5E-03	0.0E+00	2.5E-03	2.5E-03	2.5E-03	2.5E-03	2.5E-03
3	Butanone, 2-	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
4	Chloroform	0	17	0	3	2.5E-03	0.0E+00	2.5E-03	2.5E-03	2.5E-03	2.5E-03	ND
5	Dichloroethane, 1,1-	1	17	0	2	2.5E-03	0.0E+00	2.5E-03	2.5E-03	2.5E-03	2.5E-03	2.5E-03
6	Ethylbenzene	3	17	0	2	2.5E-03	0.0E+00	2.5E-03	2.5E-03	2.5E-03	2.5E-03	2.5E-03
7	Methylene chloride	10	17	1	2	2.5E-03	1.0E-03	1.0E-03	1.8E-03	6.5E-03	3.1E-01	1.0E-03
8	Tetrachloroethene	3	17	0	2	2.5E-03	0.0E+00	2.5E-03	2.5E-03	2.5E-03	2.5E-03	2.5E-03
9	Toluene	3	17	0	5	2.5E-03	0.0E+00	2.5E-03	2.5E-03	2.5E-03	2.5E-03	2.5E-03
10	Xylene (total)	3	17	0	5	2.5E-03	0.0E+00	2.5E-03	2.5E-03	2.5E-03	2.5E-03	2.5E-03
11	Benzoic acid	2	15	0	3	2.5E-02	0.0E+00	2.5E-02	2.5E-02	2.5E-02	2.5E-02	2.5E-02
12	Dibenzofuran	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
13	Dichlorobenzene, 1,2-	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
14	Dimethylphenol, 2,4-	1	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
15	Methylphenol, 2-	1	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
16	Methylphenol, 4-	1	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
17	Phenol	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
18	Acenaphthene	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
19	Acenaphthylene	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
20	Anthracene	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
21	Benzo(a)anthracene	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
22	Benzo(a)pyrene	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
23	Benzo(b)fluoranthene	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
24	Benzo(g,h,i)perylene	1	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
25	Benzo(k)fluoranthene	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
26	Chrysene	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
27	Fluoranthene	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
28	Fluorene	1	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
29	Indeno(1,2,3-cd)pyrene	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
30	Methylnaphthalene, 2-	2	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
31	Naphthalene	2	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
32	Phenanthrene	1	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
33	Pyrene	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
34	Bis(2-ethylhexyl)phthalate	4	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
35	Butylbenzylphthalate	2	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
36	Di-n-butylphthalate	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
37	Di-n-octylphthalate	0	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
38	Diethylphthalate	1	17	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
39	Aldrin	4	17	0	3	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	5.0E-03
40	Alpha Chlordane	1	17	0	3	2.5E-04	0.0E+00	2.5E-04	2.5E-04	2.5E-04	2.5E-04	2.5E-05
41	Alpha-BHC	1	17	0	3	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	2.5E-04
42	Beta-BHC	3	17	0	3	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	2.5E-05
43	DDD, 4,4-	0	17	0	3	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	2.5E-05
44	DDE, 4,4-	2	17	0	3	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	ND
45	DDT, 4,4-	2	17	0	3	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	5.0E-05
46	Delta-BHC	0	17	0	3	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	5.0E-05
47	Dieldrin	3	17	0	3	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	ND
48	Endosulfan I	2	17	0	3	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	5.0E-05
49	Endosulfan II	4	17	0	3	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	2.5E-05
50	Endosulfan sulfate	1	17	0	3	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	5.0E-05
51	Endrin	0	17	0	3	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	5.0E-05
52	Endrin aldehyde	1	1	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND
53	Endrin ketone	0	17	0	3	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	ND
54	Gamma-BHC	0	17	0	3	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	ND
55	Gamma Chlordane	1	17	0	3	2.5E-04	0.0E+00	2.5E-04	2.5E-04	2.5E-04	2.5E-04	2.5E-04
56	Heptachlor	0	16	0	3	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	ND

DATA STATISTICS

EXPOSURE POINT: NORTHWEST POND/DITCH
MEDIUM: SURFACE WATER
UNITS: MG/L
U MULTIPLIER: 0.5

DATE: 07/14/92
FILENAME S-NWMSW

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
57	Heptachlor epoxide	0	17	0	3	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	ND
58	Methoxychlor	1	17	0	3	2.5E-04	0.0E+00	2.5E-04	2.5E-04	2.5E-04	2.5E-04	2.5E-04
59	Aroclor-1260	0	17	0	3	5.0E-04	0.0E+00	5.0E-04	5.0E-04	5.0E-04	5.0E-04	ND
60	Aluminum	18	18	3	3	6.7E-01	6.7E-01	4.2E-01	5.4E-01	7.5E-01	9.4E-01	6.7E-01
61	Antimony	1	18	0	3	1.5E-02	0.0E+00	1.5E-02	1.5E-02	1.5E-02	1.5E-02	1.5E-02
62	Arsenic	5	18	1	3	2.2E-03	2.2E-03	1.0E-03	1.4E-03	2.6E-03	1.2E-02	2.2E-03
63	Barium	18	18	3	3	1.5E-01	1.5E-01	1.3E-01	1.3E-01	1.6E-01	1.7E-01	1.5E-01
64	Beryllium	1	18	0	3	5.0E-04	0.0E+00	5.0E-04	5.0E-04	5.0E-04	5.0E-04	5.0E-04
65	Cadmium (soil)	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND
66	Cadmium (water)	0	18	0	3	1.0E-03	0.0E+00	1.0E-03	1.0E-03	1.0E-03	1.0E-03	ND
67	Chromium	12	18	0	3	1.5E-03	0.0E+00	1.5E-03	1.5E-03	1.5E-03	1.5E-03	1.5E-03
68	Cobalt	3	18	0	3	1.5E-03	0.0E+00	1.5E-03	1.5E-03	1.5E-03	1.5E-03	1.5E-03
69	Cyanide	0	16	0	3	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
70	Lead	11	18	3	3	4.3E-03	4.3E-03	3.3E-03	3.8E-03	4.6E-03	4.9E-03	4.3E-03
71	Mercury	0	18	0	3	1.0E-04	0.0E+00	1.0E-04	1.0E-04	1.0E-04	1.0E-04	ND
72	Nickel	1	18	1	3	9.4E-03	9.4E-03	4.5E-03	6.1E-03	1.1E-02	3.0E-02	9.4E-03
73	Silver	1	18	0	3	2.0E-03	0.0E+00	2.0E-03	2.0E-03	2.0E-03	2.0E-03	2.0E-03
74	Thallium	0	18	0	3	1.0E-03	0.0E+00	1.0E-03	1.0E-03	1.0E-03	1.0E-03	ND
75	Vanadium	5	18	0	3	1.0E-03	0.0E+00	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03
76	TCDD Equivalent	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND

TABLE 2

DATA STATISTICS

EXPOSURE POINT: DITCH, OFF-SITE
MEDIUM: SEDIMENT
UNITS: MG/KG
U MULTIPLIER: 0.5

DATE: 07/14/92
FILENAME S-OFFSED

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
1	Acetone	22	25	1	3	4.7E-02	4.7E-02	6.5E-03	2.0E-02	5.9E-02	1.0E+04	4.7E-02
2	Benzene	0	25	0	3	6.5E-03	0.0E+00	3.5E-03	4.5E-03	7.4E-03	1.7E-02	ND
3	Butanone, 2-	0	25	0	3	7.0E-03	0.0E+00	6.5E-03	6.7E-03	7.2E-03	7.2E-03	ND
4	Chloroform	3	25	0	3	6.5E-03	0.0E+00	3.5E-03	4.5E-03	7.4E-03	1.7E-02	6.5E-03
5	Dichloroethane, 1,1-	0	25	0	3	6.5E-03	0.0E+00	3.5E-03	4.5E-03	7.4E-03	1.7E-02	ND
6	Ethylbenzene	0	25	0	3	6.5E-03	0.0E+00	3.5E-03	4.5E-03	7.4E-03	1.7E-02	ND
7	Methylene chloride	23	25	3	3	8.8E-02	8.8E-02	2.6E-02	5.3E-02	1.1E-01	1.6E+00	8.8E-02
8	Tetrachloroethene	0	25	0	3	6.5E-03	0.0E+00	3.5E-03	4.5E-03	7.4E-03	1.7E-02	ND
9	Toluene	0	25	0	3	6.5E-03	0.0E+00	3.5E-03	4.5E-03	7.4E-03	1.7E-02	ND
10	Xylene (total)	2	25	0	3	6.5E-03	0.0E+00	3.5E-03	4.5E-03	7.4E-03	1.7E-02	6.5E-03
11	Benzoic acid	5	14	0	2	2.3E+00	0.0E+00	2.2E+00	2.2E+00	2.7E+00	2.5E+00	2.3E+00
12	Dibenzofuran	0	25	0	3	4.8E-01	0.0E+00	2.2E-01	3.8E-01	6.1E-01	2.0E+00	ND
13	Dichlorobenzene, 1,2-	0	25	0	3	4.8E-01	0.0E+00	2.2E-01	3.8E-01	6.1E-01	2.0E+00	ND
14	Dimethylphenol, 2,4-	0	25	0	3	4.8E-01	0.0E+00	2.2E-01	3.8E-01	6.1E-01	2.0E+00	ND
15	Methylphenol, 2-	0	25	0	3	4.8E-01	0.0E+00	2.2E-01	3.8E-01	6.1E-01	2.0E+00	ND
16	Methylphenol, 4-	0	25	0	3	4.8E-01	0.0E+00	2.2E-01	3.8E-01	6.1E-01	2.0E+00	ND
17	Phenol	0	25	0	3	4.8E-01	0.0E+00	2.2E-01	3.8E-01	6.1E-01	2.0E+00	ND
18	Acenaphthene	0	25	0	3	4.8E-01	0.0E+00	2.2E-01	3.8E-01	6.1E-01	2.0E+00	ND
19	Acenaphthylene	0	25	0	3	4.8E-01	0.0E+00	2.2E-01	3.8E-01	6.1E-01	2.0E+00	ND
20	Anthracene	0	25	0	3	4.8E-01	0.0E+00	2.2E-01	3.8E-01	6.1E-01	2.0E+00	ND
21	Benzo(a)anthracene	0	25	0	3	4.8E-01	0.0E+00	2.2E-01	3.8E-01	6.1E-01	2.0E+00	ND
22	Benzo(a)pyrene	2	25	0	3	4.8E-01	0.0E+00	2.2E-01	3.8E-01	6.1E-01	2.0E+00	ND
23	Benzo(b)fluoranthene	0	25	0	3	4.8E-01	0.0E+00	2.2E-01	3.8E-01	6.1E-01	2.0E+00	4.8E-01
24	Benzo(g,h,i)perylene	0	25	0	3	4.8E-01	0.0E+00	2.2E-01	3.8E-01	6.1E-01	2.0E+00	ND
25	Benzo(k)fluoranthene	0	25	0	3	4.8E-01	0.0E+00	2.2E-01	3.8E-01	6.1E-01	2.0E+00	ND
26	Chrysene	1	25	0	3	4.8E-01	0.0E+00	2.2E-01	3.8E-01	6.1E-01	2.0E+00	ND
27	Fluoranthene	1	25	0	3	4.8E-01	0.0E+00	2.2E-01	3.8E-01	6.1E-01	2.0E+00	4.8E-01
28	Fluorene	0	25	0	3	4.8E-01	0.0E+00	2.2E-01	3.8E-01	6.1E-01	2.0E+00	4.8E-01
29	Indeno(1,2,3-cd)pyrene	0	25	0	3	4.8E-01	0.0E+00	2.2E-01	3.8E-01	6.1E-01	2.0E+00	ND
30	Methylnaphthalene, 2-	2	25	0	3	4.8E-01	0.0E+00	2.2E-01	3.8E-01	6.1E-01	2.0E+00	ND
31	Naphthalene	0	25	0	3	4.8E-01	0.0E+00	2.2E-01	3.8E-01	6.1E-01	2.0E+00	4.8E-01
32	Phenanthrene	1	25	0	3	4.8E-01	0.0E+00	2.2E-01	3.8E-01	6.1E-01	2.0E+00	ND
33	Pyrene	2	25	0	3	4.8E-01	0.0E+00	2.2E-01	3.8E-01	6.1E-01	2.0E+00	4.8E-01
34	Bis(2-ethylhexyl)phthalate	14	25	1	3	4.8E-01	1.5E-01	1.5E-01	3.6E-01	6.6E-01	1.4E+01	4.8E-01
35	Butylbenzylphthalate	1	25	0	3	4.8E-01	0.0E+00	2.2E-01	3.8E-01	6.1E-01	2.0E+00	1.5E-01
36	Di-n-butylphthalate	4	25	0	3	4.8E-01	0.0E+00	2.2E-01	3.8E-01	6.1E-01	2.0E+00	4.8E-01
37	Di-n-octylphthalate	0	25	0	3	4.8E-01	0.0E+00	2.2E-01	3.8E-01	6.1E-01	2.0E+00	4.8E-01
38	Diethylphthalate	0	25	0	3	4.8E-01	0.0E+00	2.2E-01	3.8E-01	6.1E-01	2.0E+00	ND
39	Aldrin	0	16	0	2	5.5E-03	0.0E+00	5.5E-03	5.5E-03	5.5E-03	5.5E-03	ND
40	Alpha Chlordane	0	16	0	2	5.5E-02	0.0E+00	5.5E-02	5.5E-02	5.5E-02	5.5E-02	ND
41	Alpha-BHC	0	16	0	2	5.5E-03	0.0E+00	5.5E-03	5.5E-03	5.5E-03	5.5E-03	ND
42	Beta-BHC	0	16	0	2	5.5E-03	0.0E+00	5.5E-03	5.5E-03	5.5E-03	5.5E-03	ND
43	DDD, 4,4-	0	16	0	2	1.2E-02	0.0E+00	1.1E-02	1.1E-02	1.4E-02	1.3E-02	ND
44	DDE, 4,4-	1	16	0	2	1.2E-02	0.0E+00	1.1E-02	1.1E-02	1.4E-02	1.3E-02	1.2E-02
45	DDT, 4,4-	1	16	0	2	1.2E-02	0.0E+00	1.1E-02	1.1E-02	1.4E-02	1.3E-02	1.2E-02
46	Delta-BHC	0	16	0	2	5.5E-03	0.0E+00	5.5E-03	5.5E-03	5.5E-03	5.5E-03	ND
47	Dieldrin	1	16	0	2	1.2E-02	0.0E+00	1.1E-02	1.1E-02	1.4E-02	1.3E-02	1.2E-02
48	Endosulfan I	0	16	0	2	5.5E-03	0.0E+00	5.5E-03	5.5E-03	5.5E-03	5.5E-03	ND
49	Endosulfan II	1	16	0	2	1.2E-02	0.0E+00	1.1E-02	1.1E-02	1.4E-02	1.3E-02	1.2E-02
50	Endosulfan sulfate	0	16	0	2	1.2E-02	0.0E+00	1.1E-02	1.1E-02	1.4E-02	1.3E-02	ND
51	Endrin	1	16	0	2	1.2E-02	0.0E+00	1.1E-02	1.1E-02	1.4E-02	1.3E-02	1.2E-02
52	Endrin aldehyde	0	2	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND
53	Endrin ketone	0	16	0	2	1.2E-02	0.0E+00	1.1E-02	1.1E-02	1.4E-02	1.3E-02	ND
54	Gamma-BHC	0	16	0	2	5.5E-03	0.0E+00	5.5E-03	5.5E-03	5.5E-03	5.5E-03	ND
55	Gamma Chlordane	0	16	0	2	5.5E-02	0.0E+00	5.5E-02	5.5E-02	5.5E-02	5.5E-02	ND
56	Heptachlor	0	16	0	2	5.5E-03	0.0E+00	5.5E-03	5.5E-03	5.5E-03	5.5E-03	ND

DATA STATISTICS

EXPOSURE POINT: DITCH, OFF-SITE
MEDIUM: SEDIMENT
UNITS: MG/KG
U MULTIPLIER: 0.5

DATE: 07/14/92
FILENAME S-OFFSED

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
57	Heptachlor epoxide	0	16	0	2	5.5E-03	0.0E+00	5.5E-03	5.5E-03	5.5E-03	5.5E-03	ND
58	Methoxychlor	0	16	0	2	5.5E-02	0.0E+00	5.5E-02	5.5E-02	5.5E-02	5.5E-02	ND
59	Aroclor-1260	0	16	0	2	1.2E-01	0.0E+00	1.1E-01	1.1E-01	1.4E-01	1.3E-01	ND
60	Aluminum	25	25	3	3	2.8E+04	2.8E+04	1.5E+04	2.1E+04	3.2E+04	5.5E+04	2.8E+04
61	Antimony	0	12	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND
62	Arsenic	25	25	3	3	1.3E+01	1.3E+01	5.2E+00	1.0E+01	1.8E+01	1.3E+02	1.3E+01
63	Barium	25	25	3	3	6.7E+02	6.7E+02	1.9E+02	3.6E+02	8.2E+02	3.3E+04	6.7E+02
64	Beryllium	19	25	3	3	9.9E-01	9.9E-01	5.4E-01	8.4E-01	1.3E+00	2.3E+00	9.9E-01
65	Cadmium (soil)	5	25	2	3	9.6E-01	9.6E-01	6.5E-01	8.2E-01	1.1E+00	1.3E+00	9.6E-01
66	Cadmium (water)	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND
67	Chromium	24	25	3	3	2.2E+01	2.2E+01	1.8E+01	2.0E+01	2.3E+01	2.4E+01	2.2E+01
68	Cobalt	25	25	3	3	2.2E+01	2.2E+01	2.7E+00	1.0E+01	2.8E+01	2.7E+05	2.2E+01
69	Cyanide	0	14	0	2	1.2E+00	0.0E+00	1.2E+00	1.2E+00	1.4E+00	1.3E+00	ND
70	Lead	25	25	3	3	5.1E+01	5.1E+01	7.3E+00	2.2E+01	6.5E+01	6.4E+05	5.1E+01
71	Mercury	4	25	1	3	7.8E-01	7.8E-01	5.0E-02	3.0E-01	1.00E+00	5.4E+08	7.8E-01
72	Nickel	25	25	3	3	1.8E+01	1.8E+01	1.4E+01	1.6E+01	1.9E+01	2.0E+01	1.8E+01
73	Silver	2	21	1	2	1.5E+00	1.5E+00	5.5E-01	1.0E+00	3.8E+00	5.9E+02	1.5E+00
74	Thallium	6	25	1	3	4.3E-01	4.3E-01	2.5E-01	3.1E-01	4.8E-01	7.5E-01	4.3E-01
75	Vanadium	25	25	3	3	3.9E+01	3.9E+01	2.1E+01	2.8E+01	4.4E+01	7.4E+01	3.9E+01
76	TCDD Equivalent	9	9	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	-

TABLE 2

DATA STATISTICS

EXPOSURE POINT: DITCH, OFF-SITE
MEDIUM: SURFACE WATER
UNITS: MG/L
U MULTIPLIER: 0.5

DATE: 07/14/92
FILENAME S-OFFSW

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
1	Acetone	4	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
2	Benzene	2	16	0	2	2.5E-03	0.0E+00	2.5E-03	2.5E-03	2.5E-03	2.5E-03	2.5E-03
3	Butanone, 2-	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
4	Chloroform	0	17	0	2	2.5E-03	0.0E+00	2.5E-03	2.5E-03	2.5E-03	2.5E-03	ND
5	Dichloroethane, 1,1-	1	17	0	2	2.5E-03	0.0E+00	2.5E-03	2.5E-03	2.5E-03	2.5E-03	2.5E-03
6	Ethylbenzene	3	17	0	2	2.5E-03	0.0E+00	2.5E-03	2.5E-03	2.5E-03	2.5E-03	2.5E-03
7	Methylene chloride	10	17	1	2	2.5E-03	1.0E-03	1.0E-03	1.8E-03	6.5E-03	3.1E-01	1.0E-03
8	Tetrachloroethene	3	17	0	2	2.5E-03	0.0E+00	2.5E-03	2.5E-03	2.5E-03	2.5E-03	2.5E-03
9	Toluene	3	17	0	2	2.5E-03	0.0E+00	2.5E-03	2.5E-03	2.5E-03	2.5E-03	2.5E-03
10	Xylene (total)	3	17	0	2	2.5E-03	0.0E+00	2.5E-03	2.5E-03	2.5E-03	2.5E-03	2.5E-03
11	Benzoic acid	2	15	0	2	2.5E-02	0.0E+00	2.5E-02	2.5E-02	2.5E-02	2.5E-02	2.5E-02
12	Dibenzofuran	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
13	Dichlorobenzene, 1,2-	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
14	Dimethylphenol, 2,4-	1	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
15	Methylphenol, 2-	1	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
16	Methylphenol, 4-	1	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
17	Phenol	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
18	Acenaphthene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
19	Acenaphthylene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
20	Anthracene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
21	Benzo(a)anthracene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
22	Benzo(a)pyrene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
23	Benzo(b)fluoranthene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
24	Benzo(g,h,i)perylene	1	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
25	Benzo(k)fluoranthene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
26	Chrysene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
27	Fluoranthene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
28	Fluorene	1	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
29	Indeno(1,2,3-cd)pyrene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
30	Methylnaphthalene, 2-	2	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
31	Naphthalene	2	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
32	Phenanthrene	1	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
33	Pyrene	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
34	Bis(2-ethylhexyl)phthalate	4	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
35	Butylbenzylphthalate	2	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
36	Di-n-butylphthalate	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
37	Di-n-octylphthalate	0	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
38	Diethylphthalate	1	17	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
39	Aldrin	4	17	1	2	1.0E-04	1.0E-04	2.5E-05	6.3E-05	3.0E-04	2.9E+01	1.0E-04
40	Alpha Chlordane	1	17	0	2	2.5E-04	0.0E+00	2.5E-04	2.5E-04	2.5E-04	2.5E-04	2.5E-04
41	Alpha-BHC	1	17	0	2	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	2.5E-05
42	Beta-BHC	3	17	0	2	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	2.5E-05
43	DDD, 4,4-	0	17	0	2	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	ND
44	DDE, 4,4-	2	17	0	2	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	5.0E-05
45	DDT, 4,4-	2	17	0	2	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	5.0E-05
46	Delta-BHC	0	17	0	2	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	ND
47	Dieldrin	3	17	0	2	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	5.0E-05
48	Endosulfan I	2	17	0	2	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	2.5E-05
49	Endosulfan II	4	17	0	2	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	5.0E-05
50	Endosulfan sulfate	1	17	0	2	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	5.0E-05
51	Endrin	0	17	0	2	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	ND
52	Endrin aldehyde	1	1	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND
53	Endrin ketone	0	17	0	2	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	ND
54	Gamma-BHC	0	17	0	2	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	ND
55	Gamma Chlordane	1	17	0	2	2.5E-04	0.0E+00	2.5E-04	2.5E-04	2.5E-04	2.5E-04	2.5E-04
56	Heptachlor	0	16	0	2	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	ND

DATA STATISTICS

EXPOSURE POINT: DITCH, OFF-SITE
MEDIUM: SURFACE WATER
UNITS: MG/L
U MULTIPLIER: 0.5

DATE: 07/14/92
FILENAME S-OFFSW

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
57	Heptachlor epoxide	0	17	0	2	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	ND
58	Methoxychlor	1	17	0	2	2.5E-04	0.0E+00	2.5E-04	2.5E-04	2.5E-04	2.5E-04	2.5E-04
59	Aroclor-1260	0	17	0	2	5.0E-04	0.0E+00	5.0E-04	5.0E-04	5.0E-04	5.0E-04	ND
60	Aluminum	18	18	2	2	1.1E+00	1.1E+00	2.6E-01	6.9E-01	3.4E+00	5.9E+05	1.1E+00
61	Antimony	1	18	0	2	1.5E-02	0.0E+00	1.5E-02	1.5E-02	1.5E-02	1.5E-02	1.5E-02
62	Arsenic	5	18	0	2	1.0E-03	0.0E+00	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03
63	Barium	18	18	2	2	5.3E-01	5.3E-01	2.7E-01	4.0E-01	1.2E+00	9.8E+00	5.3E-01
64	Beryllium	1	18	0	2	5.0E-04	0.0E+00	5.0E-04	5.0E-04	5.0E-04	5.0E-04	5.0E-04
65	Cadmium (soil)	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND
66	Cadmium (water)	0	18	0	2	1.0E-03	0.0E+00	1.0E-03	1.0E-03	1.0E-03	1.0E-03	ND
67	Chromium	12	18	1	2	3.4E-03	3.4E-03	1.5E-03	2.5E-03	8.4E-03	2.4E-01	3.4E-03
68	Cobalt	3	18	0	2	1.5E-03	0.0E+00	1.5E-03	1.5E-03	1.5E-03	1.5E-03	1.5E-03
69	Cyanide	0	16	0	2	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
70	Lead	11	18	2	2	1.1E-02	1.1E-02	4.3E-03	7.7E-03	2.9E-02	3.7E+00	1.1E-02
71	Mercury	0	18	0	2	1.0E-04	0.0E+00	1.0E-04	1.0E-04	1.0E-04	1.0E-04	ND
72	Nickel	1	18	0	2	4.5E-03	0.0E+00	4.5E-03	4.5E-03	4.5E-03	4.5E-03	4.5E-03
73	Silver	1	18	0	2	2.0E-03	0.0E+00	2.0E-03	2.0E-03	2.0E-03	2.0E-03	2.0E-03
74	Thallium	0	18	0	2	1.0E-03	0.0E+00	1.0E-03	1.0E-03	1.0E-03	1.0E-03	ND
75	Vanadium	5	18	1	2	2.3E-03	2.3E-03	1.0E-03	1.7E-03	5.8E-03	1.8E-01	2.3E-03
76	TCDD Equivalent	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND

TABLE 2

DATA STATISTICS

EXPOSURE POINT: PIT AREA
MEDIUM: GROUNDWATER
UNITS: MG/L
U MULTIPLIER: 0.5

DATE: 07/14/92
FILENAME S-A1GW

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
1	Acetone	0	27	0	12	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
2	Benzene	2	27	0	12	5.0E-03	0.0E+00	2.5E-03	4.6E-03	5.1E-03	5.4E-03	5.0E-03
3	Butanone, 2-	0	27	0	12	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
4	Chloroform	1	27	0	12	5.0E-03	0.0E+00	2.5E-03	4.6E-03	5.1E-03	5.4E-03	5.0E-03
5	Dichloroethane, 1,1-	0	27	0	12	5.0E-03	0.0E+00	2.5E-03	4.6E-03	5.1E-03	5.4E-03	ND
6	Ethylbenzene	0	27	0	12	5.0E-03	0.0E+00	2.5E-03	4.6E-03	5.1E-03	5.4E-03	ND
7	Methylene chloride	18	27	8	12	2.5E-02	2.5E-02	2.0E-03	6.7E-03	1.0E-02	1.2E-02	1.2E-02
8	Tetrachloroethene	0	27	0	12	5.0E-03	0.0E+00	2.5E-03	4.6E-03	5.1E-03	5.4E-03	ND
9	Toluene	0	27	0	12	5.0E-03	0.0E+00	2.5E-03	4.6E-03	5.1E-03	5.4E-03	ND
10	Xylene (total)	0	27	0	12	5.0E-03	0.0E+00	2.5E-03	4.6E-03	5.1E-03	5.4E-03	ND
11	Benzoic acid	0	2	0	2	2.5E-02	0.0E+00	2.5E-02	2.5E-02	2.5E-02	2.5E-02	ND
12	Dibenzofuran	0	27	0	12	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
13	Dichlorobenzene, 1,2-	0	27	0	12	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
14	Dimethylphenol, 2,4-	0	27	0	12	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
15	Methylphenol, 2-	0	27	0	12	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
16	Methylphenol, 4-	0	27	0	12	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
17	Phenol	2	26	0	11	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
18	Acenaphthene	0	27	0	12	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
19	Acenaphthylene	0	27	0	12	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
20	Anthracene	0	27	0	12	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
21	Benzo(a)anthracene	0	27	0	12	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
22	Benzo(a)pyrene	0	27	0	12	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
23	Benzo(b)fluoranthene	0	27	0	12	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
24	Benzo(g,h,i)perylene	0	27	0	12	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
25	Benzo(k)fluoranthene	0	27	0	12	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
26	Chrysene	0	27	0	12	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
27	Fluoranthene	0	27	0	12	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
28	Fluorene	0	27	0	12	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
29	Indeno(1,2,3-cd)pyrene	0	27	0	12	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
30	Methylnaphthalene, 2-	0	27	0	12	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
31	Naphthalene	0	27	0	12	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
32	Phenanthrene	0	27	0	12	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
33	Pyrene	0	27	0	12	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
34	Bis(2-ethylhexyl)phthalate	25	27	12	12	2.3E-01	2.3E-01	1.0E-03	3.5E-02	6.8E-02	5.3E-01	2.3E-01
35	Butylbenzylphthalate	2	27	0	12	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
36	Di-n-butylphthalate	5	27	2	12	5.0E-03	1.0E-03	1.0E-03	4.3E-03	5.1E-03	7.1E-03	1.0E-03
37	Di-n-octylphthalate	1	27	0	12	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
38	Diethylphthalate	1	27	0	12	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	5.0E-03
39	Aldrin	0	27	0	12	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	ND
40	Alpha Chlordane	5	27	3	12	2.5E-04	1.5E-04	1.9E-05	7.5E-05	1.2E-04	1.7E-04	1.5E-04
41	Alpha-BHC	4	27	0	12	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	2.5E-05
42	Beta-BHC	2	27	0	12	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	2.5E-05
43	DDD, 4,4-	0	27	0	12	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	ND
44	DDE, 4,4-	1	27	0	12	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	5.0E-05
45	DDT, 4,4-	0	27	0	12	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	ND
46	Delta-BHC	0	27	0	12	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	ND
47	Dieldrin	0	27	0	12	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	ND
48	Endosulfan I	0	27	0	12	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	ND
49	Endosulfan II	0	27	0	12	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	ND
50	Endosulfan sulfate	4	27	2	12	5.0E-05	5.5E-06	2.6E-06	4.2E-05	5.2E-05	1.3E-04	5.5E-06
51	Endrin	0	27	0	12	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	ND
52	Endrin aldehyde	0	25	0	10	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	ND
53	Endrin ketone	0	27	0	12	5.0E-05	0.0E+00	5.0E-05	5.0E-05	5.0E-05	5.0E-05	ND
54	Gamma-BHC	0	27	0	12	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	ND
55	Gamma Chlordane	0	27	0	12	2.5E-04	0.0E+00	2.5E-05	6.3E-05	1.1E-04	1.1E-04	ND
56	Heptachlor	0	27	0	12	2.5E-05	0.0E+00	2.5E-05	2.5E-05	2.5E-05	2.5E-05	ND

DATA STATISTICS

EXPOSURE POINT: PIT AREA
MEDIUM: GROUNDWATER
UNITS: MG/L
U MULTIPLIER: 0.5

DATE: 07/14/92
FILENAME S-A1GW

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
57	Heptachlor epoxide	4	27	3	12	2.5E-05	3.9E-06	2.0E-06	1.9E-05	2.5E-05	5.7E-05	3.9E-06
58	Methoxychlor	0	27	0	12	2.5E-04	0.0E+00	2.5E-04	2.5E-04	2.5E-04	2.5E-04	ND
59	Aroclor-1260	0	27	0	12	5.0E-04	0.0E+00	5.0E-04	5.0E-04	5.0E-04	5.0E-04	ND
60	Aluminum	26	27	11	12	5.2E+01	5.2E+01	2.6E-02	7.5E+00	1.5E+01	1.1E+03	5.2E+01
61	Antimony	1	27	1	12	2.0E-02	1.1E-02	6.5E-03	1.5E-02	1.7E-02	2.0E-02	1.1E-02
62	Arsenic	7	27	5	12	1.0E-02	1.0E-02	1.0E-03	4.2E-03	5.9E-03	8.3E-03	8.3E-03
63	Barium	27	27	12	12	7.4E-01	7.4E-01	1.3E-01	3.6E-01	4.6E-01	5.4E-01	5.4E-01
64	Beryllium	6	27	2	12	8.6E-03	8.6E-03	5.0E-04	1.4E-03	2.6E-03	2.2E-03	2.2E-03
65	Cadmium (soil)	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND
66	Cadmium (water)	2	27	0	12	2.5E-03	0.0E+00	5.0E-04	1.4E-03	1.9E-03	2.4E-03	2.4E-03
67	Chromium	23	27	9	12	1.3E+00	1.3E+00	1.0E-03	2.3E-01	4.4E-01	8.5E+01	1.3E+00
68	Cobalt	18	27	7	12	7.8E-02	7.8E-02	1.5E-03	1.5E-02	2.6E-02	5.8E-02	5.8E-02
69	Cyanide	0	9	0	4	5.0E-03	0.0E+00	5.0E-03	5.0E-03	5.0E-03	5.0E-03	ND
70	Lead	18	27	8	12	3.4E-02	3.4E-02	5.0E-04	7.2E-03	1.3E-02	4.4E-02	3.4E-02
71	Mercury	7	27	4	12	4.0E-04	4.0E-04	1.0E-04	1.8E-04	2.4E-04	2.7E-04	2.7E-04
72	Nickel	23	27	9	12	5.8E-01	5.8E-01	3.5E-03	2.6E-01	3.8E-01	1.3E+01	5.8E-01
73	Silver	0	20	0	10	2.0E-03	0.0E+00	1.0E-03	1.6E-03	1.9E-03	2.1E-03	ND
74	Thallium	0	19	0	8	5.0E-03	0.0E+00	1.0E-03	1.8E-03	2.6E-03	2.8E-03	ND
75	Vanadium	15	27	5	12	1.9E-01	1.9E-01	1.0E-03	2.6E-02	5.4E-02	2.9E-01	1.9E-01
76	TCDD Equivalent	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND

EXPOSURE POINT: PIT AREA
MEDIUM: SOIL
UNITS: MG/KG
U MULTIPLIER: 0.5

DATA STATISTICS

DATE: 07/14/92
FILENAME S-A1SOIL

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
1	Acetone	34	51	18	22	7.0E-02	7.0E-02	6.0E-03	2.2E-02	2.8E-02	3.1E-02	3.1E-02
2	Benzene	0	51	0	22	7.0E-03	0.0E+00	3.5E-03	6.1E-03	6.4E-03	6.5E-03	ND
3	Butanone, 2-	0	51	0	22	7.0E-03	0.0E+00	5.5E-03	6.3E-03	6.4E-03	6.4E-03	ND
4	Chloroform	0	51	0	22	7.0E-03	0.0E+00	3.5E-03	6.1E-03	6.4E-03	6.5E-03	ND
5	Dichloroethane, 1,1-	0	51	0	22	7.0E-03	0.0E+00	3.5E-03	6.1E-03	6.4E-03	6.5E-03	ND
6	Ethylbenzene	0	51	0	22	7.0E-03	0.0E+00	3.5E-03	6.1E-03	6.4E-03	6.5E-03	ND
7	Methylene chloride	29	51	21	22	7.1E-02	7.1E-02	3.5E-03	4.0E-02	4.7E-02	6.6E-02	6.6E-02
8	Tetrachloroethene	1	51	0	22	7.0E-03	0.0E+00	3.5E-03	6.1E-03	6.4E-03	6.5E-03	6.5E-03
9	Toluene	0	51	0	22	7.0E-03	0.0E+00	3.5E-03	6.1E-03	6.4E-03	6.5E-03	ND
10	Xylene (total)	0	51	0	22	7.0E-03	0.0E+00	3.5E-03	6.1E-03	6.4E-03	6.5E-03	ND
11	Benzoic acid	0	6	0	1	6.5E+01	0.0E+00	6.5E+01	6.5E+01	0.0E+00	0.0E+00	ND
12	Dibenzofuran	0	51	0	22	1.3E+01	0.0E+00	1.9E-01	8.5E-01	1.8E+00	7.4E-01	ND
13	Dichlorobenzene, 1,2-	0	51	0	22	1.3E+01	0.0E+00	1.9E-01	8.5E-01	1.8E+00	7.4E-01	ND
14	Dimethylphenol, 2,4-	0	46	0	17	1.3E+01	0.0E+00	1.9E-01	1.0E+00	2.3E+00	1.1E+00	ND
15	Methylphenol, 2-	0	46	0	17	1.3E+01	0.0E+00	1.9E-01	1.0E+00	2.3E+00	1.1E+00	ND
16	Methylphenol, 4-	0	47	0	18	1.3E+01	0.0E+00	1.9E-01	9.9E-01	2.2E+00	1.00E+00	ND
17	Phenol	1	46	0	17	1.3E+01	0.0E+00	1.9E-01	1.0E+00	2.3E+00	1.1E+00	1.1E+00
18	Acenaphthene	0	51	0	22	1.3E+01	0.0E+00	1.9E-01	8.5E-01	1.8E+00	7.4E-01	ND
19	Acenaphthylene	0	51	0	22	1.3E+01	0.0E+00	1.9E-01	8.5E-01	1.8E+00	7.4E-01	ND
20	Anthracene	0	51	0	22	1.3E+01	0.0E+00	1.9E-01	8.5E-01	1.8E+00	7.4E-01	ND
21	Benzo(a)anthracene	3	51	2	22	1.3E+01	4.4E-02	4.0E-02	8.3E-01	1.8E+00	8.4E-01	4.4E-02
22	Benzo(a)pyrene	3	51	2	22	1.3E+01	9.2E-02	7.8E-02	8.4E-01	1.8E+00	7.7E-01	9.2E-02
23	Benzo(b)fluoranthene	3	51	2	22	1.3E+01	1.8E-01	1.8E-01	8.5E-01	1.8E+00	7.3E-01	1.8E-01
24	Benzo(g,h,i)perylene	2	51	1	22	1.3E+01	8.9E-02	8.9E-02	8.4E-01	1.8E+00	7.6E-01	8.9E-02
25	Benzo(k)fluoranthene	3	51	2	22	1.3E+01	1.8E-01	1.8E-01	8.5E-01	1.8E+00	7.3E-01	1.8E-01
26	Chrysene	4	51	3	22	1.3E+01	1.1E+00	9.7E-02	8.4E-01	1.8E+00	7.6E-01	7.6E-01
27	Fluoranthene	3	51	2	22	1.3E+01	1.4E-01	1.2E-01	8.4E-01	1.8E+00	7.5E-01	1.4E-01
28	Fluorene	0	51	0	22	1.3E+01	0.0E+00	1.9E-01	8.5E-01	1.8E+00	7.4E-01	ND
29	Indeno(1,2,3-cd)pyrene	2	51	1	22	1.3E+01	7.1E-02	7.1E-02	8.4E-01	1.8E+00	7.7E-01	7.1E-02
30	Methylnaphthalene, 2-	2	51	1	22	1.3E+01	7.8E-02	7.8E-02	8.4E-01	1.8E+00	7.7E-01	7.8E-02
31	Naphthalene	0	51	0	22	1.3E+01	0.0E+00	1.9E-01	8.5E-01	1.8E+00	7.4E-01	ND
32	Phenanthrene	3	51	2	22	1.3E+01	7.6E-02	5.8E-02	8.4E-01	1.8E+00	7.9E-01	7.6E-02
33	Pyrene	4	51	3	22	1.3E+01	1.1E+00	1.0E-01	8.4E-01	1.8E+00	7.5E-01	7.5E-01
34	Bis(2-ethylhexyl)phthalate	37	51	11	22	3.9E+00	3.9E+00	4.3E-02	4.4E-01	7.4E-01	6.8E-01	6.8E-01
35	Butylbenzylphthalate	4	51	2	22	1.3E+01	5.6E-02	5.3E-02	8.3E-01	1.8E+00	8.1E-01	5.6E-02
36	Di-n-butylphthalate	7	51	0	22	1.3E+01	0.0E+00	1.9E-01	8.5E-01	1.8E+00	7.4E-01	7.4E-01
37	Di-n-octylphthalate	0	51	0	22	1.3E+01	0.0E+00	1.9E-01	8.5E-01	1.8E+00	7.4E-01	ND
38	Diethylphthalate	6	51	0	22	1.3E+01	0.0E+00	1.9E-01	8.5E-01	1.8E+00	7.4E-01	7.4E-01
39	Aldrin	0	27	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	ND
40	Alpha Chlordane	0	27	0	1	5.0E-02	0.0E+00	5.0E-02	5.0E-02	0.0E+00	0.0E+00	ND
41	Alpha-BHC	0	27	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	ND
42	Beta-BHC	0	27	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	ND
43	DDD, 4,4-	0	27	0	1	1.1E-02	0.0E+00	1.1E-02	1.1E-02	0.0E+00	0.0E+00	ND
44	DDE, 4,4-	0	27	0	1	1.1E-02	0.0E+00	1.1E-02	1.1E-02	0.0E+00	0.0E+00	ND
45	DDT, 4,4-	0	27	0	1	1.1E-02	0.0E+00	1.1E-02	1.1E-02	0.0E+00	0.0E+00	ND
46	Delta-BHC	0	27	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	ND
47	Dieldrin	0	27	0	1	1.1E-02	0.0E+00	1.1E-02	1.1E-02	0.0E+00	0.0E+00	ND
48	Endosulfan I	1	27	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	5.0E-03
49	Endosulfan II	1	27	0	1	1.1E-02	0.0E+00	1.1E-02	1.1E-02	0.0E+00	0.0E+00	1.1E-02
50	Endosulfan sulfate	0	27	0	1	1.1E-02	0.0E+00	1.1E-02	1.1E-02	0.0E+00	0.0E+00	ND
51	Endrin	0	27	0	1	1.1E-02	0.0E+00	1.1E-02	1.1E-02	0.0E+00	0.0E+00	ND
52	Endrin aldehyde	0	20	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND
53	Endrin ketone	0	27	0	1	1.1E-02	0.0E+00	1.1E-02	1.1E-02	0.0E+00	0.0E+00	ND
54	Gamma-BHC	0	27	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	ND
55	Gamma Chlordane	0	27	0	1	5.0E-02	0.0E+00	5.0E-02	5.0E-02	0.0E+00	0.0E+00	ND
56	Heptachlor	0	27	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	ND

DATA STATISTICS

EXPOSURE POINT: PIT AREA
MEDIUM: SOIL
UNITS: MG/KG
U MULTIPLIER: 0.5

DATE: 07/14/92
FILENAME S-A1SOIL

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
57	Heptachlor epoxide	0	27	0	1	5.0E-03	0.0E+00	5.0E-03	5.0E-03	0.0E+00	0.0E+00	ND
58	Methoxychlor	0	27	0	1	5.0E-02	0.0E+00	5.0E-02	5.0E-02	0.0E+00	0.0E+00	ND
59	Aroclor-1260	0	27	0	1	1.1E-01	0.0E+00	1.1E-01	1.1E-01	0.0E+00	0.0E+00	ND
60	Aluminum	51	51	22	22	2.3E+04	2.3E+04	9.1E+03	1.4E+04	1.5E+04	1.5E+04	1.5E+04
61	Antimony	7	19	0	2	4.3E+00	0.0E+00	4.3E+00	4.3E+00	4.3E+00	4.3E+00	4.3E+00
62	Arsenic	51	51	22	22	3.1E+01	3.1E+01	3.0E+00	6.5E+00	8.7E+00	7.8E+00	7.8E+00
63	Barium	51	51	22	22	2.4E+04	2.4E+04	1.2E+02	4.1E+03	6.5E+03	1.9E+04	1.9E+04
64	Beryllium	51	51	22	22	2.0E+00	2.0E+00	3.7E-01	8.2E-01	9.5E-01	9.6E-01	9.6E-01
65	Cadmium (soil)	8	51	1	22	1.1E+00	1.1E+00	2.3E-01	3.1E-01	3.8E-01	3.6E-01	3.6E-01
66	Cadmium (water)	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND
67	Chromium	51	51	22	22	7.0E+01	7.0E+01	1.2E+01	2.4E+01	3.0E+01	3.0E+01	3.0E+01
68	Cobalt	47	51	20	22	1.8E+01	1.8E+01	6.5E-01	6.2E+00	7.9E+00	1.0E+01	1.0E+01
69	Cyanide	0	7	0	1	1.2E+00	0.0E+00	1.2E+00	1.2E+00	0.0E+00	0.0E+00	ND
70	Lead	40	51	11	22	8.1E+01	8.1E+01	1.2E+01	3.4E+01	4.1E+01	4.4E+01	4.4E+01
71	Mercury	8	51	3	22	2.2E-01	2.2E-01	5.5E-02	7.9E-02	9.6E-02	9.1E-02	9.1E-02
72	Nickel	51	51	22	22	3.2E+01	3.2E+01	5.5E+00	1.2E+01	1.5E+01	1.5E+01	1.5E+01
73	Silver	17	49	10	22	3.6E+00	3.6E+00	4.8E-01	1.0E+00	1.3E+00	1.3E+00	1.3E+00
74	Thallium	1	51	0	22	7.0E-01	0.0E+00	2.5E-01	5.8E-01	6.3E-01	6.7E-01	6.7E-01
75	Vanadium	51	51	22	22	6.9E+01	6.9E+01	8.5E-01	2.7E+01	3.2E+01	4.8E+01	4.8E+01
76	TCDD Equivalent	6	6	1	1	1.0E-05	1.0E-05	1.0E-05	1.0E-05	0.0E+00	0.0E+00	1.0E-05

TABLE 2

DATA STATISTICS

EXPOSURE POINT: PIT AREA
MEDIUM: SLUDGE
UNITS: MG/KG
U MULTIPLIER: 0.5

DATE: 07/14/92
FILENAME S-NEDGE

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
1	Acetone	20	39	18	31	2.6E+01	2.6E+01	2.5E-02	6.2E+00	8.7E+00	5.5E+01	2.6E+01
2	Benzene	29	39	26	31	3.5E+01	3.5E+01	7.0E-03	8.8E+00	1.2E+01	3.2E+02	3.5E+01
3	Butanone, 2-	15	39	11	31	3.1E+00	3.0E+00	7.0E-03	1.3E+00	1.6E+00	5.8E+00	3.0E+00
4	Chloroform	14	39	12	31	5.5E+00	8.7E-01	7.0E-03	1.4E+00	1.9E+00	1.4E+01	8.7E-01
5	Dichloroethane, 1,1-	0	39	0	31	5.5E+00	0.0E+00	7.0E-03	1.7E+00	2.2E+00	1.3E+01	ND
6	Ethylbenzene	31	39	28	31	6.6E+01	6.6E+01	7.0E-03	1.6E+01	2.2E+01	1.3E+03	6.6E+01
7	Methylene chloride	19	39	16	31	6.3E+00	6.3E+00	7.0E-03	1.9E+00	2.4E+00	1.1E+01	6.3E+00
8	Tetrachloroethene	0	39	0	31	5.5E+00	0.0E+00	7.0E-03	1.7E+00	2.2E+00	1.3E+01	ND
9	Toluene	33	39	28	31	1.2E+02	1.2E+02	7.0E-03	2.4E+01	3.2E+01	7.1E+03	1.2E+02
10	Xylene (total)	32	39	26	31	2.8E+02	2.8E+02	7.0E-03	7.7E+01	1.0E+02	3.7E+04	2.8E+02
11	Benzoic acid	0	11	0	7	1.7E+02	0.0E+00	9.6E+01	1.2E+02	1.4E+02	1.5E+02	ND
12	Dibenzofuran	8	41	8	33	3.4E+01	3.3E+01	2.6E-01	1.2E+01	1.5E+01	3.1E+01	3.1E+01
13	Dichlorobenzene, 1,2-	2	41	2	33	1.2E+02	1.3E+00	2.6E-01	1.5E+01	2.1E+01	5.1E+01	1.3E+00
14	Dimethylphenol, 2,4-	0	41	0	33	1.2E+02	0.0E+00	2.6E-01	1.5E+01	2.1E+01	4.5E+01	ND
15	Methylphenol, 2-	0	41	0	33	1.2E+02	0.0E+00	2.6E-01	1.5E+01	2.1E+01	4.5E+01	ND
16	Methylphenol, 4-	0	41	0	33	1.2E+02	0.0E+00	2.6E-01	1.5E+01	2.1E+01	4.5E+01	ND
17	Phenol	2	41	2	33	1.2E+02	6.3E+00	2.6E-01	1.5E+01	2.1E+01	4.5E+01	6.3E+00
18	Acenaphthene	6	41	5	33	3.4E+01	3.3E+01	2.6E-01	1.2E+01	1.5E+01	3.4E+01	3.3E+01
19	Acenaphthylene	1	41	1	33	1.2E+02	5.4E+00	2.6E-01	1.5E+01	2.1E+01	4.3E+01	5.4E+00
20	Anthracene	7	41	7	33	3.4E+01	3.4E+01	2.1E-01	1.4E+01	1.6E+01	4.0E+01	3.4E+01
21	Benzo(a)anthracene	3	41	3	33	1.2E+02	1.1E+00	2.6E-01	1.5E+01	2.1E+01	5.5E+01	1.1E+00
22	Benzo(a)pyrene	1	41	1	33	1.2E+02	1.8E+00	2.6E-01	1.5E+01	2.1E+01	4.7E+01	1.8E+00
23	Benzo(b)fluoranthene	0	41	0	33	1.2E+02	0.0E+00	2.6E-01	1.5E+01	2.2E+01	4.7E+01	ND
24	Benzo(g,h,i)perylene	0	41	0	33	1.2E+02	0.0E+00	2.6E-01	1.5E+01	2.2E+01	4.7E+01	ND
25	Benzo(k)fluoranthene	0	41	0	33	1.2E+02	0.0E+00	2.6E-01	1.5E+01	2.2E+01	4.7E+01	ND
26	Chrysene	14	41	12	33	1.2E+02	2.0E+01	4.7E-02	1.3E+01	1.9E+01	4.9E+01	2.0E+01
27	Fluoranthene	8	41	8	33	1.2E+02	1.5E+01	2.6E-01	1.5E+01	2.1E+01	4.8E+01	1.5E+01
28	Fluorene	25	41	24	33	6.1E+01	6.1E+01	4.6E-01	2.0E+01	2.5E+01	6.3E+01	6.1E+01
29	Indeno(1,2,3-cd)pyrene	0	41	0	33	1.2E+02	0.0E+00	2.6E-01	1.5E+01	2.2E+01	4.7E+01	ND
30	Methylnaphthalene, 2-	36	42	33	34	5.4E+02	5.4E+02	2.5E-02	1.5E+02	1.9E+02	1.6E+04	5.4E+02
31	Naphthalene	34	41	32	33	2.0E+02	2.0E+02	1.0E-02	7.1E+01	8.8E+01	4.7E+03	2.0E+02
32	Phenanthrene	35	42	33	34	1.8E+02	1.8E+02	5.2E-02	4.3E+01	5.7E+01	6.6E+02	1.8E+02
33	Pyrene	23	41	21	33	1.2E+02	2.0E+01	1.3E-01	1.2E+01	1.9E+01	3.5E+01	2.0E+01
34	Bis(2-ethylhexyl)phthalate	28	42	26	34	1.0E+02	1.0E+02	5.0E-02	1.4E+01	1.9E+01	1.1E+02	1.0E+02
35	Butylbenzylphthalate	1	41	1	33	1.2E+02	7.0E+00	2.6E-01	1.6E+01	2.2E+01	4.7E+01	7.0E+00
36	Di-n-butylphthalate	1	41	1	33	1.2E+02	3.4E+00	2.6E-01	1.5E+01	2.2E+01	4.7E+01	3.4E+00
37	Di-n-octylphthalate	2	41	2	33	1.2E+02	2.0E+00	6.0E-02	1.5E+01	2.2E+01	6.2E+01	2.0E+00
38	Diethylphthalate	0	41	0	33	1.2E+02	0.0E+00	2.6E-01	1.5E+01	2.2E+01	4.7E+01	ND
39	Aldrin	9	39	9	31	3.4E+01	4.2E-02	1.1E-03	5.6E+00	9.0E+00	2.7E+03	4.2E-02
40	Alpha Chlordane	11	40	11	32	3.4E+01	1.5E-02	1.2E-03	5.5E+00	8.7E+00	3.7E+03	1.5E-02
41	Alpha-BHC	9	39	9	31	3.4E+01	4.0E-03	5.7E-04	5.6E+00	9.0E+00	1.2E+04	4.0E-03
42	Beta-BHC	2	40	2	32	3.4E+01	9.0E-03	1.1E-03	5.5E+00	8.7E+00	5.8E+03	9.0E-03
43	DDD, 4,4-	1	40	1	32	3.4E+01	6.4E-04	6.4E-04	5.5E+00	8.7E+00	1.9E+03	6.4E-04
44	DDE, 4,4-	9	40	9	32	3.4E+01	1.8E-02	1.6E-03	5.5E+00	8.7E+00	1.2E+03	1.8E-02
45	DDT, 4,4-	13	40	13	32	3.4E+01	7.9E-02	7.2E-04	5.5E+00	8.7E+00	1.0E+03	7.9E-02
46	Delta-BHC	2	40	2	32	3.4E+01	3.9E-03	1.7E-04	5.5E+00	8.7E+00	7.7E+03	3.9E-03
47	Dieldrin	6	38	6	30	3.4E+01	6.8E-03	4.7E-04	5.8E+00	9.2E+00	7.1E+03	6.8E-03
48	Endosulfan I	4	36	4	32	3.4E+01	1.2E-02	1.1E-03	5.5E+00	8.7E+00	5.1E+03	1.2E-02
49	Endosulfan II	7	36	7	32	3.4E+01	4.9E-02	6.3E-04	5.5E+00	8.7E+00	1.6E+03	4.9E-02
50	Endosulfan sulfate	7	40	7	32	3.4E+01	2.5E-01	9.9E-04	5.5E+00	8.7E+00	1.6E+03	2.5E-01
51	Endrin	7	40	7	32	3.4E+01	1.9E-02	2.3E-03	5.5E+00	8.7E+00	1.2E+03	1.9E-02
52	Endrin aldehyde	1	29	1	25	4.2E-02	1.3E-02	2.1E-03	9.3E-03	1.3E-02	1.4E-02	1.3E-02
53	Endrin ketone	3	36	3	32	3.4E+01	8.8E-03	2.1E-03	5.5E+00	8.7E+00	1.5E+03	8.8E-03
54	Gamma-BHC	1	40	1	32	3.4E+01	3.2E-04	3.2E-04	5.5E+00	8.7E+00	7.7E+03	3.2E-04
55	Gamma Chlordane	9	40	9	32	3.4E+01	1.7E-02	3.2E-04	5.5E+00	8.7E+00	6.4E+03	1.7E-02
56	Heptachlor	2	40	2	32	3.4E+01	2.0E-02	3.9E-04	5.5E+00	8.7E+00	7.0E+03	2.0E-02

DATA STATISTICS

EXPOSURE POINT: PIT AREA
MEDIUM: SLUDGE
UNITS: MG/KG
U MULTIPLIER: 0.5

DATE: 07/14/92
FILENAME S-NEDGE

	CHEMICAL	MEDIUM HITS	MEDIUM TOTAL	EPC HITS	EPC TOTAL	MAX VALUE	MAX HIT	MIN VALUE	ARITH MEAN	UCL95 NORM	UCL95 LOGNORM	RME EPC (LOGNORM)
57	Heptachlor epoxide	3	40	3	32	3.4E+01	1.2E-02	8.0E-04	5.5E+00	8.7E+00	6.8E+03	1.2E-02
58	Methoxychlor	3	40	3	32	3.4E+01	8.7E-02	1.1E-02	5.5E+00	8.7E+00	1.8E+02	8.7E-02
59	Aroclor-1260	2	40	2	32	2.7E+01	2.7E+01	2.1E-02	2.8E+00	4.6E+00	2.4E+01	2.4E+01
60	Aluminum	37	37	29	29	1.2E+04	1.2E+04	1.3E+02	6.6E+03	7.4E+03	1.1E+04	1.1E+04
61	Antimony	0	24	0	18	4.3E+01	0.0E+00	4.3E+00	1.6E+01	2.1E+01	2.5E+01	ND
62	Arsenic	26	37	22	29	2.5E+01	2.5E+01	4.3E+00	1.2E+01	1.4E+01	1.5E+01	1.5E+01
63	Barium	37	37	29	29	4.8E+04	4.8E+04	6.1E+02	2.4E+04	2.7E+04	4.0E+04	4.0E+04
64	Beryllium	9	37	7	29	3.5E+00	7.9E-01	1.3E-01	9.2E-01	1.2E+00	1.4E+00	7.9E-01
65	Cadmium (soil)	19	37	19	29	1.2E+01	1.2E+01	6.5E-01	3.7E+00	4.6E+00	5.3E+00	5.3E+00
66	Cadmium (water)	0	0	0	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	ND
67	Chromium	37	37	29	29	9.3E+02	9.3E+02	8.0E+00	3.6E+02	4.4E+02	7.3E+02	7.3E+02
68	Cobalt	26	37	22	29	4.1E+01	4.1E+01	5.5E+00	1.8E+01	2.1E+01	2.1E+01	2.1E+01
69	Cyanide	1	16	1	12	2.5E+00	2.0E+00	5.0E-01	1.5E+00	1.8E+00	2.1E+00	2.0E+00
70	Lead	33	37	29	29	2.8E+03	2.8E+03	2.2E+01	4.2E+02	5.9E+02	7.2E+02	7.2E+02
71	Mercury	27	37	26	29	2.9E+00	2.9E+00	1.2E-01	8.8E-01	1.1E+00	1.4E+00	1.4E+00
72	Nickel	23	37	19	29	2.4E+01	2.4E+01	3.6E+00	1.2E+01	1.4E+01	1.5E+01	1.5E+01
73	Silver	8	37	6	29	7.0E+00	3.6E+00	2.8E-01	2.0E+00	2.6E+00	3.1E+00	3.1E+00
74	Thallium	3	37	3	29	7.1E+01	1.2E+00	2.9E-01	1.2E+01	2.0E+01	4.9E+01	1.2E+00
75	Vanadium	26	37	22	29	3.1E+01	3.1E+01	5.6E+00	1.6E+01	1.8E+01	1.9E+01	1.9E+01
76	TCDD Equivalent	17	17	7	7	4.5E-04	4.5E-04	1.0E-05	1.9E-04	3.1E-04	5.3E-03	4.5E-04

TABLE #3

SUMMARY OF EXPOSURE SCENARIOS SELECTED FOR QUANTIFICATION

Land Use	Exposed Population	Exposure Point	Exposure Media	Exposure Routes
Current	Trespasser[a]	On-Site (Northwest Pit, Northeast Pit, South Pit, Salt Water Pond, Southeast Marsh, Northwest Pond/Ditch)	Sludge Sediment Surface Water	Oral/Dermal Oral/Dermal Dermal
Current	Resident	Off-Site Drainage Ditch, Residential Wells	Sediment Surface Water Groundwater	Oral/Dermal Dermal Oral/Dermal
Future	Resident	On-site[b] (Pit Area)	Soil Groundwater Garden Vegetables Beef Milk	Oral/Dermal Oral/Dermal/Inhal (VOCs) Oral Oral Oral
Future	Resident	On-site[c] (Pit Area)	Sludge Groundwater Garden Vegetables Beef Milk	Oral/Dermal Oral/Dermal/Inhal (VOCs) Oral Oral Oral

(a) Scenarios in which a trespasser is exposed at various sources on-site may also apply to hypothetical future on-site residents.
(b) Assumes current site conditions (i.e., sludge is located in pits).
(c) Assumes pit sludge is excavated and spread on surrounding land.

TABLE #4

SUMMARY OF HUMAN EXPOSURE ASSUMPTIONS AT PAB OIL

Exposure Pathway	Parameter	Future On-Site Resident Child (Age 1 to 6) Avg.	Future On-Site Resident Child (Age 1 to 6) RME	Future On-Site Resident Adult Avg.	Future On-Site Resident Adult RME	Trespasser RME	Current Off-Site Resident Child (age 1-6) RME	Current Off-Site Resident Adult RME
General	Body weight, kg	15(a)	15(a)	70(a)	70(a)	43(a)	15(a)	70(a)
	Exposure frequency, days/yr	350(a)	350(a)	350(a)	350(a)	60(e)	100(e)	50(e)
	Exposure duration, yr	6(a)	6(a)	9(a)	30(a)	10(e)	6(a)	30(a)
	Averaging time (noncancer), yr	6(d)	6(d)	9(a)	30(d)	10(e)	6(d)	30(d)
	Averaging time (cancer), yr	--(e)	--(e)	70(d)	70(d)	70(d)	--	70(d)
Ingestion of Soil, Sediment or Sludge	Daily intake, mg	200(f)	200(a)	100(f)	100	100(e)	100(e)	50(e)
Vegetable Ingestion	Homegrown intake, g/day	25(g,a)	40(f)	50(a)	80(a)	--	--	--
Beef Ingestion	Homegrown intake, g/day	21(g,a)	36(f)	44(a)	75(a)	--	--	--
Milk Ingestion	Homegrown intake, g/day	218(g,a)	408(f)	160(a)	300(a)	--	--	--
Inhalation of VOCs	Breathing rate, m^3/day	5(f)	18(e)	15(f)	15(a)	--	--	--
Water Ingestion	Daily Intake, L/day	0.7(f)	1(c)	1.4(f)	2(c)	--	--	--
Dermal Exposure to Soil, Sediment, Sludge or Surface Water	Skin surface area exposed, cm^2/event	1,800(a)	1,800(a)	5,000(a)	5,000(a)	5,000(a)	1,800(a)	5,000(a)
Dermal Exposure to Groundwater	Skin surface area exposed, cm^2/event	7,200(a)	7,200(a)	20,000(a)	20,000(a)	--	--	--

(a) Default value recommended by USEPA (1989a).
(b) Default value recommended by USEPA (1991a).
(c) Assumed value, based on professional judgment.
(d) The averaging time for subchronic and chronic exposures (used to evaluate noncancer health effects) is equal to the exposure duration. The averaging time for lifetime exposure (used to evaluate cancer effects) is 70 years.
(e) -- = not evaluated.
(f) Guidance from USEPA Region VI.
(g) Soil intake by the adult is calculated as a time-weighted average, assuming 200 mg/day for six years while a child (body weight = 15 kg) and 100 mg/day for 24 years while an adult (body weight = 70 kg).
(h) Estimated according to USEPA guidance (1989b;1992b).

TABLE 4

TABLE #5

SUMMARY OF HIF CALCULATIONS

Exposed Population	Exposure Medium	Exposure Route	HIF, AVG	HIF, RME	HIF, AVG	HIF, RME	HIF, AVG	HIF, RME
Current Trespasser	Soil, Sludge or Sediment	Oral	--	--	--	3.8E-07[a]	--	5.5E-08[a]
		Dermal	--	--	--	1.9E-05[a]	--	2.7E-06[a]
	Surface Water	Dermal	--	--	--	5.0E-02[a]	--	7.1E-03[a]
Current Off-site Resident	Sediment	Oral	--	1.8E-06	--	9.8E-08	--	4.2E-08
		Dermal	--	3.3E-05	--	9.8E-06	--	4.2E-06
	Surface Water	Dermal	--	6.6E-02	--	9.8E-03	--	4.2E-03
Future On-site Resident	Groundwater	Oral	4.5E-02	6.4E+02	1.9E-02	2.7E-02	2.5E-03	1.2E-02
		Inhalation	3.2E-01	1.2E+00	2.1E-01	2.1E-01	2.6E-02	8.8E-02
		Dermal	5.5E-02	9.2E-02	3.3E-02	5.5E-02	4.2E-03	2.3E-02
	Soil or Sludge	Oral	1.3E-05	1.3E-05	1.4E-06	3.7E-06	1.8E-07	1.6E-06
		Dermal	2.3E-05	9.2E-02	1.4E-05	5.5E-02	1.8E-06	2.3E-02
	Garden Vegetables	Oral	1.6E-03	2.6E-03	6.8E-04	1.1E-03	8.8E-05	4.8E-04
	Beef	Oral	1.3E-03	2.3E-01	6.0E-04	1.0E-03	7.7E-05	4.4E-04
	Milk	Oral	1.4E-02	2.6E-02	2.2E-03	4.1E-03	2.8E-04	1.8E-03

(a) HIF, shown for the trespasser are site totals. Values for exposure at each subarea are derived by multiplying total HIF by fraction of time at each location (assumed to be 1/6). See Appendix 2 for discussion.

TABLE #6

SUMMARY OF CARCINOGENIC EFFECTS AND SLOPE FACTORS FOR CONTAMINANTS OF POTENTIAL CONCERN AT PAB OIL[a]

Chemical	Tumor Type - Route	Weight of Evidence	Slope Factor, (mg/kg-day)$^{-1}$ Oral	Inhalation
Aldrin	Liver-oral	B2	1.7E+01	1.7E+01
alpha-BHC	Liver-oral	B2	6.3E+00	6.3E+00
alpha-Chlordane	Liver-oral	B2	1.3E+00	1.3E+00
Arsenic	Lung-inhalation; skin cancer-oral; limited evidence of other internal cancers-oral and inhalation	A	1.8E+00	1.5E+01
Benzene	Nonlymphocytic leukemia-inhalation and oral	A	2.9E-02	2.9E-02
Benzo(a)anthracene	(b)	B2	7.3E+00	--
Benzo(a)pyrene	Stomach-oral; respiratory tract-inhalation; skin-dermal	B2	7.3E+00	--
Benzo(b)fluoranthene	(b)	B2	7.3E+00	--
Benzo(k)fluoranthene	(b)	B2	7.3E+00	--
Beryllium	Lung cancer-inhalation. Osteo-sarcomas-injection (intravenous or intramedullary)	B2	4.3E+00	8.4E+00
beta-BHC	Liver-oral	C	1.8E+00	1.8E+00

continued-

(a) Information from IRIS Database (USEPA 1992a) or HEAST (USEPA 1992d) unless otherwise noted. Only chemicals with slope factors calculated by EPA are included here.
(b) The cancer potency of this PAH is judged to be equivalent to that of benzo(a)pyrene.

TABLE 6

Chemical	Tumor Type - Route	Weight of Evidence	Slope Factor, (mg/kg-day)$^{-1}$ Oral	Inhalation
Bis(2-ethylhexyl)phthalate	Liver-oral	B2	1.4E-02	--
Cadmium	Lung, prostate-inhalation; insufficient evidence of carcinogenicity-oral	B1 (inhalation)	--	6.3E+00
Chloroform	Kidney and liver-inhalation and oral	B2	6.1E-03	8.1E-02
Chromium (VI)	Lung-inhalation	A (inhalation)	--	4.2E+01
Chrysene	(a)	B2	7.3E+00	--
4,4'-DDD	Liver-oral	B2	2.4E-01	--
4,4'-DDE	Liver-oral	B2	3.4E-01	--
4,4'-DDT	Liver-oral	B2	3.4E-01	3.4E-01
Dieldrin	Liver, lung-oral	B2	1.6E+01	1.6E+01
gamma-Chlordane	Liver-oral	B2	1.3E+00	1.3E+00
Heptachlor	Liver-oral	B2	4.5E+00	4.5E+00
Heptachlor epoxide	Liver-oral	B2	9.1E+00	9.1E+00
Indeno (1,2,3-cd) pyrene	(a)	B2	7.3+00	--
Lead	Renal tumors-oral (ATSDR 1991e)	B2	--	--
Methylene chloride	Liver-oral and inhalation	B2	7.5E-03	1.6E-03

continued-

(a) The cancer potency of this PAH is judged to be equivalent to that of benzo(a)pyrene.

TABLE 6

Chemical	Tumor Type - Route	Weight of Evidence	Slope Factor, (mg/kg-day)$^{-1}$ Oral	Inhalation
Nickel	Lung and nasal cancer-inhalation of nickel refinery dust	A (inhalation)	--	8.4E-01[a]
Polychlorinated biphenyls (PCBs)[b]	Liver-oral; inadequate but suggestive evidence of liver cancer-inhalation and dermal	B2	7.7E+00	--
2,3,7,8-TCDD equivalent	Liver, lung, hard palate, nasal epithelium-oral	B2	1.5E+05	1.5E+05
Tetrachloroethene	Liver-inhalation and oral; leukemia-inhalation	B2	--	--

(a) Inhalation slope factor for nickel refinery dust.
(b) All PCBs evaluated by using SF developed for Aroclor 1260.

TABLE 6

TABLE #7

SUMMARY OF NONCARCINOGENIC EFFECTS AND TOXICITY VALUES FOR CONTAMINANTS OF POTENTIAL CONCERN AT PAB OIL[a]

Chemical	Effect	Oral			Inhalation		
		RfD$_o$[b]	RfD$_o$[b]	Confidence Level	RfD$_i$[b]	RfD$_i$[b]	Confidence Level
Acenaphthene	Liver effects-oral	6.0E-01	6.0E-02	Low	--	--	--
Acenaphthylene	(c)	-- (c)	-- (c)	--	--	--	--
Acetone	Increased liver and kidney weights, nephrotoxicity-oral	1.0E-00	1.0E-01	Low	--	--	--
Aldrin	Liver toxicity-oral; developmental effects	3.0E-05	3.0E-05	Medium	--	--	--
alpha-BHC	Liver and kidney effects-oral	--	--	--	--	--	--
alpha-Chlordane	Liver necrosis-oral	6.0E-05	6.0E-05	Low	--	--	--
Aluminum	Asthma, pulmonary fibrosis-inhalation; neurological disorders-oral and kidney dialysis (ATSDR 1990a); developmental effects	--	--	--	--	--	--
Anthracene	No treatment related effects	3.0E+00	3.0E-01	Low	--	--	--
Antimony	Decreased longevity, changes in blood glucose, cholesterol-oral; developmental effects	4.0E-04	4.0E-04	Low	--	--	--
Arsenic	Mucous membrane irritation-inhalation; liver and kidney effects-oral; keratosis, hyperpigmentation, neurological disorders-both routes (ATSDR 1991a); developmental effects	3.0E-04	3.0E-04	Medium	--	--	--
Barium	Hypertension-oral; developmental effects	7.0E-02	7.0E-02	Medium	1.4E-03	1.4E-04	--
Benzene	Hematological effects-oral and inhalation; developmental effects	--	--	--	--	--	--
Benzo(a)anthracene	(d)	--[d]	--[d]	--	--	--	--
Benzo(a)pyrene	(d); developmental effects	--[d]	--[d]	--	--	--	--
Benzo(b)fluoranthene	(d)	--[d]	--[d]	--	--	--	--
Benzo(g,h,i)perylene	(d)	--[d]	--[d]	--	--	--	--
Benzo(k)fluoranthene	(d)	--[d]	--[d]	--	--	--	--

continued-

(a) All information from either IRIS Database (USEPA 1992a) or HEAST (USEPA 1992d) unless otherwise noted.
(b) Units of the RfD are mg/kg-day.
(c) Noncarcinogenic effects of this PAH evaluated using the RfD for acenaphthene.
(d) Noncarcinogenic effects of this PAH evaluated using the RfD for pyrene.

Chemical	Effect	Oral			Inhalation		
		RfD$_s$	RfD$_c$	Confidence Level	RfD$_s$	RfD$_c$	Confidence Level
Benzoic acid	Irritation, malaise-oral	4.0E+00	4.0E+00	Medium	--	--	--
Beryllium	No adverse effects noted	5.0E-03	5.0E-03	Low	--	--	--
beta-BHC	Liver and kidney effects-oral	--	--	--	--	--	--
Bis(2-ethylhexyl)phthalate	Liver toxicity, reproductive and developmental effects-oral (ATSDR 1991d)	2.0E-02	2.0E-02	Medium	--	--	--
2-Butanone	Central nervous system effects, fetotoxicity-inhalation	5.0E-01	5.0E-02	Medium	9.0E-01	2.9E-01	--
Butylbenzylphthalate	Liver and kidney changes, hematological and reproductive effects-oral	2.0E+00	2.0E-01	Low	--	--	--
Cadmium (food) (water)	Renal damage-both routes; impaired respiratory function-inhalation; possible immune alterations-oral (ATSDR 1991b); developmental effects	-- --	1.0E-03 5.0E-04	High High	-- --	-- --	-- --
Chloroform	Liver and kidney toxicity-inhalation and oral; central nervous system depression-inhalation (ATSDR 1991c); developmental effects	1.0E-02	1.0E-02	Medium	--	--	--
Chromium (VI)[a]	Atrophy of nasal mucosa-inhalation; no effects defined after oral exposure; developmental effects	2.0E-02	5.0E-03	Low	--	--	--
Chrysene	(b)	--[b]	--[b]	--	--	--	--
Cobalt	Asthma, fibrosis-inhalation. Cardiomyopathy-oral (ATSDR (1990b)	--	--	--	--	--	--
Cyanide (free)	Weight loss, thyroid effects, myelin degeneration-oral; developmental effects	2.0E-02	2.0E-02	Medium	--	--	--
4,4'-DDD	Liver damage-oral; developmental effects	--	--	--	--	--	--
4,4'-DDE	Liver damage-oral; developmental effects	--	--	--	--	--	--
4,4'-DDT	Liver damage-oral; developmental effects	5.0E-04	5.0E-04	Medium	--	--	--
delta-BHC	--	--	--	--	--	--	--
Di-n-butylphthalate	Increased mortality-oral; developmental effects	1.0E+00	1.0E-01	Low	--	--	--
Di-n-octylphthalate	Kidney and liver damage-oral	2.0E-02	2.0E-02	--	--[b]	--	--

continued-

(a) All detected chromium assumed to be hexavalent.
(b) Noncarcinogenic effects of this PAH evaluated using the RfD for pyrene.

TABLE 7

Chemical	Effect	Oral			Inhalation		
		RfD$_o$	RfD$_c$	Confidence Level	RfD$_i$	RfD$_c$	Confidence Level
Dibenzofuran	--	--	--	--	--	--	--
1,2-Dichlorobenzene	Liver, kidney effects-oral; reduced weight gain-inhalation	9.0E-01	9.0E-02	--	5.7 E-01	5.7E-02	--
1,1-Dichloroethane	Renal damage-inhalation; no effect-oral; developmental effects	1.0E+00	1.0E-01	--	1.4E+00	1.4E-01	--
Dieldrin	Liver lesions-oral; developmental effects	5.0E-05	5.0E-05	Medium	--	--	--
Diethylphthalate	Reduced growth rate, altered organ weights-oral	8.0E+00	8.0E-01	Low	--	--	--
2,4-Dimethylphenol	Clinical signs of toxicity, changes in hematologic parameters-oral	2.0E-01	2.0E-02	Low	--	--	--
Endosulfan (I, II)	Mild kidney lesions-oral; developmental effects	2.0E-04	5.0E-05	Medium	--	--	--
Endosulfan sulfate	CNS and kidney effects-oral	--	--	--	--	--	--
Endrin	Histological lesioning in liver, convulsions-oral; developmental effects	3.0E-04	3.0E-04	Medium	--	--	--
Enrin aldehyde	--	--	--	--	--	--	--
Enrin ketone	--	--	--	--	--	--	--
Ethylbenzene	Liver and kidney effects-oral; developmental toxicity-inhalation	1.0E+00	1.0E-01	Low	2.9E-01	2.9E-01	Low
Fluoranthene	Liver and kidney effects-oral	4.0E-01	4.0E-02	Low	--	--	--
Fluorene	Decreased red blood cells, hemoglobin-oral	4.0E-01	4.0E-02	Low	--	--	--
gamma-BHC	Liver and kidney effects-oral	3.0E-03	3.0E-04	--	--	--	--
gamma-Chlordane	Liver necrosis-oral	6.0E-05	6.0E-05	Low	--	--	--
Heptachlor	Increased liver weight-oral; developmental effects	5.0E-04	5.0E-04	--	--	--	--
Heptachlor epoxide	Increased liver weight-oral; developmental effects	--	1.3E-05	Low	--	--	--
Indeno(1,2,3-cd)pyrene	(a)	--(a)	--(a)	--	--	--	--

-continued-

(a) Noncarcinogenic effects of this PAH evaluated using the RfD for pyrene.

TABLE 7

Chemical	Effect	Oral			Inhalation		
		RfD$_s$	RfD$_c$	Confidence Level	RfD$_s$	RfD$_c$	Confidence Level
Lead	Neurological deficiencies, hypertension, inhibition heme synthesis, reproductive effects-oral and inhalation (ATSDR 1991e); developmental effects	--[a]	--[a]	--	--	--	--
Mercury	Neurotoxicity-inhalation; kidney effects-oral; developmental effects	3.0E-04	3.0E-04	--	8.6E-05	8.6E-05	--
Methoxychlor	Excessive loss of litters-oral; developmental effects	5.0E-03	5.0E-03	Low	--	--	--
Methylene chloride	Liver toxicity-oral; developmental effects	6.0E-02	6.0E-02	Medium	8.6E-01	8.6E-01	--
2-Methylnaphthalene	(b)	--[c]	--[c]	--	--	--	--
2-Methylphenol	Decreased body weight and neurotoxicity-oral; developmental effects	5.0E-01	5.0E-02	Medium	--	--	--
4-Methylphenol	Neurotoxicity-oral; developmental effects	5.0E-01	5.0E-02[c]	Medium	--	--	--
Naphthalene	Hemolytic anemia-oral and inhalation; hepatic, reproductive and other effects-oral; developmental effects	4.0E-02	4.0E-02	--	--	--	--
Nickel (soluble salts)	Hematological, developmental effects-oral; respiratory, immune and reproductive effects-inhalation (ATSDR 1991f)	2.0E-02	2.0E-02	Medium	--	--	--
Phenanthrene	(d)	--[c]	--[c]	--	--	--	--
Phenol	Developmental and kidney effects-oral	6.0E-01	6.0E-01	Low	--	--	--
Polychlorinated biphenyls (PCBs)	Liver effects, chloracne-all routes (ATSDR 1991g); developmental effects	--	--	--	--	--	--
Pyrene	Kidney damage-oral	3.0E-01	3.0E-02	Low	--	--	--
Silver	Skin discoloration (argyria)-oral	5.0E-03	5.0E-03	Low	--	--	--
2,3,7,8-TCDD equivalent	Chloracne, thymus, liver and hematological effects-oral and inhalation; developmental effects	--	--	--	--	--	--
Tetrachloroethene	Liver and kidney effects-both routes central nervous system depression-inhalation (ATSDR 1991h); developmental effects	1.0E-01	1.0E-02	Medium	--	--	--

continued-

(a) Lead will be evaluated based on acceptable blood lead levels using the UBK model.
(b) Noncarcinogenic effects of this PAH evaluated using the RfD for naphthalene.
(c) Removed from IRIS 8/91, under review (USEPA 1992d).
(d) Noncarcinogenic effects of this PAH evaluated using the RfD for pyrene.

TABLE 7

Chemical	Effect	Oral			Inhalation		
		RfD_s	RfD_c	Confidence Level	RfD_s	RfD_c	Confidence Level
Thallium	Alopecia and increased liver enzymes-oral; developmental effects	7.0E-04	7.0E-05	--	--	--	--
Toluene	Changes in liver and kidney weights-oral; central nervous system effects-inhalation; developmental effects	2.0E+00	2.0E-01	Medium	5.7E-01	5.7E-01	--
Vanadium	Renal and gastrointestinal effects-oral; respiratory irritation-inhalation; developmental effects	7.0E-03	7.0E-03	--	--	--	--
Xylenes (total)	Central nervous system toxicity-oral and inhalation; developmental effects-oral	4.0E+00	2.0E+00	Medium	--	--	--

TABLE 7

TABLE #8

SUMMARY OF EXCESS CANCER RISK ESTIMATES

Exposed Population	Exposure Location	Exposure Medium	Exposure Route	Cancer Risk (AVG)	Cancer Risk (RME)
Current Trespasser	Northwest Pit	Sludge	Oral	--	5E-06
			Dermal	--	2E-07
			Total:		5E-06
	Northeast Pit	Sludge	Oral	--	6E-06
			Dermal	--	1E-05
		Surface water	Dermal	--	1E-05
			Total:		3E-05
	South Pit	Sludge	Oral	--	4E-05
			Dermal	--	1E-04
		Surface water	Dermal		6E-06
			Total:		1E-04
	Salt Water Pond	Sediment	Oral	--	3E-07
			Dermal	--	1E-08
		Surface water	Dermal		5E-06
			Total:		5E-06
	Southeast Marsh	Soil	Oral	--	3E-07
			Dermal	--	2E-09
		Surface water	Dermal	--	5E-06
			Total:		5E-06
	Northwest Pond/Ditch	Sediment/Soil	Oral	--	6E-07
			Dermal	--	1E-08
		Surface water	Dermal	--	3E-06
			Total:		4E-06
	Site Total	All			2E-04
Current Off-Site Residents	Drainage Ditch	Sediment	Oral	--	1E-06
			Dermal	--	9E-08
		Surface water	Dermal	--	1E-05
			Total:		1E-05

TABLE 8

Exposed Population	Exposure Location	Exposure Medium	Exposure Route	Cancer Risk (AVG)	Cancer Risk (RME)
Future On-Site Residents	Pit Area (Current condition)	Soil	Oral	6E-06	4E-05
			Dermal	8E-08	1E-06
		Food	Oral	7E-05	4E-04
		Groundwater	Oral	7E-05	3E-04
			Dermal	4E-05	2E-04
		Indoor Air (VOCs)	Inhalation	7E-06	3E-05
			Total:	2E-04	9E-04
	Pit Area (Sludge spread) on surface)	Soil	Oral	8E-05	7E-04
			Dermal	4E-05	7E-04
		Food	Oral	3E-03	2E-02
		Groundwater	Oral	7E-05	3E-04
			Dermal	4E-05	2E-04
		Indoor Air (VOCs)	Inhalation	7E-06	3E-05
			Total:	3E-03	2E-02

TABLE #9

SUMMARY OF CHRONIC NONCANCER RISK ESTIMATES TO ADULTS

Exposed Population	Exposure Location	Exposure Medium	Exposure Route	Hazard Index (AVG)	Hazard Index (RME)
Current Trespasser	Northwest Pit	Sludge	Oral	--	4E-02
			Dermal	--	2E-03
			Total:		4E-02
	Northeast Pit	Sludge	Oral	--	2E-01
			Dermal	--	4E-01
		Surface water	Dermal	--	3E-02
			Total:		6E-01
	South Pit	Sludge	Oral	--	6E-01
			Dermal	--	3E+00
		Surface water	Dermal	--	4E-02
			Total:		4E+00
	Salt Water Pond	Sediment	Oral	--	1E-02
			Dermal	--	1E-04
		Surface water	Dermal	--	1E-02
			Total:		2E-02
	Southeast Marsh	Soil	Oral	--	8E-03
			Dermal	--	2E-04
		Surface water	Dermal	--	7E-03
			Total:		2E-02
	Northwest Pond/Ditch	Sediment/Soil	Oral	--	1E-02
			Dermal	--	1E-04
		Surface water	Dermal	--	4E-03
			Total:		1E-02
	Site Total	All			5E+00
Current Off-Site Residents	Drainage Ditch	Sediment	Oral	--	7E-03
			Dermal	--	6E-04
		Surface water	Dermal	--	7E-03
			Total:		1E-02

TABLE 9

Exposed Population	Exposure Location	Exposure Medium	Exposure Route	Cancer Risk (AVG)	Cancer Risk (RME)
Future On-Site Residents	Pit Area (Current condition)	Soil	Oral	5E-01	1E+00
			Dermal	6E-04	3E-03
		Food	Oral	2E-02	3E-02
		Groundwater	Oral	7E+00	1E+01
			Dermal	5E-01	8E-01
		Indoor Air (VOCs)	Inhalation	1E-03	1E-03
			Total:	8E+00	1E+01
	Pit Area (Sludge spread) on surface)	Soil	Oral	1E+00	3E+00
			Dermal	2E-02	1E-01
		Food	Oral	8E+00	1E+01
		Groundwater	Oral	7E+00	1E+01
			Dermal	5E-01	8E-01
		Indoor Air (VOCs)	Inhalation	1E-03	1E-03
			Total:	2E+01	2E+01

TABLE #10

REMEDIAL GOALS
SITE SURFACE WATER
Units: µg/l

Contaminant of Concern	Maximum On-site Value				Remedial Goals	Basis
	Saltwater Pond	S. Pit	N.E. Pit	S.E. Marsh		
Beryllium	--	--	2.5 B	--	275	LDEQ Discharge Limit[1]
Barium	2,890	13,000	1,270	669 J	2,000	LDEQ Discharge Limit[1]
Benzene	--	200 J	65 J	--	100	LDEQ Discharge Limit[1]
Toluene	--	78 J	73 J	--	74	LDEQ Discharge Limit[1]
Iron	3,740	191,000	7,700	6,920	1,000	AWQC[2]

[1] Anticipated LDEQ Discharge Limit. Similar limits have been utilized for pump down discharges at the Gulf Coast Superfund Site.
[2] AWQC - Ambient Water Quality Criteria.

TABLE 10

TABLE #11

REMEDIAL GOALS
SLUDGE AND ASSOCIATED SOILS
Units: mg/kg

Contaminant of Concern	Maximum On-site Value		Background Range[3]	Exposure Limit - EL[1]		Remedial Goal	Basis
	Pit/Pond Sludge/Scum	Associated Soils		Non-C.	Carc.		
Arsenic	25.1	30.7	1.8-14.1	23	0.36	10	State Regulation[6]
Barium	48,400	23,500	88.3-256	5,400	NA	5,400	EL-Non-C
Total Carcinogenic PAHs[2]	20 J	7	--	NA	NA	3	Region VI[4]
Non-Carcinogenic PAHs	407	286	--	NA	NA	HI = 1[5]	Region VI

1 EL based on carcinogenic risk 1E-06 and Hazard Index = 1.
2 Values are totals of detected compounds.
3 Background samples collected 0-3 ft in depth.
4 The clean-up level of carcinogenic PAHs is based on a residential exposure scenario and falls within EPA's acceptable risk range of 1E-4 to 1E-6. The 3 mg/kg is expressed as a carcinogenic Benzo (a) Pyrene equivalent which corresponds to a risk of 3E-5. Although EPA has flexibility within its risk range for identifying an appropriate clean-up goal, the decision to use 3 mg/kg was an effort to be consistent with similar past clean-up decisions within the Region.
5 For noncarcinogenic PAHs, the following risk based concentrations shall be used in order to achieve a hazard index (HI) of 1: 16,500 mg/kg, Acenaphthene; 82,000 mg/kg, Anthracene; 11,000 mg/kg, Fluoranthene; 11,000 mg/kg, Fluorene; 1100 mg/kg, Naphthalene; and 8000 mg/kg Pyrene. A conservative estimate of 8000 mg/kg will be used as the surrogate risk-based concentration for other noncarcinogenic PAHs that do not have a reference dose.
6 Lousiana Statewide Order No. 29-B, Section 129.B.6; Pit Closure.

NA = Not Applicable
HI = Hazard Index

TABLE 11

APPENDIX #1