Superfund Record of Decision

State Marine Superfund Site
Port Arthur, Jefferson County, Texas

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6

APRIL 2007

STATE MARINE SUPERFUND SITE
PORT ARTHUR, JEFFERSON COUNTY, TEXAS
RECORD OF DECISION
NO FURTHER ACTION NECESSARY

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PART 1: DECLARATION

SITE NAME AND LOCATION

The State Marine Superfund Site is located in Port Arthur, Jefferson County, Texas. The National Superfund Database (CERCLIS) identification number for this Site is TXD099801102. This Site has not been divided into separate operable units and all areas and media within the Site are addressed together in this Record of Decision.

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the State Marine Superfund Site located in Port Arthur, Jefferson County, Texas, which was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 USC § 9601 et seq., as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300 et seq., as amended.

This decision was based on the Administrative Record, which has been developed in accordance with Section 113(k) of CERCLA, 42 U.S.C. § 9631(k), and is available for review at the Port Arthur Public Library, 4615 9th Avenue, Port Arthur, Texas; at the Texas Commission on Environmental Quality (TCEQ) offices in Austin, Texas; and at the United States Environmental Protection Agency (EPA) Region 6 offices in Dallas, Texas. The Administrative Record Index identifies each of the items comprising the Administrative Record upon which the selection of the remedial action is based.

The State of Texas, through the TCEQ, concurs with the Selected Remedy.

DESCRIPTION OF THE SELECTED REMEDY

The EPA has determined that No Further Action is Necessary at the State Marine Superfund Site to protect human health and the environment. The EPA's Time Critical Removal Action completed in August 2001 consisted of removal and off-site disposal of waste materials, water treatment, oil and water separation, and stabilization and off-site disposal of sludge materials. The removal action addressed materials that posed a risk to human health and ecological receptors.

STATUTORY DETERMINATIONS

The selected No Further Action Necessary remedy for the site is protective of human health and the environment. The Time Critical Removal Action completed by the EPA in August 2001 removed materials that posed a risk to human health and ecological receptors. Based on the results of the Human Health Risk Assessment (HHRA), the EPA determined that the current site conditions do not pose a risk to industrial or commercial workers. A Screening Level Ecological Risk Assessment (SLERA) was also conducted to determine if the Site posed a risk to ecological receptors. The results of the SLERA indicate that no remedial action is warranted to address ecological risk at the site. The No Further Action Necessary remedy is based on the human health risk assessment for industrial/commercial workers. Remaining conditions at the site will not allow for unlimited use and unrestricted exposure. Therefore, a policy review will be required to ensure that future site development remains consistent with the intended commercial/industrial site use and future development is protective of human health and the environment. As part of the five-year review, sediment sampling and monitoring should be considered in Sabine Lake adjacent to the State Marine site to ensure that the remedy remains protective of ecological receptors. Pursuant to CERCLA Section 121(c), 42 U.S.C. § 9621(c), and as provided in the current guidance on Five Year Reviews [OSWER Directive 9355.7-03B-P, *Comprehensive Five-Year Review Guidance* (June 2001)], the EPA will conduct a policy five-year review within five years from the signing of the Record of Decision for the site.

AUTHORIZING SIGNATURE

By: _____ Date: 4/18/07

Samuel Coleman, P.E., Director
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STATE MARINE SUPERFUND SITE
PORT ARTHUR, JEFFERSON COUNTY, TEXAS
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NO FURTHER ACTION NECESSARY
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STATE MARINE SUPERFUND SITE
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PART 2: THE DECISION SUMMARY

SITE NAME, LOCATION, AND BRIEF DESCRIPTION

The State Marine Site is located approximately 4.5 miles east-northeast of the City of Port Arthur in Jefferson County, Texas, on Old Yacht Club Road on Pleasure Islet, a peninsula located approximately 0.5-mile southwest of the mouth of the Neches River, see Figure 1-1. Overall, the Site encompasses approximately 17 acres and is bounded to the north by the Palmer Barge Line Site (PBLS), to the west by Old Yacht Club Road, to the south by undeveloped property, and to the east by Sabine Lake. There is very little topographical relief to the Site. The Site is located approximately 0.5 mile southwest of the confluence of the Neches River and the Sabine Neches Barge Canal.

SITE BACKGROUND AND ENFORCEMENT ACTIVITIES

Site History

Pleasure Islet is a manmade landmass consisting of dredge spoils generated during the construction and maintenance of the Sabine-Neches Canal, also called the Intercoastal Waterway. The canal was constructed between 1898 and approximately 1920 in the vicinity of Sabine Lake and the Neches River, between the current site location and the mainland. Between 1955 and 1957, a portion of the canal along the western side of Pleasure Islet was abandoned, and a new canal was cut along the eastern and southern sides of Pleasure Islet. Pleasure Islet was created when a land bridge was constructed across the abandoned portions of the canal, between the northern tip of Pleasure Island and the mainland. Vehicle access to the Site is limited to a single dirt road starting at the western site border along Old Yacht Club Road.

Ownership of Pleasure Islet was transferred from the State of Texas to the City of Port Arthur, Texas, in 1955. Development of the islet and the Site began after 1957, following construction of the land bridge across the abandoned portions of the Sabine-Neches Canal. In approximately 1963, the City of Port Arthur began municipal landfill operations on the northern and central portions of the islet. Initially, the landfill consisted of a burn pit in which wastes were incinerated. By December 1969, burn operations were discontinued, and the landfill was used solely for disposal of wastes. Between 1969 and 1972, landfill disposal operations expanded to include the central and northern portions of the Site and the property north of the Site. Between 1972 and 1974, disposal activities were generally concentrated in the northern parts of the islet. In December 1974, the City of Port Arthur closed the landfill in accordance with Texas

Department of Health (TDH) regulations, which required covering the entire landfill with approximately 2 feet of fine-grained fill material. The cover material is believed to be dredge spoils that originated on the islet.

Site operations began about 1973 under the names of State Welding and Marine Works and the Golden Triangle Shipyard. The construction of wastewater impoundments in the northwestern portion of the Site was also reported. The impoundments were reportedly unlined, earthen diked areas approximately two (2) acres in size used to store oil and wastewater from barge-cleaning operations. Inspection reports indicate that wastewater from barge-cleaning operations was directed to two Above Ground Storage Tanks (ASTs) and then pumped to the wastewater impoundments. Some of the oil from the tanks was diverted to an old ship (on land) that was used as an oil/water separator. Oil from the separator was collected for reuse, potentially on-site. The Site included the locations of the former wastewater impoundments, tar burn area, distillation column, and the former location of the Lauren Refining Company (LRC) Tank Farm, see Figure 1-2.

History of Federal and State Investigations

In 1995, the Texas Natural Resource Conservation Commission (TNRCC), now the Texas Commission on Environmental Quality (TCEQ), initiated an Expanded Site Inspection (ESI) at the Site. The objective of the TNRCC ESI was to collect sufficient data to develop an understanding of the Site contaminants and to identify the potential migration pathways, primary contaminant sources, exposure pathways, and presence of potential human health and ecological receptors. The following reports were completed as a result of the data obtained from the field work during the ESI:

- 1996 Expanded Site Investigation Report (TNRCC).
- 1997 Hazardous Ranking System Documentation Report (TNRCC).
- 1999 Technical Memorandum (CH2M HILL).

In 2001, a remedial investigation was conducted for the State Marine Site to determine the nature and extent of contamination present at the site.

In May and June 2006, the EPA conducted a Supplemental Remedial Investigation (Supplemental RI) to determine if hazardous materials remained in the former surface impoundments that could migrate to the Sabine Lake sediments through the shallow ground water pathway. Subsurface soil samples were collected through the former surface impoundment area and two (2) down gradient shallow ground water monitoring wells were installed. In addition, sediment samples were collected from Sabine Lake along the shore of the State Marine site.

Other Investigations Adjacent to the Site included a Preliminary Assessment (PA), a Screening Site Inspection (SSI), and an ESI that was conducted immediately adjacent to the Site at the

PBLS. The PBLS is located on Pleasure Islet immediately north of the Site. These investigations did not involve collecting soil, sediment, or ground water directly from the Site; however, some sediment data obtained from the PBLS at near-shore and offshore locations were used in the human health and ecological screening risk assessment.

History of CERCLA Removal Actions

In August 2001, the EPA Region 6 completed a Time Critical Removal Action to remove source materials stored on-site. Activities included waste removal, water treatment, oil/water separation, and sludge stabilization.

History of CERCLA Enforcement Activities

On October 29, 1998, the EPA issued Special Notice Letters to potentially responsible parties (PRP) for the PRPs to conduct the remedial investigation and feasibility study. The EPA did not receive positive responses to the Special Notice Letters. In February 1999, the EPA sent 104(e) information request letters regarding the State Marine Site.

National Priorities List

The EPA published a proposed rule on March 6, 1998, to add the State Marine Site to the National Priorities List (NPL) of Superfund sites. The Site was added to the NPL in a final rule published on July 28, 1998 [Federal Register Listing (FRL-6130-9), Volume 63, Number 144, Pages 40182 - 40188].

COMMUNITY PARTICIPATION

The Remedial Investigation and Feasibility Study Report and the Proposed Plan for the State Marine Site in Port Arthur, Texas, were made available to the public on July 27, 2005. These and other Site documents can be found in the Administrative Record file and the information repositories at the following locations: Port Arthur Public Library located at 4615 9th Avenue, Port Arthur, Texas; the U.S. Environmental Protection Agency Region 6 located at 1445 Ross Avenue, Dallas, Texas; and the Texas Commission on Environmental Quality located at 12100 Park 35 Circle, Building E, 1st Floor, Austin, Texas. The notice of the availability of these documents was published in the Port Arthur News on July 28, 2005. A public comment period was held from July 27, 2005 to August 25, 2005. The EPA and the Texas Commission on Environmental Quality conducted a public meeting on August 11, 2005, to discuss the Proposed Plan and receive comments from the community. The public meeting was held at the West Groves Education Center, located at 5840 West Jefferson, in Groves, Texas. The EPA's responses to comments received during the public comment period are included in the Responsiveness Summary, which is part of this Record of Decision (ROD).

SCOPE AND ROLE OF RESPONSE ACTION

In this Record of Decision, the EPA has determined that no further response action is necessary at the State Marine Site to protect human health and the environment. The EPA's decision is based on the Time Critical Removal Action completed by the EPA in August 2001, the human health and ecological risk assessments, and the Supplemental Remedial Investigations which indicate that site conditions do not pose a risk to human health and the environment based on a future industrial worker use scenario. This will be the final decision document since there are no other operable units associated with this site.

SITE CHARACTERISTICS

Remedial Investigation

A remedial investigation (RI) was conducted by WESTON in 2001, consisting of two sampling events in the fall of 2001, where sediment samples from off-site locations in Sabine Lake and soil and ground water samples from on-site locations on the Site were collected.

Site Geology and Hydrogeology

The geology and hydrogeology of the State Marine Site are unusual, because the Site is situated on a man-made landmass within a waterway of considerable flow volume. This landmass consists of dredge spoils generated during construction and maintenance of the Sabine-Neches Canal. The canal was constructed between 1898 and 1920. The City of Port Arthur used the Site as a municipal landfill from approximately 1963 until 1974. Trench and fill methods were employed for disposal of the municipal waste. The entire Site was subsequently capped with what is believed to be dredge spoils. Municipal landfill debris is present in the shallow subsurface across the majority of the Site. The landfill material is usually encountered approximately 2 feet below the surface and typically ranges in thickness from 3 to 10 feet.

During the RI conducted in 2003, the presence of landfill debris prohibited recovery of subsurface soil samples in most instances; thus, detailed information on the subsurface soil conditions across the majority of the Site could not be obtained. Based on observations during monitoring well installation activities, the soils underlying the landfill debris consist of dredge spoils underlain by alluvial deposits to the depths investigated (40 to 55 feet). These materials consisted primarily of saturated, very soft, gray silty clay. At one location, saturated, gray, silty sand was encountered at a depth of approximately 35 feet below ground surface (bgs).

Monitoring wells were installed at three locations during the RI field activities. The well locations were selected to obtain samples downgradient of the most significant source areas. In addition, based on observations during monitoring well installation, ground water is typically encountered at depths of approximately 2 to 4 feet bgs. Below this depth, soils remained saturated throughout the depths investigated (40 to 55 feet) without the presence of a distinct

confining layer. Due to the extensive saturated thickness, two nested wells were installed at each of the three monitoring well locations, one to screen the upper 20 feet and one to screen the next 20 feet below. Because no previous ground water sampling had been conducted, the wells were used as a screening assessment of the ground water conditions.

Although an obvious aquitard was not observed during the well installations, the water quality data indicates the presence of two separate zones. Salinity measurements were consistently higher in the deeper wells, which could indicate that a shallow perched zone is present and has a fresh water impact from precipitation. In addition, the piezometric surface of the shallow well measurements appears to follow the land surface topography. This is commonly seen in shallow perched aquifers. Based on the depth of water measured in the shallow screened wells, the base of the landfill may serve as the lower aquitard of a perched shallow ground water zone. For both the deep- and shallow-screened wells, ground water appears to flow to the southeast at a hydraulic gradient of 1.18 x 10-3 ft/ft and 2.13 x 10-2 ft/ft, respectively.

Former Source Areas

Former Wastewater Impoundments

Nine (9) surface soil samples were collected and analyzed for target analyte list (TAL) metals and target compound list (TCL) semi-volatile organic compounds (SVOCs) from the Former Wastewater Impoundments Area. The following contaminants with the associated maximum reported concentrations were detected: 20.5 mg/kg antimony, 7.4 mg/kg arsenic, 534 mg/kg barium, 210 mg/kg lead, and 0.16 mg/kg mercury. The remaining TAL metals were either not detected or were detected at concentrations below the Texas Risk Reduction Program (TRRP) Tier 1 Commercial/Industrial Protective Concentration Levels (PCLs) for soils (Tier 1 PCLs). No TCL SVOCs were detected at levels exceeding Tier 1 PCLs.

Wastewater Treatment Facility

Eight (8) surface soil samples were collected and analyzed for TAL metals and TCL SVOCs from the Wastewater Treatment Facility. The following TAL metals were detected at maximum concentrations of 10.4 mg/kg arsenic, 150 mg/kg lead, 0.98 mg/kg mercury, and 1.4 mg/kg silver. The remaining TAL metals were either not detected or detected at concentrations below Tier 1 PCLs. No TCL SVOCs were detected at any sample location in the Wastewater Treatment Facility.

Tar Burn Area

Four (4) surface soil samples were collected and analyzed for TAL metals and TCL SVOCs from the Tar Burn Area. The following TAL metals were detected at maximum concentrations of 967 mg/kg lead, 0.31 mg/kg mercury, and 1.0 mg/kg silver. The remaining TAL metals were either not detected or detected at concentrations below Tier 1 PCLs. No TCL SVOCs were detected at

concentrations exceeding risk based levels. The following polycyclic aromatic hydrocarbons (PAHs) were detected at low concentrations: benzo(a)pyrene, benzo(b)fluoranthene, and butylbenzylphthalate.

Aboveground Storage Tank Area

Six (6) surface soil samples were collected and analyzed for TAL metals and TCL SVOCs from the AST area. The following TAL metals were detected at maximum concentrations of 7.9 mg/kg arsenic, 558 mg/kg lead, 0.13 mg/kg mercury, and 0.96 mg/kg silver. The remaining TAL metals were either not detected or detected at concentrations below Tier 1 PCLs. The TCL SVOC analysis detected the following two constituents at concentrations of: 2.7 mg/kg benzo(a)pyrene, and 0.28 mg/kg pentachlorophenol.

Maintenance Shed Area

Five (5) surface soil samples, including one field duplicate, were analyzed for TAL metals and TCL SVOCs from the Maintenance Shed Area. The following TAL metals were detected at maximum concentrations of 5.8 mg/kg antimony, 19 mg/kg arsenic, 290 mg/kg lead, 0.11 mg/kg mercury, and 1.6 mg/kg thallium. The remaining TAL metals were either not detected or detected at concentrations below Tier 1 PCLs. For TCL SVOCs, no constituents were detected above laboratory quantitation limits.

Former Lauren Tank Farm Area

Six (6) surface soil samples were analyzed for TAL metals and TCL SVOCs from the Former Lauren Tank Farm Area. The following TAL metals were detected at maximum concentrations of 26.4 mg/kg arsenic and 1030 mg/kg lead. Antimony, cadmium, copper, mercury, nickel, selenium, silver, and thallium were also detected at low concentrations. The remaining TAL metals were either not detected or detected at concentrations below Tier 1 PCLs.

For TCL SVOCs, benzo(a)pyrene was detected at a concentration of 5.1 mg/kg. The majority of the remaining constituents were not detected at levels above laboratory reporting requirements.

Non-source Areas

A majority of the sample locations at the Site came from areas that did not fall within the defined source areas. These sample locations were defined as non-source sample locations. A total of 66 surface soil samples were analyzed for TAL metals and TCL SVOCs from the non-source area. Arsenic and lead were detected at concentrations of 48.7 mg/kg and 2040 mg/kg, respectively. Seven additional TAL metals were detected at maximum concentrations of: 26.3 mg/kg antimony, 744 mg/kg barium, 1.2 mg/kg beryllium, 16.4 mg/kg cadmium, 5480 mg/kg copper, 0.54 mg/kg mercury, 8.3 mg/kg thallium and 2.9 mg/kg silver. The remaining TAL metals were either not detected or were detected at concentrations below Tier 1 PCLs.

For TCL SVOCs, three PAH compounds were detected at two locations at concentrations of 24 mg/kg benzo(a)anthracene, 25 mg/kg benzo(b)fluoranthene and 19 mg/kg benzo(a)pyrene. Carbazole and PCP were also detected at 7.5 mg/kg and 0.060 mg/kg, respectively, at one location. The remaining TCL SVOCs were either not detected or were detected at concentrations below Tier 1 PCLs.

Sediment

Nine (9) intertidal sediment samples were collected and analyzed for TAL metals and TCL SVOCs. Lead and mercury were detected at concentrations of 942 and 0.18 mg/kg, respectively. Antimony, arsenic, cadmium, and selenium were also detected at low concentrations. The remaining TAL metals were either not detected or detected at concentrations below Tier 1 PCLs.

For the TCL SVOCs, Pentachlorophenol (PCP) was detected at two (2) intertidal locations at concentrations of 0.82 mg/kg and 0.160 mg/kg. The majority of the remaining constituents were not detected at levels above laboratory reporting requirements.

Fifty-eight (58) sediment samples were collected and analyzed for TAL metals and TCL SVOCs from the near-shore locations. Arsenic, lead, and mercury were detected at maximum concentrations of 14.3, 29.9 and 0.075 mg/kg, respectively. Barium, beryllium, and cadmium were also detected at low concentrations. The remaining TAL metals were either not detected or detected at concentrations below Tier 1 PCLs.

For TCL SVOCs, 3,3-dichlorobenzidine was detected at a concentration of 0.075 mg/kg. The majority of the SVOC constituents were not detected at levels above laboratory reporting requirements.

A total of twelve (12) sediment samples were collected and analyzed for TAL metals and TCL SVOCs from the offshore locations. Arsenic, lead and mercury were detected at maximum reported concentrations of 8.9, 15.1, and 0.072 mg/kg, respectively. The remaining TAL metals were either not detected or detected at concentrations below Tier 1 PCLs.

Ground Water

There is no ground water transmissive zone within the dredge isle formation. The ground water collected in the shallow wells results from water present in the dredge materials used to construct the isle. The shallow ground water appears to be a mix of fresh and brackish water from the lake, making it unsuitable for human consumption. In addition, the ground water exists at depths where the landfill material exists. Therefore, ground water may be affected by constituents of concern from landfill wastes and not suitable for household drinking water use. Based on the high Total Dissolved Solids (TDS) concentrations, the proximity of the Site to brackish surface water, and the presence of the underlying landfill, there is no current or anticipated future use of ground water as a source of potable water at the Site.

Supplemental Remedial Investigation 2006

Former Wastewater Impoundments

The Supplemental RI conducted in May and June 2006, included the completion of seven (7) soil borings and the collection of soil samples at seventeen (17) locations from those borings. Five (5) of the soil borings were completed within the area of the former wastewater impoundments to determine if waste materials were still present that could potentially be a source of contamination to the Sabine Lake sediments. Two (2) borings were installed downgradient of the former wastewater impoundments and completed as monitor wells. Soil samples were analyzed for Target Analyte List (TAL) metals and Target Compound List (TCL) Semivolatile Organic Compounds (SVOCs).

Ground Water

As part of the Supplemental RI, two shallow ground water monitoring wells were installed downgradient of the former wastewater impoundments to a depth of 20 feet below ground surface. Ground water samples were collected from this two wells and a nearby existing shallow ground water well.

Ground water samples were analyzed for TAL metals (total and dissolved), TCL SVOCs, and Polycyclic Aromatic Hydrocarbons (PAHs).

Sediment

Sediment samples were collected at eight (8) site locations and one (1) background location. Sediment samples were analyzed for TAL metals and TCL SVOCs. Selenium was detected at all eight site sediment sample locations. The selenium concentrations ranged from 2.22 mg/kg to 4.66 mg/kg.

CURRENT AND POTENTIAL FUTURE LAND AND GROUND WATER USES

Land Use

The former State Marine Site is currently being operated by the site owner as an industrial property for metal scraping activities. Future use of the Site is also anticipated to be limited to industrial use due to its location and other surrounding industrial sites. The closest school is located approximately 2.7 miles from the site. There are only fourteen (14) residential properties located within a 1-mile radius.

Ground Water Uses

There is no current or anticipated future use of the shallow ground water at the site. The shallow

ground water at the Site is not considered a potential drinking water source. There is no ground water transmissive zone within the dredge isle formation. The ground water collected in the shallow wells results from water present within the dredge materials that were used to construct the isle where the State Marine Site is located.

SUMMARY OF SITE RISKS

A baseline risk assessment was performed to estimate the probability and magnitude of potential adverse human health effects from exposure to contaminants associated with the Site assuming no remedial action was taken. It provides the basis for taking action and identifies the contaminants and exposure pathways that need to be addressed by the remedial action. The public health risk assessment followed a four step process: 1) identification of the chemicals of concern from those hazardous substances which, given the specifics of the Site were of significant concern; 2) exposure assessment, which identified actual or potential exposure pathways, characterized the potentially exposed populations, and determined the extent of possible exposure; 3) toxicity assessment, which considered the types and magnitude of adverse health effects associated with exposure to hazardous substances, and 4) risk characterization and uncertainty analysis, which integrated the three earlier steps to summarize the potential and actual risks posed by hazardous substances at the Site, including carcinogenic and non-carcinogenic risks and a discussion of the uncertainty in the risk estimates.

Human Health Risk Assessment

Data Used in the HHRA

Soil - All historic soil data were used in the Human Health Risk Assessment (HHRA). The available data consisted of soil samples collected in 1995 and 2001 from various areas, including six "hot spot" areas that were identified during the Expanded Site Inspection (ESI) and 2001 Remedial Investigation based on historic activities performed in six distinct areas. The data were grouped for the HHRA based on the groupings presented in the 1995 ESI and the groupings provided in the 2001 RI Report. In 1995 ESI, soil samples were grouped by areas potentially impacted by the potential sources and included areas outside of the immediate source boundaries. The following data groupings were used in the HHRA:

- Wastewater Impoundment Area
- Wastewater Treatment Facility
- Tar Burn Area
- Current Aboveground Storage Tank Area
- Maintenance Shed Area
- Lauren Tank Farm
- Non-Source Area

Groundwater - Groundwater data were not used in the HHRA due to the lack of groundwater

receptors (groundwater is not used as a potable source; chemicals of potential concern are inorganics and semi-volatile organic compounds).

Surface Water - Surface water data were not used in the HHRA. Although one surface water sample was available, the methodgy used for its collection reflected groundwater quality rather than surface water.

Sediment - All historic sediment data collected from the 0-6 inch interval and available to CH2M HILL electronically as of June 17, 2005 were used in the HHRA. The available data consisted of sediment samples collected in 1995 and 2001. All sediment groupings previously identified in the 1995 and 2001 data sets were combined into one sediment grouping. The sediment data were used to model edible fish tissue concentrations.

Fish - Historic edible fish tissue data available for Sabine Lake are discussed in the Uncertainty Section. The data were collected by the Texas Department of Health (TDH) in 1995.

Potential Receptors

The following realistic receptors were identified onsite and in the vicinity of the Site and were evaluated for significant exposure pathways in the HHRA:

- Current onsite - industrial/commercial worker (Site owner)
- Current offsite - adult or child eating fish caught in Lake Sabine
- Future onsite - industrial/commercial worker
- Future offsite - adult or child eating fish caught in Lake Sabine

Direct contact exposures to sediment were not quantified since there are currently no complete exposure pathways for sediment, and the Jefferson County Navigation District has no plans to dredge sediments immediately adjacent to the Site. The nearest dredging will occur approximately 500 feet from the Site shoreline.

The human health Conceptual Site Model (CSM) presents potential chemical sources, release mechanisms, receptors (current and future), and exposure routes.

Chemicals of Potential Concern Selection Process

The chemicals of potential concern (COPCs) were identified for soil and sediment by a three-step screening process that evaluated: 1) frequency of detection, 2) background concentrations, and 3) risk-based screening levels. In addition, chemicals that were considered to be essential nutrients (calcium, magnesium, potassium, and sodium) were not selected as COPCs.

For each analyte carried to Step 3, the maximum detected concentration was compared to its human health risk-based screening levels identified below. For those chemicals (except lead)

with maximum concentrations exceeding risk-based screening levels, the 95 percent upper confidence limit (95% UCL) on the mean concentration was compared to the human health risk-based screening levels identified below. In accordance with the EPA guidance, the mean concentration of lead is used to represent an exposure area and was used in the comparison to screening levels:

- Soil - EPA Region 6 Medium-Specific Screening Levels (MSSLs) issued December 2004, based on a target excess lifetime cancer risk (ELCR) of 1x10-6 and a non-cancer hazard index (HI) of one.

- Sediment - Sediment concentrations protective of fish consumption for those constituents with bioaccumulation potential ("Bioaccumulative COCs") of the Ecological Risk Assessment Guidance document (TNRCC, 2001). The two-step process presented in the Texas Risk Reduction Program (TRRP) was used.

A risk-based exposure level (RBEL) for consumption of fish tissue was derived using equations of TCEQ's regulatory guidance entitled Determining Protection Concentration Levels (PCLs) for Surface Water and Sediment. Fish tissue RBELs were based on a target ELCR of 1x10-5 and a HI of one. With the exception of the fish ingestion rate, all exposure factors used in deriving the fish tissue RBEL were default factors. A fish ingestion rate of 0.026 kg/day was used based on the 95th percentile (95%) of the average daily intake of marine fin fish in the Gulf, derived from fish surveys conducted by the National Marine Fisheries in 1993.

Those chemicals that exceeded risk-based screening levels were identified as COPCs for the specific exposure area. In addition, sample quantitation limits (SQLs) were compared to screening levels for analytes that were always non-detected. The following COPCs were identified:

- Soil - Former Wastewater Impoundment Area - benzo(a)pyrene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene;

- Soil - Wastewater Treatment Facility - benzo(a)pyrene and iron;

- Soil - Tar Burn Area - benzo(a)pyrene;

- Soil - Current Aboveground Storage Tank Area - benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenzo(a,h)anthracene;

- Soil - Maintenance Shed Area - benzo(a)pyrene, Aroclor-1254, dieldrin, p,p'-DDD, p,p'-DDE, and p,p'-DDT;

- Soil - Former Lauren Tank Farm Area - benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and alpha-chlordane;

- Soil - Non-Source Area - benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and heptachlor epoxide; and

- Sediment - Aroclor-1242, copper, and zinc.

Exposure Pathways Quantified in the HHRA

Various potential exposure pathways were quantified in the HHRA. Soil "hot spot" areas and the non-source area were evaluated separately. The following data groupings were used to estimate potential risks for the indicated receptors:

- Current/Future Onsite Industrial/Commercial Worker #1 - Ingestion, dermal contact, and inhalation of COPCs at the former Wastewater Impoundment Area.

- Current/Future Onsite Industrial/Commercial Worker #2 - Ingestion, dermal contact, and inhalation of COPCs at the former Wastewater Treatment Facility.

- Current/Future Onsite Industrial/Commercial Worker #3 - Ingestion, dermal contact, and inhalation of COPCs at the former Tar Burn Area.

- Current/Future Onsite Industrial/Commercial Worker #4 - Ingestion, dermal contact, and inhalation of COPCs at the Current Aboveground Storage Tank Area.

- Current/Future Onsite Industrial/Commercial Worker #5 - Ingestion, dermal contact, and inhalation of COPCs at the former Maintenance Shed Area.

- Current/Future Onsite Industrial/Commercial Worker #6 - Ingestion, dermal contact, and inhalation of COPCs at the former Lauren Tank Farm.

- Current/Future Onsite Industrial/Commercial Worker #7 - Ingestion, dermal contact, and inhalation of COPCs in soil from the Non-source area.

- Current/Future Offsite Fisherman - Ingestion of COPCs in fish from Lake Sabine by an adult; an exposure by a child was not quantified since a child would eat much smaller portions of fish, and at a lower frequency, than an adult. Therefore the risk calculated for an adult can conservatively represent the risk to a child from eating fish.

The 95% UCL on the mean concentration of each soil COPC was used as the exposure point concentration (EPC) unless it exceeded the maximum detected concentration for that data grouping. In sediment, the 95% UCL on the mean concentrations (or the maximum concentration, whichever was lower) was used to model the EPCs of sediment COPCs in fish. The 95% UCLs were calculated using the most recent version of ProUCL (Version 3.00.02).

Exposure Factors

A reasonable maximum exposure (RME) scenario was quantified for each of the indicated receptors. If the potential risks associated with an RME scenario exceeded acceptable risk levels, a central tendency (CT) scenario was also quantified. The exposure factors used in the risk calculations are summarized below:

- Industrial/Commercial Worker - For each exposure parameter, the more conservative value between the standard default exposure factors presented in the EPA guidance and the exposure factors used in TRRP.

- Fisherman - Standard default exposure factors presented in the EPA guidance, with the exception of a fish ingestion rate of 0.026 kg/day, as presented in the Calcasieu Estuary Superfund Site study.

For the CT exposure scenario, exposure factors were based on various EPA guidance documents.

Toxicity Assessment

The following hierarchy of sources was used to obtain toxicity data for chemicals detected at the Site:

- Integrated Risk Information System (IRIS)
- Provisional Peer-Reviewed Toxicity Values (PPRTVs)
- National Center for Environmental Assessment (NCEA)
- Health Effects Assessment Summary Tables (HEAST)

For those constituents without toxicity values, toxicity values for surrogate chemicals were used when available. Constituents with no appropriate toxicity values were evaluated qualitatively in the HHRA.

Risk Characterization

Potential ELCRs and HIs were calculated using RME assumptions for the receptors and exposure pathways identified. The following potential risks were identified:

- Current/Future Onsite Industrial/Commercial Worker #1 - Ingestion, dermal contact, and inhalation exposures to soil COPCs in the former Wastewater Impoundment Area were quantified. An ELCR of 9x10-6 was calculated; an HI was not calculated due to the lack of non-cancer toxicity data for the COPCs. No COPCs exceeded an individual ELCR of 1x10-5. Therefore, risks are within acceptable levels and no COCs were identified for this receptor and exposure area.

- Current/Future Onsite Industrial/Commercial Worker #2 - Ingestion, dermal contact, and inhalation exposures to soil COPCs in the former Wastewater Treatment Facility were quantified. An ELCR of 2x10-6 and HI of 0.6 were calculated. No COPCs exceeded an individual ELCR of 1x10-5 or HI of 1. Therefore, risks are within acceptable levels and no COCs were identified for this receptor and exposure area.

- Current/Future Onsite Industrial/Commercial Worker #3 - Ingestion, dermal contact, and inhalation exposures to soil COPCs in the former Tar Burn Area were quantified. An ELCR of 5x10-6 was calculated; an HI was not calculated due to the lack of non-cancer toxicity data for the COPCs. No COPCs exceeded an individual ELCR of 1x10-5. Therefore, risks are within acceptable levels and no COCs were identified for this receptor and exposure area.

- Current/Future Onsite Industrial/Commercial Worker #4 - Ingestion, dermal contact, and inhalation exposures to soil COPCs in the Current Aboveground Storage Tank Area were quantified. An ELCR of 2x10-5 was calculated; an HI was not calculated due to the lack of non-cancer toxicity data for the COPCs. No COPCs exceeded an individual ELCR of 1x10-5. Therefore, risks are within acceptable levels and no chemicals of concern (COCs) were identified for this receptor and exposure area.

- Current/Future Onsite Industrial/Commercial Worker #5 - Ingestion, dermal contact, and inhalation exposures to soil COPCs in the former Maintenance Shed Area were quantified. No COPCs exceeded an individual ELCR of 1x10-5 or HI of 1. Therefore, risks are within acceptable levels and no COCs were identified for this receptor and exposure area.

- Current/Future Onsite Industrial/Commercial Worker #6 - Ingestion, dermal contact, and inhalation exposures to soil COPCs in the former Lauren Tank Farm Area were quantified. An ELCR of 2x10-5 and HI of 0.00005 were calculated. No COPCs exceeded an individual ELCR of 1x10-5 or HI of 1. Therefore, risks are within acceptable levels and no COCs were identified for this receptor and exposure area.

- Current/Future Onsite Industrial/Commercial Worker #7 - Ingestion, dermal contact, and inhalation exposures to soil COPCs from all non-source areas were quantified. No COPCs exceeded an individual ELCR of 1x10-5 or HI of 1. Therefore, risks are within acceptable levels and no COCs were identified for this receptor and exposure area.

- Current/Future Offsite Fisher - Ingestion exposures to COPCs in sediment (bioaccumulated by fish in Lake Sabine) were quantified for an adult. An ELCR of 2x10-4 and HI of 7 were calculated. One COPC (Aroclor 1242) exceeded an individual ELCR of 1x10-5 and copper and zinc exceeded an HI of 1. Risks exceed acceptable levels and three COCs (Aroclor 1242, copper, and zinc) were identified for this receptor and exposure area. Estimated risks were also evaluated using CT exposure assumptions.

An ELCR of 8x10-5 and HI of 7 were calculated. Aroclor 1242 exceeds an individual ELCR of 1x10-5 and copper and zinc exceed an HI of 1. Aroclor 1242, copper, and zinc were identified as COCs for this receptor and exposure area using CT exposure assumptions.

Supplemental RI Risk Assessment

TAL metals test results for soils did not exceed Tier 1 PCL concentrations. TCL SVOC test results did not exceed Tier 1 PCLs concentrations. The test results from the data collected during the Supplemental RI did not indicate the presence of contaminants at concentrations that would present a risk to human health or the environment. The human health risk conducted from previous investigations did not change.

Uncertainty Assessment

Aroclor 1242 in Sediment

Aroclor 1242 is a risk driver for sediment in the HHRA. However, there is much uncertainty in the risk calculations, primarily due to the available dataset. No source has been identified onsite. Available data from all areas of the Site indicate no detections of Aroclor 1242.

Aroclor 1242 was detected in one of seven sediment samples; it was the only Aroclor detected. The fish ingestion risk calculations are based on a single, detected PCB concentration in sediments. This concentration is not expected to represent the PCB concentrations that a fish comes in contact with during its lifetime before it is caught and eaten since a fish's home range is much larger than the single location. Therefore, using one location to model fish uptake is extremely conservative.

The TDH prepared a risk assessment of Sabine Lake under the EPA's Near Coastal Water Grant (TDH, 1995). Although these data were gathered for a broader study, the data were reportedly collected in accordance with the EPA's Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories, Fish Sampling and Analysis (EPA, 1993) and analyses were performed in the TDH laboratory using the EPA-approved methods for detection of metals, pesticides, PCBs, semivolatile and volatile organic constituents. Aquatic species were collected to represent commonly consumed edible tissue taken by the public from sample locations in Sabine Lake (South), Sabine Lake (North), and Sabine Pass. Aroclor 1242 was not detected in fish tissue samples.

Copper in Sediment

Copper is a risk driver for sediment in the HHRA. However, there is much uncertainty in the risk calculations, primarily due to the available dataset. No significant source of copper has been identified onsite.

Since copper is a naturally-occurring element, copper was detected in 61 of 62 sediment samples. The fish ingestion risk calculations are based on a 95% UCL concentration from the 62 samples. Only five locations exceeded risk-based concentrations. The calculated HI is 2 using both reasonable maximum exposure and central tendency exposure scenarios. This level is only slightly higher than the acceptable HI of 1.

The TDH risk assessment of Sabine Lake detected copper in 3 of the 10 fish tissue samples tested. The maximum detected concentration of 19 parts per million (ppm) copper in fish tissue is much lower than the modeled fish tissue concentration of 150 ppm used in the risk calculations for the State Marine Site.

Zinc in Sediment

Zinc is a risk driver for sediment in the HHRA. However, there is much uncertainty in the risk calculations for zinc. No significant source of zinc has been identified onsite. Since zinc is a naturally-occurring element, zinc was detected in all 66 sediment samples. The fish ingestion risk calculations are based on a 95% UCL concentration from the 66 samples. Only two sediment locations exceeded risk-based concentrations for zinc. The calculated HI is 5 using both reasonable maximum exposure and central tendency exposure scenarios. This level is slightly higher than the acceptable HI of 1.

The 1995 TDH risk assessment of Sabine Lake detected zinc in all 10 fish tissue samples. The maximum detected concentration of zinc in fish tissue (344 ppm) is much lower than the modeled fish tissue concentration (4,300 ppm) used in the conservative risk calculations for the State Marine Site.

Sediment Results from the 2006 Supplemental RI

Selenium was encountered in the sediment samples at levels that could present a risk to ecological receptors. However, the levels of selenium encountered at the site do not suggest that the source of selenium in the sediment samples is site related. Although the levels of selenium are above screening level concentrations, they are not at significantly high levels that would warrant a response action.

Human Health Risk Conclusion

- No soil constituents of concern (COCs) were identified in the human health risk assessment. Therefore, no remedial action is warranted for site soils.

- Three sediment COCs (copper, zinc, and Aroclor 1242) were identified in the HHRA based on conservatively modeled edible fish tissue uptake from Lake Sabine. However, the modeled edible fish tissue concentrations used in the HHRA were much higher than the measured fish tissue concentrations from Lake Sabine as reported by the Texas

Department of Health (TDH). Therefore, the realistic impacts of sediment on edible fish tissue are expected to have been overestimated in the HHRA as discussed in the Uncertainty Assessment. The TDH fish tissue concentrations from the TDH study are expected to better represent the current and future edible fish tissue concentrations that fishers may encounter in Lake Sabine. Therefore, no remedial action is warranted for sediment on the basis of human health impacts.

Baseline Ecological Risk Assessment

The baseline ecological risk assessment (BERA) for the State Marine Superfund Site (Site) is not a complete BERA outlining the full 8-Step process for ecological risk assessment under CERCLA. Instead, the BERA concludes after step 3 (Baseline Problem Formulation [BPF]), which consists primarily of a refinement of risk calculations in Steps 1 and 2 presented in the RI report for the site commonly referred to as Step 3a.

Data Used in the BERA

Soil - All historic surface soil data were used in the BERA. The available data consisted of soil samples collected in 1995 and 2001 from various areas, including six "hot spot" areas that were identified during the Expanded Site Inspection (ESI) and 2001 Remedial Investigation (RI) based on historic activities performed in six distinct areas.

Sediment - All historic sediment data collected from the 0-6 inch interval were used in the BERA. The available data consisted of sediment samples collected in 1995, 1999, and 2001. The sediment data was used to evaluate direct toxicity to lower trophic level organisms and to model whole-body biota tissue concentrations for consumption by wildlife. Data from other sources including the Palmer Barge and Calcasieu Estuary ERAs were used as a frame of reference.

Site data were split into three distinct groupings as presented previously in the RI Report and described below:

- Intertidal Area - 0-6 inch samples collected along the shore of the site at the approximate high water mark. Piscivorous birds and omnivorous shorebirds would be expected to forage in this area.

- Near shore area - 0-6 inch samples collected below shallow need a depth waters where shorebirds and piscivorous birds would both be expected to forage.

- Offshore area - 0-6 inch samples collected below deeper need a depth waters where piscivorous birds would forage but where the water is too deep for shorebirds.

Groundwater - Risk resulting from groundwater would most likely present its greatest exposure to sediment dwelling organisms and the pathway would be addressed adequately through the

evaluation of sediment chemistry data. Groundwater data from two shallow wells was analyzed to determine if groundwater is a source contributing to contamination identified in sediments in Sabine Lake adjacent to the Site. The wells are located approximately 80 to 100 feet from the shore from well screen depths around 25 feet bgs. According to the groundwater profile presented in the RI Report, the groundwater elevation is approximately 2 feet above mean sea level at the wells and is decreasing as it approaches Sabine Lake.

Chemicals of Potential Ecological Concern (COPEC)

The COPECs were identified for soil and sediment by a five-part screening process that evaluates 1) frequency of detection, 2) background concentrations, 3) risk-based screening levels, 4) bioaccumulative COPECs and 5) gradient analysis (soils only). In addition, chemicals that are considered to be essential nutrients (calcium, magnesium, potassium, and sodium) will not be selected as COPECs.

Comparison to Screening Levels

For each analyte carried to Step 3, the maximum detected concentration in each medium within each exposure area was compared to its appropriate medium-specific ecological risk-based screening levels, identified below:

- Soil - Qualitative (Iron and aluminum) and quantitative EcoSSLs; terrestrial plant and invertebrate screening levels in TNRCC, 2001. In addition, screening levels from other EPA sources were used as necessary.

- Sediment -Screening levels and processes for derivation of benchmarks in TNRCC, 2001. In addition, screening levels that are not listed in TNRCC, 2001 from other EPA sources were used as necessary.

For those constituents without screening values, screening values for proxy chemicals were used when available. Constituents with no appropriate proxy toxicity values retained for quantitative evaluation for risk to upper trophic level wildlife. Those constituents without either screening values or wildlife TRVs were evaluated qualitatively.

Determination of Bioaccumulative COPECs

Bioaccumulative COPECs for soil and sediment were determined using the information on bioaccumulative chemicals as presented in the TCEQ's Guidance for Conducting Ecological Risk Assessments at Remediation Sites in Texas. All bioaccumulative constituents were retained as COPECs and were carried into the risk analysis so long as they were detected greater than background.

Gradient Analysis

A gradient analysis was performed for COPECs in soils that were not believed to be site-related. Inorganic constituents and polycyclic aromatic hydrocarbons were determined to be site-related. Thus pesticides remained the only COPECs for which to perform a gradient analysis. Insufficient spatial sampling coverage was available from which to perform a gradient analysis.

Ecosystems and Receptors Potentially at Risk

Based upon previous site investigations and review of threatened and endangered species lists for the area the following feeding guilds and surrogate receptors were identified for evaluation:

- Terrestrial -omnivorous birds (northern bobwhite quail) and mammals (white-footed mouse), and carnivorous mammals (coyote)

- Aquatic -benthic invertebrates, omnivorous birds (spotted sandpiper), and carnivorous birds (belted kingfisher)

Complete Exposure Pathways

Exposure pathways not explicitly addressed in this BERA include; 1) inhalation and dermal exposure pathways for upper trophic level organisms, 2) foliar uptake of dissolved COPCs by aquatic plants, and 3) risk to amphibians and reptiles, because these pathways currently lack enough accompanying toxicological exposure information and guidance for a complete quantitative evaluation.

Exposure to subsurface soil was not considered. Some burrowing mammals may be exposed to surface soils. However, it was assumed that the greatest exposure of the site-specific COPECs would be in surface soils where uptake by invertebrates and the shallow rooted plants found at the site would be the greatest.

Exposure Assessment

The EPA's Wildlife Exposure Factors Handbook was the primary source of exposure factors data used for each receptor. Bioaccumulation regression models from the Oak Ridge National Laboratory (ORNL) and the EcoSSLs were used as appropriate.

The exposure to upper trophic level organisms was assessed by quantifying the daily dose of ingested contaminated food items (that is, plant and animal) and ingested media. Exposure to receptors was estimated using chemical-specific Exposure Point Concentrations (EPCs), bioaccumulation data, and several other factors such as species-specific body weights, ingestion rates, home range data, and area use factors. Prey tissue concentrations were estimated using chemical-specific bioaccumulation factors and bioaccumulation regression models. Site-specific

tissue data were not available. Instead tissue concentrations were modeled using literature data. Benthic invertebrates were evaluated for direct toxicity to COPECs in sediment. EPCs were compared directly to media screening levels.

Fish tissue concentrations used in modeling ingestion by piscivorous birds was modeled using biota sediment accumulation factors (BASF). It was assumed that the fish from which these BSAFs were developed were from the same trophic level as those expected in the diets of piscivorous birds feeding adjacent to the Site.

Initial EPCs were established as maximum detected concentrations. For those COPECs suggesting risk based on maximum detected concentrations, 95% UCLs were calculated using the most recent version of ProUCL.

Effects Assessment

Toxicity values used in the screening level evaluation are shown in Tables 29 and 30. The USEPA (1999) Toxicity Reference Value (TRV) selection hierarchy was used as guidance for identifying toxicity values used to develop TRVs and uncertainty factors were applied as directed when necessary. The EcoSSLs (USEPA, 2005), Toxicological Benchmarks for Wildlife: 1996 Revision (Sample et al. 1996), EPA's ECOTOX database, and EPA's draft Screening Level Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities (1999) were consulted as possible sources for avian and mammalian TRVs.

Risk Characterization

Hazard quotients (HQ) were calculated by dividing exposure point concentrations (EPC) by ecological risk-based screening levels for benthic invertebrates and exposure doses by toxicological reference values for wildlife. HIs were calculated for total LPAHs and HPAHs as the sum of HQs for individual PAHs.

Terrestrial Omnivorous/Insectivorous Mammals:

White-footed mouse in the Former Wastewater Impoundments: The NOAEL-based HQ exceeds unity only for zinc (1.5). No LOAEL-based HQs exceed unity. Therefore, the risk to the omnivorous/ insectivorous mammal feeding guild lies in the risk management area between the No-Observable-Adverse Effect Level (NOAEL) and Lowest-Observable-Adverse Effect Level (LOAEL).

White-footed mouse in the Wastewater Treatment Facility: The NOAEL-based HQ exceeds unity only for zinc (1.9). No LOAEL-based HQs exceed unity. Therefore, the risk to the omnivorous/ insectivorous mammal feeding guild lies in the risk management area between the NOAEL and LOAEL.

White-footed mouse in the Current Above Ground Storage Tanks: The NOAEL-based HQ exceeds unity only for chromium (1.3), lead (2.1), and zinc (1.7). The HI for HPAHs also exceeds unity (1.5). No LOAEL-based HQs or HIs exceed unity. Therefore, all of the risks to the omnivorous/ insectivorous mammal feeding guild lie in the risk management area between the NOAEL and LOAEL.

White-footed mouse in the Maintenance Shed Area: The NOAEL-based HQ exceeds unity only for beta endosulfan (1.7), endrin aldehyde (1.5), and zinc (2.4). No LOAEL-based HQs exceed unity. However, the risk for beta-endosulfan is not bound by a LOAEL due to a lack of available toxicological data. While there is no certainty with where the LOAEL TRV would lie relative to the NOAEL TRV, an assumption that the LOAEL is as little as 2 times the NOAEL would yield a LOAEL HQ below unity. Therefore, all of the risks to the omnivorous/ insectivorous mammal feeding guild lie in the risk management area between the NOAEL and LOAEL.

White-footed mouse in the Tar Burn Area: The NOAEL-based HQ exceeds unity only for zinc (1.7). No LOAEL-based HQs exceed unity. Therefore, the risk to the omnivorous/ insectivorous mammal feeding guild lies in the risk management area between the NOAEL and LOAEL.

White-footed mouse in the Lauren Tank Farm: The NOAEL-based HQ exceeds unity only for alpha chlordane (1.3), cadmium (1.1), and zinc (1.7). The HI for HPAHs also exceeds unity (1.7). No LOAEL-based HQ or HI exceeded unity. Risk to the omnivorous/insectivorous mammal feeding guild lies in the risk management area between the NOAEL and LOAEL.

White-footed mouse in the Non-source Area: The NOAEL-based HQ exceeds unity only for cadmium (5), carbazole (1.2), chrysene (1.1), fluoranthene (3.5), p,p-DDE (1.6), and pyrene (2.3). The HI for HPAHs also exceeds unity (10). No LOAEL-based HQ or HI exceeded unity. The risk from zinc appears to be attributable to a data outlier and is discussed further in the uncertainty analysis. Risks to the omnivorous/insectivorous mammal feeding guild lies in the risk management area between the NOAEL and LOAEL.

Terrestrial Omnivorous/Insectivorous Birds: NOAEL-based HQs exceed 1.0 only for chromium, copper, lead, zinc, dieldrin, heptachlor epoxide, and DDT and its metabolites DDD and DDE. All HQs were below 10. No LOAEL-based HQs exceed unity. Therefore, the risk to the omnivorous/ insectivorous bird feeding guild lies in the risk management area between the NOAEL and LOAEL.

Terrestrial Carnivorous Mammals: No NOAEL-based or LOAEL-based HQs exceed 1.0. Therefore, there is no risk to the carnivorous mammal feeding guild.

Supplemental RI Soil Ecological Assessment

The purpose of the Supplemental RI was to determine if the former surface impoundments could potentially be a contamination pathway to the lake sediments. The supplemental investigation did not indicate the presence of contaminants in the former surface impoundments that could migrate to the lake sediments above health based levels. It was determined that the shallow ground water is not a pathway for site contaminants to migrate to the Sabine Lake Sediments. Therefore, the results of the Supplemental RI did not change the previous ecological risk assessment results for the site surface soils.

Benthic Invertebrates: Sediment concentrations from all three exposure areas in Sabine Lake were compared to primary and secondary effects levels indicative of toxicity to benthic invertebrate communities. The main source of effects levels were the effects range low (ERL) and effects range median (ERM) values from MacDonald et al., 2000 or other sources recommended by the EPA or the TCEQ. Constituents were identified as COCs for benthic invertebrates if the average concentration within an exposure area was at or above the primary effects level (ERL).

The analysis of the Intertidal Area indicates low level risk exists for seven COPECs. The primary effects level (e.g., ERL) is exceeded by the average concentration as well as detected concentrations in two or more samples from the intertidal area for acenaphthene, copper, fluorene, lead, manganese, nickel, selenium, and zinc. Secondary effects levels (e.g., ERMs) are also exceeded in at least one location each for copper lead, nickel, and zinc. Acid volatile sulfide/simultaneously extracted metals (AVS/SEM) analysis reported in the 2003 RI report suggests the metals concentrations are bioavailable and likely toxic, with lead, zinc, and copper having the highest individual ratios to AVS.

The analysis of the Nearshore Area also indicates a low level of poorly defined risk exists for acenaphthene, barium, fluorene, and zinc. The frequency of exceedance is low for acenaphthene, fluorene, and zinc. However, the average concentrations exceed ERLs and at least one sample for each compound exceeds the ERM. The primary effects value for barium is an apparent effects threshold (AET) presented in the NOAA SQuiRT tables (Buchman, 1999). No secondary effects level is available. Nineteen (19) of 44 samples exceed the AET reported by Buchman.

The analysis of the Offshore Area indicates low level risk for manganese and barium. Multiple locations exceed the AET value for barium and that for manganese. Additionally, concentrations are more than twice the AET values.

Omnivorous/Insectivorous Birds:

Spotted sandpiper in the Intertidal Area. No NOAEL-based or LOAEL-based HQs exceed 1.0. For the spotted sandpiper in the Near Shore Area, the NOAEL-based HQs for fluorene (3.2), manganese (2.6), phenanthrene (1.8), and thallium (2.1), exceed unity, as does the LPAH HI (5).

No LOAEL-based HQs exceed unity. For the combined total HQs for the spotted sandpiper representing omnivorous/ insectivorous shore birds foraging in both the intertidal and nearshore areas, NOAEL-based HQs fluorene (3.3), manganese (3.4), phenanthrene (1.8), and thallium (2.1), exceed unity, as does the LPAH HI (5). No LOAEL-based HQs exceed unity. Risks to omnivorous/ insectivorous shore birds are marginal.

Piscivorous Birds: For the belted kingfisher from the combined Intertidal, Near Shore, and Offshore Areas, only the NOAEL-based HQ for zinc exceeds unity (7.5). No LOAEL-based HQs exceed unity. Therefore, the risk to the piscivorous bird feeding guild lies in the risk management area between the NOAEL and LOAEL.

Supplemental RI Sediment Ecological Assessment

Test results from the Sediment samples collected during the Supplement RI indicate that sediments contaminant concentrations are currently lower than from previous investigations. Selenium concentrations were detected at level that could potentially present a risk to ecological receptors. Selenium concentrations encountered in site soils do not indicate that they are the source for the elevated levels found in the sediment samples. Although the selenium concentrations are above screening levels, they are not at concentrations that would warrant remedial action.

Uncertainty Assessment

Benthic Invertebrates Exposed to Sediment

In the BERA, risk was evaluated for benthic invertebrates due to elevated levels of 9 COPECs in the intertidal area, near shore, and offshore sediments. Elevated risk is indicated by measured COPEC concentrations in sediment exceeding screening values and simultaneously extracted metals concentrations exceeding acid volatile sulfide concentrations in the intertidal area. However, estimated risk to the benthic invertebrate community in these exposure areas is uncertain for various reasons.

In the intertidal area risk was indicated due to the presence of elevated concentrations of eight (8) different constituents. In this area the evidence of risk is stronger than in the nearshore or offshore areas because the concentrations are higher in relation to screening values, the number of constituents exceeding screening values is higher, and there is AVS/SEM data suggesting the concentrations are likely bioavailable. This stronger evidence suggests a larger magnitude of the risk.

Although risk in the intertidal area is more likely, there is still uncertainty associated with the risk evaluation in this area. The two primary uncertainties with the risk in the intertidal area are that the principles of AVS/SEM are not readily agreed upon in the scientific community and that the identified risks have not been supported by site-specific toxicity testing or community structure

analysis. Although site-specific toxicity and biological data is frequently collected at contaminated sites, early planning for this risk assessment concluded that it was not warranted. Thus, results of comparison to risk screening values are not completely supported.

Risk to benthic invertebrates in the nearshore area is low but highly uncertain. Although average concentrations of acenaphthene, fluorene and zinc exceed screening values, only three samples out of over 40 exceed ERLs for acenaphthene and only two for fluorene and zinc. This suggests the presence of one or two hot spots in the nearshore area. Only one sample of acenaphthene and fluorene exceed the ERM and two exceed for zinc. Exceedance of the ERM presents a stronger likelihood of risk, with similar uncertainty as explained earlier for the intertidal area.

The concentrations of barium in the nearshore area represent the majority of exceedances identified and the toxicity information and studies for barium are far more uncertain. Elevated concentrations seem fairly widespread with 19 of 44 samples exceeding the screening value. However, barium is not universally considered toxic, as suggested by the limited availability of toxicity data in any other commonly used sediment quality reference, literature study, or guidance document. The only value available is the Apparent Effects Threshold (AET) value which is the highest concentration at which no effects were observed for amphipods in sediment. Since the concentration is not a lowest effect level, it is not known whether or not toxicity would occur at the concentrations found in the nearshore area. This same uncertainty exists in the offshore area where similar concentrations of barium are found as well as manganese concentrations exceeding a screening value from the same data source.

Based upon the uncertainties in the data set, the data do not support a conclusive statement of the magnitude or extent of risk to macroinvertebrates associated with exposure to COPECs in surface sediments. The Feasibility Study indicates exceedance of screening criteria in over 7 acres of sediment. However, if risk is present, it appears that risk in much of this area (e.g., where only barium and manganese are exceeding screening values) is marginal and limited to small "hot spots". That is, although a risk may be identified in the BERA, there is a substantial amount of uncertainty and conflicting information that prohibits quantification of the magnitude of the risk. Given this, the decision to remediate sediments should consider other ecological aspects of the habitat as it currently exists in comparison to the damage that could be caused by remedial action. In addition, given the amount and level of uncertainty associated with the behavior and bioavailability of COPECs in the intertidal area, any preliminary remediation goals (PRGs) developed for benthic invertebrates are also uncertain.

Other Uncertainties

Uncertainties are inherent in all risk assessments. The nature and magnitude of the uncertainties depend on the amount and quality of data available, the degree of knowledge concerning site conditions, and the assumptions made to perform the assessment. A qualitative evaluation of the other major general uncertainties associated with this screening assessment, in no particular order of importance, is outlined below:

- All sediment data used in the risk assessment is a minimum of four years old. The Site is located along Sabine Lake adjacent to a canal that receives regular boat traffic. It is dredged every two to three years. The sediments in this area are also subject to tidal movements. Sediments located in such an active area are not likely to remain constant, and as such, the available data from 2001, 1999, and 1995 are neither necessarily reflective solely of site-related influence nor are they definitively representative of existing conditions.

- Literature-derived toxicity data based on laboratory studies were the only available toxicity data used to evaluate risk to all receptor groups. It was assumed that effects observed in laboratory species were indicative of effects that would occur in wild species. The suitability of this assumption is unknown. Consequently, the risk may be either overestimated or underestimated.

- No avian and mammalian life history data specific to the site were available; therefore, exposure parameters were either modeled based on allometric relationships (e.g., food ingestion rates) or were based on data from these same species in other portions of their range. Because diet composition as well as food, water, and soil ingestion rates can differ among individuals and locations, published parameter values may not accurately reflect individuals present at the site. Consequently, risk may be either overestimated or underestimated.

- No site-specific data on concentrations in prey items were available. Therefore, concentrations in these prey items were estimated using literature-derived bioaccumulation models. The suitability of these models is unknown. Consequently, concentrations of COPECs in actual prey may be either higher or lower than the data used in this screen.

- Dietary compositions were simplified for the site receptors to estimate concentrations in food items using bioaccumulation models. It was assumed that concentrations were similar in comparable food types. The suitability of this assumption is unknown. Consequently, risk may be either overestimated or underestimated.

- Because toxicity data specific for bird and mammal species at the site were not available, it was necessary to extrapolate toxicity values from test species to site receptor species. Although scaling factors were employed, these factors are not chemical-specific and are based on acute toxicity data. Consequently, risk may be either overestimated or underestimated.

- In this screen, risks for most chemicals were each considered independently. Because chemicals may interact in an additive, antagonistic, or synergistic manner, the evaluation of single-chemical risk may either underestimate or overestimate risk associated with

chemical mixtures. The risk from PAHs and organochlorine pesticides were summed to determine the combined risk.

- Detection limits for some data were insufficient because they were greater than ecological screening values. These compounds were carried forward in the risk assessment and evaluated for effects on wildlife using one-half the detection limit as a proxy value for non-detects. This assumption could either underestimate or overestimate risk, depending on the true concentration of those constituents.

- Risk was not calculated for reptiles and amphibians due to insufficient toxicological data and site-specific data. Some species of omnivorous birds have similar diets to those of omnivorous reptiles and amphibians. Hence, conclusions for the omnivorous bird feeding guild were considered representative of the reptiles and amphibians likely living on the Site.

- Toxicity information adequate to quantify ecological risks was not available for some detected constituents. In some cases, data for surrogate chemicals were used. The use of surrogate toxicity information to quantify toxicity for these contaminants might lead to overestimates or underestimates of risk to ecological receptors. For some constituents, there is no information available from which to develop TRVs. Consequently, these constituents could not be evaluated. There is no information available from which to develop TRVs for 13 COPECs for birds and 1 COPEC for mammals. For some COCs, there is a mammal TRV but no avian TRV or vice versa. The uncertainty of risk to one class of receptors in these cases is reduced by the lack of quantifiable risk to the other class of organisms.

- The exposure dose estimates in this screening risk assessment assume that 100 percent of the chemical concentrations to which receptors are exposed are in the bioavailable form. Most chemicals will not be 100 percent bioavailable. In the cases where bioavailability is less than 100 percent, risk is overestimated.

Summary of Ecological Risk

The ecological risk assessment evaluated risk in six source areas on site and three areas within Sabine Lake using data available from previous studies conducted in 1995, 1999, and 2001. Surface soils were evaluated for risk to wildlife from the site source areas and non source areas individually and combined. No risk was identified for the soil source areas and Non-source areas. Risk was identified for the benthic invertebrate community that may be living in the intertidal area along the banks of the site, the near shore area, and the offshore area. A study of the bioavailability of the metals in sediments at the site also indicates that the metals in the intertidal area are available and likely to be toxic in these areas. Data gaps surround the ecological risks identified in sediment. Risks identified in sediments do not take into account site specific information including toxicity studies, community analysis of the existing benthic

community in the intertidal area, or evaluation of the available habitat on site. Site specific information could suggest that the identified risks are over estimated or do not exist. An additional consideration is that due to the transient nature of sediments and the highly active surroundings, data that is four years old or older may not be reflective of current conditions. The source of contamination in sediment was not identified with certainty. Results from the 2006 Supplemental RI indicated that sediments contaminant concentrations are currently lower than from previous investigations. Selenium concentrations were detected at level that could potentially present a risk to ecological receptors. Selenium concentrations encountered in site soils do not indicate that they are the source for the elevated levels found in the sediment samples. Although the selenium concentrations are above screening levels, they are not at concentrations that would warrant remedial action.

SELECTED REMEDY

Based on the results of the Human Health Risk Assessment (HHRA) and the Screening Level Ecological Risk Assessment (SLERA), the EPA has determined that No Further Action is Necessary for the State Marine Superfund Site. As previously stated, the EPA completed a Time Critical Removal Action in August 2001 that addressed contamination at the Site that posed a risk to human health and the environment. The SLERA indicates that selenium concentrations in the Site sediments from the Supplemental RI may pose a risk to benthic invertebrates. However, the selenium concentrations are within one order of magnitude of the primary effects screening level. Furthermore, results from the soils data and the groundwater information do not indicate that a selenium pathway exists from the site to the sediments as the potential source of selenium contamination. Therefore, the EPA has determined that no remedial action is warranted for the site soils to prevent contamination of the Site sediments. Based on selenium concentrations in the sediments, no remedial action is warranted for the site sediments to protect ecological receptors.

Institutional controls will be required to ensure that the site current and future use remains for industrial or commercial use purposes. The No Further Action Necessary remedy selection is based on an industrial/commercial land use scenario. The EPA will be responsible for obtaining a restrictive covenant from the landowner and filing it in the appropriate property records for the site such that the future use of the property is restricted to commercial/industrial purposes.

FIVE-YEAR REVIEW REQUIREMENTS

The Selected No Further Action Necessary remedy is based on the human health risk assessment for industrial/commercial workers. Remaining conditions at the site will not allow for unlimited use and unrestricted exposure. Therefore, a policy review must be conducted for the site to ensure that future site development is consistent with the industrial cleanup standards for which this remedy is based and that conditions remain protective of human health and the environment. As part of the five-year review, sediment sampling and monitoring should be considered in Sabine Lake adjacent to the State Marine site to ensure that the remedy remains protective of

ecological receptors. Pursuant to CERCLA Section 121(c), 42 U.S.C. § 9621(c), and as provided in the current guidance on Five Year Reviews [OSWER Directive 9355.7-03B-P, *Comprehensive Five-Year Review Guidance* (June 2001)], the EPA will conduct a policy review within five years from the signing of the Record of Decision for the site.

DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan for the State Marine Site was released for public comment on July 27, 2005. The Proposed Plan identified Alternative 4, Excavation and Off-Site Disposal, as the preferred alternative for the contaminated soil and sediment. Based upon its review of the written and verbal comments submitted during the public comment period, the EPA determined that significant changes to the remedy, as originally identified in the Proposed Plan, were necessary and appropriate. The EPA's preferred remedy was based on the risk assessment which indicated that pesticides pose a risk to human health and the environment. However, at the public meeting and in written comments submitted to the EPA, it was pointed out that the concentrations used in the risk assessments for pesticides were not correct. The EPA's re-evaluation of the soils data indicated that the concentrations used for the pesticides were not correct. Re-analysis of the human health and ecological risk assessments indicated that contaminants are not present at the site that pose a risk to human health or the environment. In May and June 2006, the EPA conducted a Supplemental Remedial Investigation at the State Marine Site to address concerns regarding the potential movement of contaminants from the former surface impoundments to the Sabine Lake sediments that could pose a risk to ecological receptors. The results of the investigation indicate that contaminants do not remain at the site at levels that pose a risk to human health and they are not contributing to contamination in the Sabine Lake sediments.

Therefore, the EPA's selected remedy for the site is No Further Action Necessary. The No Further Action Necessary selection is based on the EPA's previous removal action, site investigations, risk assessments, and the information and comments received during the public comment period.

Because the EPA's Time Critical Removal Action resulted in the conclusion that no further action is necessary, the State Marine Superfund Site qualifies for a Construction Completion determination. A Preliminary Close Out Report (PCOR) or a Close Out Report (COR) will be prepared to document the construction completion determination.

STATE MARINE SUPERFUND SITE
PORT ARTHUR, JEFFERSON COUNTY, TEXAS
RECORD OF DECISION

PART 3: RESPONSIVENESS SUMMARY

STAKEHOLDERS COMMENTS AND LEAD AGENCY RESPONSES

The EPA has prepared this Responsiveness Summary for the Site, as part of the process for making a final remedy selection. This Responsiveness Summary documents, for the Administrative Record, public comments and issues raised during the public comment period on the EPA's recommendations presented in the Proposed Plan, and provides the EPA's responses to those comments. The EPA's actual decisions for the Site are detailed in the ROD. Pursuant to Section 117 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9617, the EPA has considered all comments received during the public comment period in making the final decision contained in the ROD for the Site.

Overview of Public Comment Period.

The EPA issued its Proposed Plan of Action detailing remedial action recommendations for public review and comment on July 27, 2005. These and other Site documents can be found in the Administrative Record file and the information repositories at the following locations: Port Arthur Public Library located at 4615 9th Avenue, Port Arthur, Texas; the U.S. Environmental Protection Agency Region 6 located at 1445 Ross Avenue, Dallas, Texas; and the Texas Commission on Environmental Quality located at 12100 Park 35 Circle, Building E, 1st Floor, Austin, Texas. The notice of the availability of these documents was published in the Port Arthur News on July 28, 2005. A public comment period was held from July 27, 2005 to August 25, 2005. The EPA and the Texas Commission on Environmental Quality conducted a public meeting on August 11, 2005, to discuss the Proposed Plan and receive comments from the community. The public meeting was held at the West Groves Education Center, located at 5840 West Jefferson, in Groves, Texas.

This Responsiveness Summary summarizes comments submitted during the public comment period and presents the EPA's written response to each issue, in satisfaction of community relations requirements of the NCP. The EPA's responses to comments received during the public meeting are provided below and in some cases include subsequent expanded responses to those comments as appropriate.

Based on comments received during the public comment period, the EPA re-evaluated site data to address those comments. In addition, to address concerns regarding the former surface impoundments, the EPA conducted a Supplemental Remedial Investigation in May and June 2006. These activities resulted in delays in issuing the final ROD for the site.

Summary of Public Comments and EPA Responses

COMMENT:

The City Manager for the City of Port Arthur questioned whether the city should be considered a potentially responsible party (PRP) for the site. The City Manager stated that the city operated the landfill in compliance with State, Federal and other rules and regulations.

EPA RESPONSE:

The City of Port Arthur is considered a PRP for the State Marine site as a former owner during the time that the site operated as a barge cleaning facility. It is EPA's understanding that the City of Port Arthur leased part of the site for barge cleaning operations and therefore is considered a PRP owner for the site, even if the city did not participate in the barge cleaning activities.

COMMENT:

A representative for the City of Port Arthur questioned the need to spend $2.4 million to address residual ("hot spot") contamination as proposed in the preferred alternative, Alternative 4. The size and amount of material proposed for removal was questioned and whether it should be removed from the former landfill and placed in an off-site landfill. The representative also questioned the costs associated with the proposed monitoring of the lake sediments and the need for periodic sampling. If a remedy is required for the site, the representative proposed the selection of Alternative 3, which consists of on-site capping at a cost that is $1.2 million less than the preferred alternative.

Representatives and consultants for the City of Port Arthur stated that during their review of the concentrations for the chemicals of concern that the EPA had apparently reported the chemical concentrations at levels 1000 times higher than the actual test data indicates. They stated that if their assessment is correct, the actual concentrations for the pesticides that are the risk drivers would be below the State's protective concentration levels which would indicate that they do not pose an appreciable risk.

EPA RESPONSE:

The EPA's preferred remedy, presented at the public meeting, consisted of excavation and off-site disposal of contaminated soils that presented a risk to human health and the environment. Although most of the site was a former landfill, the materials proposed for removal are not municipal landfill materials. Furthermore, the contaminated materials would be disposed in an off site permitted landfill that is designed to handle hazardous materials, which the former site landfill was not designed for or permitted to handle.

Since the public meeting, the EPA has checked the concentration of the pesticides that exceeded

health based levels. It was determined that the reported units were in error and that the correct units were one thousand times less than the reported concentrations in the human health risk assessment. Based on this information, the EPA has concluded that the residual contaminants remaining after EPA's removal action, do not pose a risk to human health or the environment. In addition, the EPA conducted a Supplemental Remedial Investigation to determine if contaminants are present in the former surface impoundments that may leach to the shallow ground water and migrate to the nearby Sabine Lake sediments. The investigation did not indicate the presence of contaminants in the former surface impoundments at levels that would migrate to the Sabine Lake sediments. Therefore, the EPA's selected remedy for the State Marine Site will be No Further Action Necessary.

This situation is precisely what the purpose of the public comment period and public meeting are intended for. In this case information was presented to the EPA which resulted in selection a different remedy than the EPA's preferred alternative. The information presented by representatives and consultants for the City of Port Arthur resulted in the EPA re-evaluating site data and ultimately selecting a different remedy from the one presented in the public meeting. The No Further Action Necessary remedy will result in savings of approximately $2.7 million since no further action is necessary for the site, based in part on EPA's previous removal action and the comments received at the public meeting.

COMMENT:

A representative for the City of Port Arthur disagree with the EPA's nine criteria evaluation which stated that Alternatives 1 and 2 would not comply with Applicable, or Relevant and Appropriate Requirements (ARARs). The representative further stated that under the Texas Risk Reduction Program (TRRP), no response action is required if a release has not been established.

EPA RESPONSE:

The EPA takes into consideration those requirements under the Texas Risk Reduction Program that may be applicable, or relevant and appropriate for the site. The EPA believes that a release of hazardous substances did occur at the site during the time that barge cleaning activities were conducted at the site. However, the EPA's removal action addressed those contaminants that posed a risk to human health and the environment. Based on the site specific human health risk assessment and the screening ecological risk assessment conducted for the site, the remaining residual levels of contaminants do not pose a risk to human health or the environment. Therefore, the EPA's selected remedy for the site will be No Further Action Necessary.

COMMENT:

The consultant for the City of Port Arthur stated that in an early investigation report, pesticides were not identified as an issue for the site. The consultant stated that the EPA's contractor specifically stated in the focused feasibility study that dieldrin, heptachlor, and hypoxide are not

site related. The remedial investigation data from the source areas do not indicate a direct correlation between source area contaminants and pesticides.

The consultant questioned why the site ground water was considered as a potential pathway and issue for the site when all documents indicated that the site ground water is not considered a potential drinking water source.

EPA RESPONSE:

The EPA's remedial investigations at Superfund sites are conducted to determine the nature and extent of contamination present at a site. Two primary activities were conducted at the State Marine Site, land filling and barge cleaning. The pesticides encountered at the site could have resulted from one of these activities or both. From the comments received at the public meeting, the EPA evaluated the reported pesticides concentration and determined that they are not present at level that present a risk to human health or the environment. Therefore, remedial action will not be required to address the pesticides encountered at the site.

Since the Public meeting, the EPA has reviewed the information provided by the City of Port Arthur and their representatives and consultants. The concentrations for the pesticides materials were not correctly used by the EPA's contractor and as a result, a human health risk was indicated. Because of the risk, the EPA developed remedial alternative to address the site risk. Since re-evaluation of the pesticides concentration indicates that they do not present a risk to human health and the environment, the EPA has concluded that no further action is necessary at the State Marine Superfund site. This is reflected in the Record of Decision for the site. The EPA appreciates the effort by the City of Port Arthur and their representatives and consultants in providing this information.

The EPA did not consider the ground water as a potential drinking water source for the site. In the feasibility study, the ground water was considered as a potential pathway for migration of site contaminants to the Sabine Lake sediments. Since the public meeting, the EPA conducted a Supplemental Remedial Investigation and determined that the shallow ground water is not a pathway for contaminants migrating to the Sabine Lake sediments.

COMMENT:

The site owner concurs with EPA's preferred Alternative 4 for the site. However, the owner disagreed that the preferred alternative was sufficient to provide the appropriate level of protection to the waters of Sabine Lake. The owner proposed that the various agencies work together for a comprehensive solution to address site conditions related to the former landfill, barge cleaning activities, and erosion along the Sabine Lake shore line. The owner stated that his proposal would reduce emissions for the whole area by reducing truck traffic. The owner also commented that by fixing the erosion along the Sabine Lake shoreline, that landfill materials would no longer wash into the lake and would prevent potential hazardous materials from

impacting ecological receptors. The owner stated that some State funds are available to reduce air emission and that the other agencies involved with the site should provide funding for a comprehensive solution.

EPA RESPONSE:

The proposed comprehensive solution for the site landfill and proposal to address air pollution for the area counties would be a win/win situation for the community. However, your proposal falls outside of the EPA's authority under the Superfund program. Under the Superfund program, the EPA can only spend funds to address releases at National Priorities List sites that present a risk to human health and the environment. The EPA's preferred alternative was designed to address those contaminants that present a risk to human health and the environment. Fish samples collected by the Texas Department of health do not indicate that fish in Sabine Lake have been impacted by contaminants related to the site or that the landfill trash is contributing to fish contamination. Since the public meeting, the EPA conducted a Supplemental Remedial Investigation and re-evaluated test results from previous investigations based on comments received during the public meeting. All data indicate that site soils and sediments do not present a risk to human health or the environment. There are no indications that the landfill trash is contributing to contamination in the Sabine Lake sediments.

Your proposal for improving air quality for the region and improving the physical condition of the former landfill on the State Marine site should be addressed to the appropriate authorities outside of the Superfund program.

TECHNICAL AND LEGAL ISSUES

The selected remedy for the State Marine Site is consistent with the current and anticipated future land use for the site. The No Further Action Necessary remedy is based on the human health risk assessment for industrial/commercial workers. Remaining conditions at the site will not allow for unlimited use and unrestricted exposure. Therefore, institutional controls will placed on the site, and a policy review will be required to ensure that future site development remains consistent with the intended commercial/industrial site use and future development is protective of human health and the environment.

APPENDIX A: TCEQ CONCURRENCE LETTER

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

April 9, 2007

Mr. Samuel Coleman, P.E., Director
Superfund Division
U.S. Environmental Protection Agency Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202

Re: Record of Decision
State Marine Superfund Site TXD050299577
Port Arthur, Jefferson County, Texas

Dear Mr. Coleman:

The Texas Commission on Environmental Quality (TCEQ) received the final Superfund Record of Decision (ROD) for the State Marine Superfund Site in Jefferson County, Texas, on March 14, 2007. The TCEQ has completed review of the document and concurs that the response action for the site described in the ROD is the most appropriate remedy.

Sincerely,

Glenn Shankle
Executive Director

FIGURES

LEGEND

- Area of Interest
- Landfill Area
- Property Boundary
- Road
- Navigation Channel
- Sunken Barge
- Intertidal Area
- Nearshore Area
- Offshore Area

N

200 100 0 200

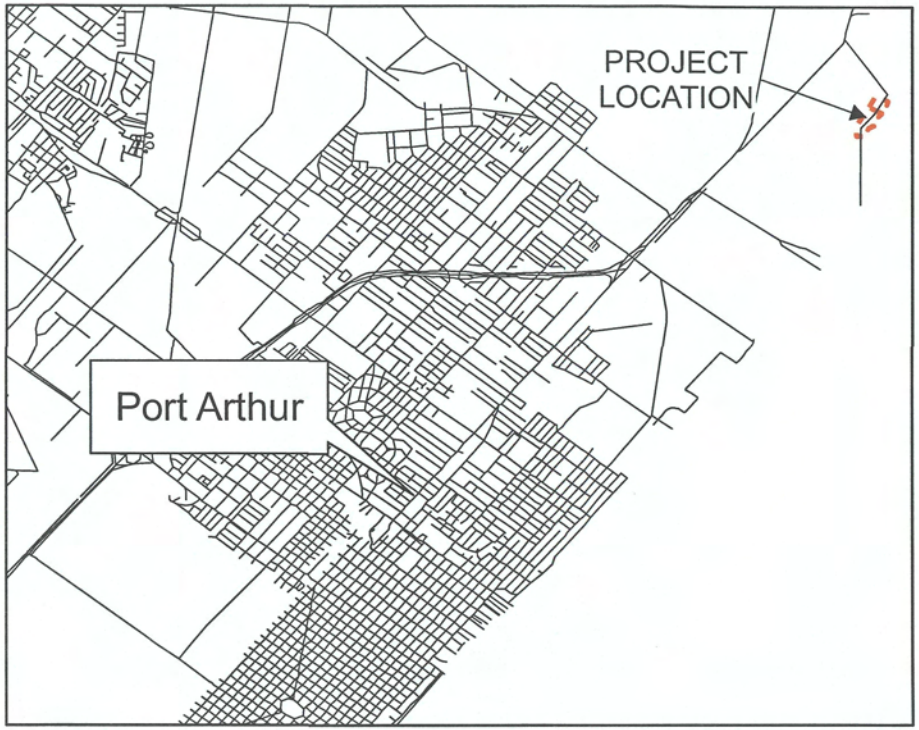
SCALE IN FEET

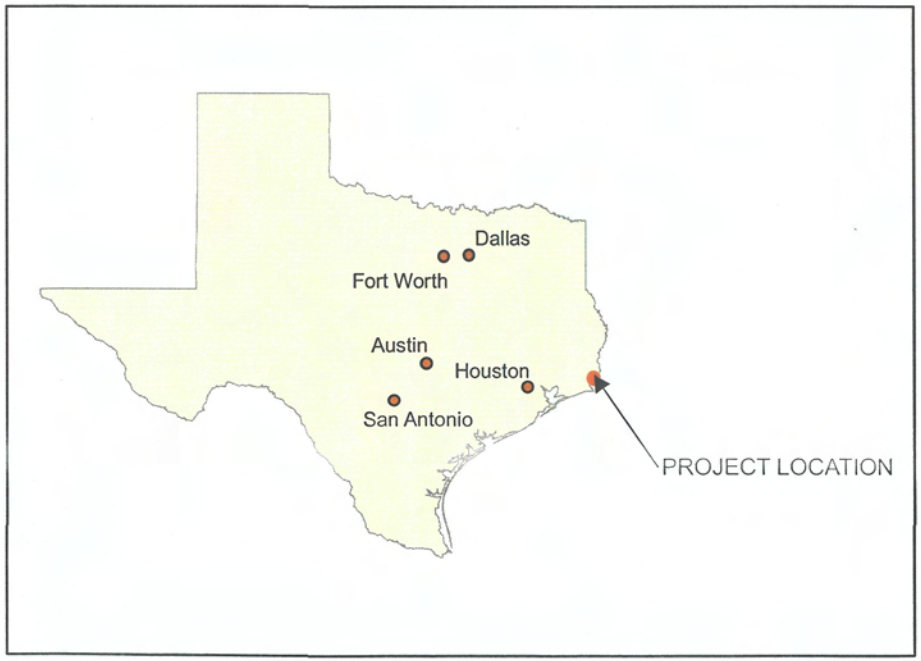
Figure 1-2
1998 **Aerial Photograph**
Current **Site Features Map**

State Marine
Superfund Site

CH2MHILL

FILENAME: J:\State_Marine\Project\MXD\FIG_1-2.mxd DATE: 7/13/2005





LEGEND

- Property Boundary
- Streets

200 100 0 200

SCALE IN FEET

Figure 1-1
Site Location Map

State Marine
Superfund Site

CH2MHILL

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