

**RECORD OF DECISION
TEX TIN CORPORATION SUPERFUND SITE
OPERABLE UNIT NO. 4
GALVESTON COUNTY, TEXAS CITY, TEXAS**

**U.S. Environmental Protection Agency
Region 6
Dallas, Texas**

Site ID #TXD062113329

**TEX TIN CORPORATION SUPERFUND SITE
OPERABLE UNIT NO. 4
GALVESTON COUNTY, TEXAS CITY, TEXAS**

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**TEX TIN CORPORATION SUPERFUND SITE
OPERABLE UNIT NO. 4
GALVESTON COUNTY, TEXAS CITY, TEXAS
RECORD OF DECISION
DECLARATION**

SITE NAME AND LOCATION

The Tex-Tin Corporation Superfund Site (the Site) (CERCLIS ID # TXD062113329) is located in the cities of Texas City and La Marque, Galveston County, Texas.

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedy for Operable Unit (OU) No. 4 of the Tex Tin Superfund Site located in Texas City, Texas, which was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 U.S.C. § 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 C.F.R. Part 300. This decision is based on the Administrative Record file for OU No. 4. The proposed remedy was issued to the public for comments on April 13, 2001. A public meeting was held on April 26, 2001, to receive comments and answer questions. After evaluating public comments, comments from the State, and Federal and State Trustees, EPA has selected the remedy presented in this document.

The State of Texas through the Texas Natural Resource Conservation Commission (TNRCC) concurs with the selected remedy for OU No. 4.

ASSESSMENT OF THE SITE

The response action selected in this Record of Decision (ROD) for OU No. 4 is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

DESCRIPTION OF THE SELECTED REMEDY

Operable Unit No. 4 addressed in this ROD is one of four operable units for the Site. OU No. 4 refers to the Swan Lake ecosystem consisting of the area between the hurricane levee and the shell barrier islands separating Swan Lake from Galveston Bay, and includes portions of Swan Lake, its associated salt marsh habitats, and the Wah Chang ditch east of Loop 197. OU No. 4 will address impacts to ecological receptors from the Site. The other three operable units associated with the Tex Tin smelter include:

- OU No.1 represents the former tin and copper smelting facility and encompasses

approximately 140 acres. OU No. 1 also includes Ponds 22, 24, 25, and 26. An amended ROD was signed for OU No. 1 on September 28, 2000. The Potentially Responsible Parties (PRPs) have completed the selection process for a remedial design/remedial action contractor and work activities are scheduled to start in September 2001.

- OU No. 2 includes approximately 27 acres of the former smelter facility that is currently owned by BP Amoco Corporation (Amoco). Amoco implemented the response action for OU No. 2 in 1998 under the Texas Voluntary Cleanup Program.
- OU No. 3 represents the La Marque residential areas located northwest from the former smelter facility. The EPA completed the cleanup of the residential yards in June 1999 through a Time Critical Removal Action. Based on EPA's response action, a No Further Action ROD was signed for OU No. 3 in September 29, 2000.

Major components of the remedy for OU No. 4 include:

- Segmented wave barriers totaling approximately 5,200 feet. Final length and location will be determined during the remedial design phase.
- The wave barrier core would consist of quarry rock, concrete rubble, or other stable construction materials. Construction would include a filter fabric and uniformly graded rip-rap along the top and sides of the barrier core.
- The typical wave barrier section has a crown width of approximately 8 feet and a 3 (horizontal) to 1 (vertical) slope. Final barrier section dimensions will be determined during the remedial design phase.
- Operations and Maintenance (O&M) to ensure integrity of the segmented wave barriers and make repairs as needed.

The segmented wave barriers remedy selected for OU No. 4 (discussed in the Proposed Plan as Alternative 5) best meets the nine evaluation criteria used in selecting remedies for Superfund sites. The selected remedy will meet the remedial action objectives for OU No. 4 by minimizing future releases of contaminated sediments and marsh sediments. This would reduce exposure to contaminated sediments for human and ecological receptors. Implementing the selected remedy would not destroy the existing benthic macroinvertebrate ecosystem and would minimize releases or potential releases of hazardous substances into the environment.

STATUTORY DETERMINATIONS

The segmented wave barriers remedy for OU No. 4 is protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate to the remedial action, is cost-effective, and utilizes permanent solutions to the

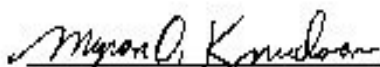
maximum extent practicable. The remedy for OU No. 4 does not satisfy the statutory preference for treatment as a principal element of the remedy; however, source materials are not present on this operable unit that constitute principal threat waste requiring treatment. The contaminant levels present on OU No. 4 are not considered highly toxic or highly mobile and can be contained in a reliable manner by the selected remedy. Therefore, treatment as a principal element is not warranted for OU No. 4. Because this remedy will result in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted within five years after initiation of remedial action to ensure that the remedy is protective of human health and the environment.

ROD DATA CERTIFICATION CHECKLIST

The following information is included in the Decision Summary section of this ROD. Additional information that can be found in the Administrative Record file for OU No. 4 includes.

- Chemicals of concern (COC) and their respective concentrations
- Cleanup levels established for chemicals of concern and the basis for these levels.
- Source materials constituting principal threats are not present at the site.
- Current and reasonably anticipated future land use assumptions are made for OU No. 4
- Estimated capital, annual O&M, and total present worth costs, discount rate, and the number of years over which the remedy cost estimates are projected.
- Key factors that led to the selection of the remedy.

AUTHORIZING SIGNATURE



Myron O. Knudson, P.E.
Director, Superfund Division
U. S. Environmental Protection Agency
Region 6


9-27-01

Date

RECORD OF DECISION
TEX TIN CORPORATION SUPERFUND SITE
OPERABLE UNIT NO. 4
GALVESTON COUNTY, TEXAS CITY, TEXAS
CONCURRENCE SIGNATURES


Carlos A. Sanchez
Remedial Project Manager

9/13/01
Date


Pamela J. Travis
Senior Attorney

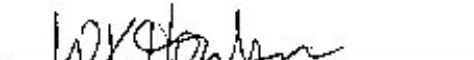
9/13/01
Date


Mark Peycke, Chief
Litigation and Enforcement Branch

09/18/01
Date


Gus Chavarria, Chief
ARK/TX Project Management Section

09/19/01
Date


William K. Honker, Chief
ARK/TX Branch

9/20/01
Date


Lawrence Andrews
Acting Regional Counsel

9/26/01
Date

**RECORD OF DECISION
TEX TIN CORPORATION SUPERFUND SITE
OPERABLE UNIT NO. 4
GALVESTON COUNTY, TEXAS CITY, TEXAS
DECISION SUMMARY**

SITE NAME AND LOCATION

The Tex-Tin Corporation Superfund Site (the Site) (CERCLIS ID # TXD062113329) is located in the cities of Texas City and La Marque, Galveston County, Texas, (Figure 1).

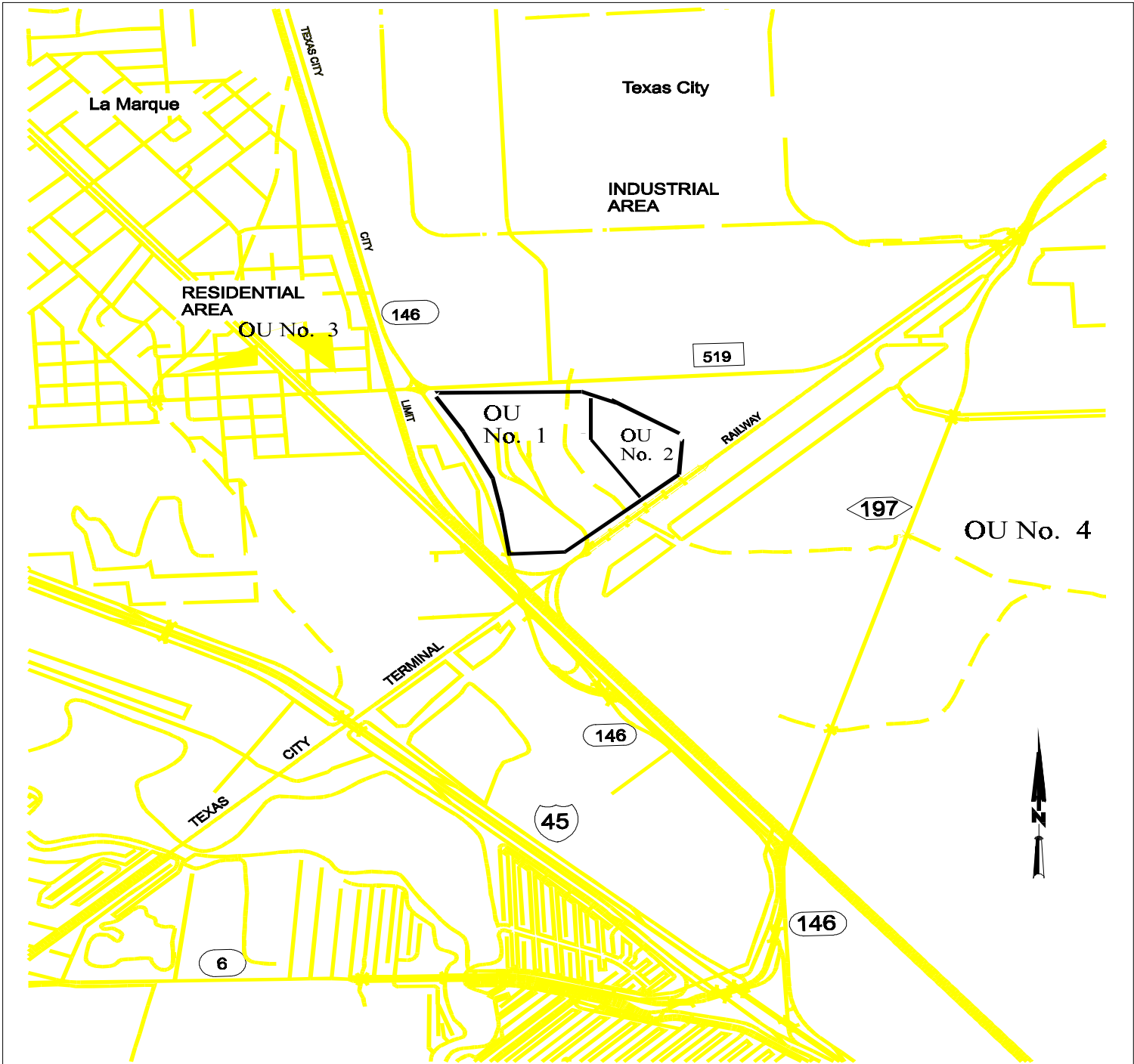
The U.S. Environmental Protection Agency (EPA) Region 6 is the Lead Agency for OU No. 4 and the Texas Natural Resource Conservation Commission (TNRCC) is the Support Agency. The remedy for OU No. 4 will be implemented by EPA through funding provided by a group of Potentially Responsible Parties (PRPs) (Private and Federal) as part of a Consent Decree entered by the U.S. District Court, Southern District of Texas, Galveston Division, in August 2000. The Site is a former industrial facility which was operated as a primary and secondary smelter from 1941 to 1991.

SITE HISTORY

The former tin and copper smelting facility is located in Texas City, Texas, in the southeast quadrant of the intersection of Farm-to-Market Road 519 and State Highway 146 (Figure 1). The area north and east of OU No. 1 is dominated by large petrochemical facilities. There is a densely populated residential neighborhood approximately 2,000 feet west-northwest of the facility, in the city of La Marque. More than 10,000 people reside within 1 mile of the former smelter facility. A municipal golf course, an industrial waste disposal facility, and marsh areas are located less than 0.5 mile to the south and southwest of OU No. 1.

The Tex Tin smelter at Texas City was constructed by the United States Government as a World War II emergency tin supply plant, and operated under a Government contract from 1941 to 1956 as the Tin Processing Corporation. The facility was sold to private industry in 1957 and was operated by a succession of companies until it ceased operations in 1991.

From 1941 through 1989, the facility primarily produced tin. Waste products generated by the operation included iron-rich liquid acid (ferrous chloride) and tin slag. The liquids were transferred to holding ponds to the south of the smelting facility. Various other production operations were reportedly carried out on Site, including an ammonia-based copper washing process, which started in 1972 and continued for an undetermined number of years, and a secondary copper smelting process, which replaced the tin smelting operations in 1989 and continued through 1991. Until the mid-1960s, the Wah Chang Ditch, an industrial canal running alongside the smelter, drained wastes from industrial facilities in Texas City through the Swan



SITE VICINITY MAP

**Tex Tin Corporation Superfund Site
FIGURE 1**

Lake Salt Marsh area, ending in Swan Lake.

On June 17, 1996, EPA proposed to add the Tex Tin Corporation Site to the National Priorities List (NPL) of Superfund sites. 61 FR 30575 (June 17, 1996). The Tex Tin NPL listing became final on September 18, 1998. 63 FR 49855.

The Site consists of four operable units. OU No. 1 (smelter property) encompasses approximately 140 acres and is the former tin and copper smelting facility. OU No. 1 also includes Ponds 22, 24, 25, and 26. OU No. 2 (Amoco property) includes approximately 27 acres of the former smelter property that is currently owned by BP Amoco Corporation. OU No. 3 (residential property) represents the La Marque residential areas located approximately 2,000 feet northwest from the smelter facility. This ROD addresses only OU No. 4, the Swan Lake ecosystem located between the hurricane levee and the shell barrier islands separating Swan Lake from Galveston Bay. OU4 includes portions of Swan Lake, its associated salt marsh habitats, and the Wah Chang ditch east of Loop 197. The selected remedy for OU No. 4 will address the impacts caused to ecological receptors from contaminants released into the area from the Site.

OU No. 4 Description

Before construction of the Hurricane Protection Levee in the mid-1960s, the Wah Chang Ditch flowed south-southeast directly through the Tex Tin Corporation smelter facility and through the salt marsh area, where it discharged into Swan Lake. The Wah Chang ditch still runs through the Tex Tin smelter site and discharges directly to Ponds 24, 25, and 26, but is shut off from direct flow through the Swan Lake Salt Marsh by the Hurricane Levee. Discharge flows are controlled by a flood control gate. The South Texas City Pump Station pumps water from the ponds over the hurricane levee and into a canal leading to Swan Lake.

The Swan Lake Salt Marsh Area, OU No. 4, is situated west of Swan Lake. It is bordered to the north by a hurricane levee and an industrial waste disposal facility; to the east by a hurricane levee, Route 197, large petrochemical and other industrial facilities; and to the south by disturbed uplands and additional industrial and commercial development (Figure 2). To the south was also a hummock formerly used as an industrial waste disposal pond. The area studied in the 1998 Swan Lake Study Area report included approximately 200 acres of salt marsh. Within the marsh are tidal pools that connect to the Wah Chang ditch by tidal creeks. The Wah Chang ditch enters the marsh along Route 197 and meanders through the Swan Lake Salt Marsh for approximately 1.1 miles to Swan Lake. It is joined at intervals by feeder channels that drain the marsh areas to the north and south. The Wah Chang ditch ranges from 15 to 30 feet wide and up to 10 feet deep at high tide.

COMMUNITY PARTICIPATION

The EPA has met the public participation requirements under CERCLA §117 and the NCP §§300.435(c)(2)(ii) and 300.825(a)(2). The EPA conducted a 30-day public comment period for

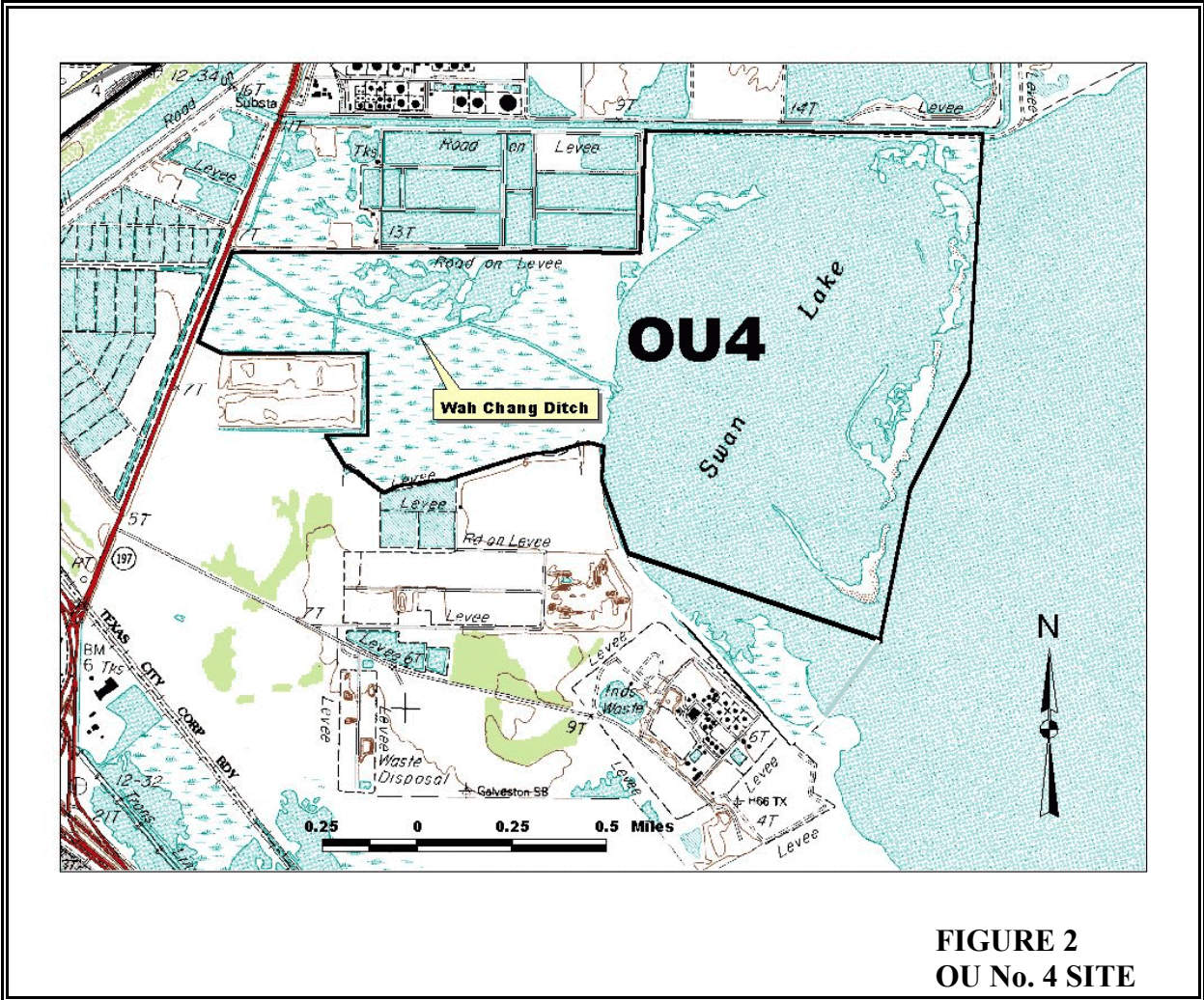


FIGURE 2
OU No. 4 SITE

the OU No. 4 Proposed Plan from April 13, 2001, through May 21, 2001. Additionally, oral comments were received at a public meeting held on April 26, 2001, at the Charles T. Doyle Convention Center in Texas City, Texas. The public was also invited to review information for OU No. 4 which can be found in the Ecological Risk Assessment (ERA) Report (also known as the Swan Lake Study Area Report), the Final Report for the Tex Tin Site - Swan Lake Marsh, and the Feasibility Study (FS) report, along with other reports and documents contained in the Administrative Record (AR) file for the Site.

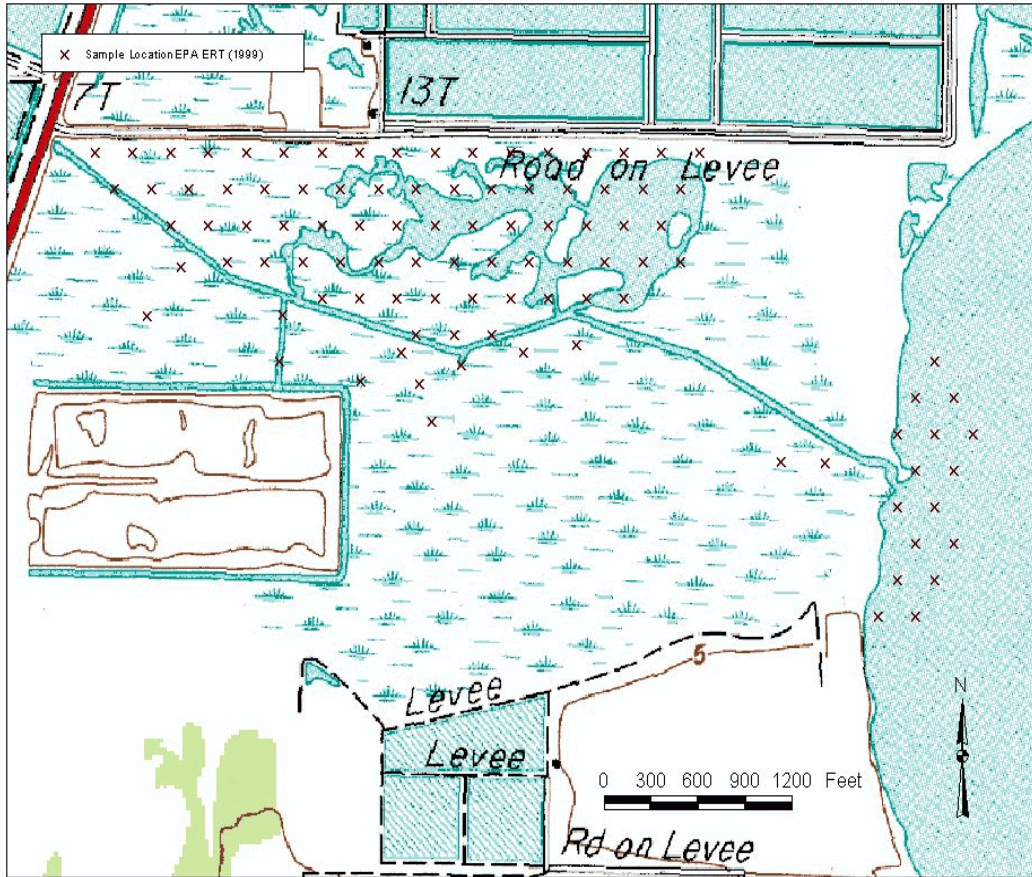
SCOPE AND ROLE OF OPERABLE UNIT

Due to the complex, multiple components associated with the Site, it was broken into four operable units to facilitate management of the site wide response actions. Operable units are specific response actions that comprise incremental steps toward comprehensively addressing site problems. This Remedy addresses only OU No. 4 and will address impacts to ecological receptors from the release or threat of release of Site contaminants. The selected remedy (Amended ROD signed September 28, 2000) for OU No. 1 addresses the former smelter facility located at the intersection of State Highway 146 and FM 519 and Ponds 22, 24, 25, and 26. Under a current Proposed Plan, EPA is recommending no further action for OU No. 2 as a result of the response action being implemented by Amoco for the OU No. 2 portion of the Site. Amoco is conducting a response action under the Texas Voluntary Cleanup Program for the approximately 27 acres of property that make up OU No. 2 and were part of the former smelter facility. For OU No. 3, EPA conducted a cleanup of the LaMarque residential properties from March 1999 through June 1999. The EPA signed a No Further Action ROD for OU No. 3 on September 29, 2000.

OU No. 4 CHARACTERISTICS

In 1996, Roy F. Weston, Inc., prepared an Onsite Ecological Risk Assessment (Onsite ERA) that focused on the smelter site (OU No. 1) and adjacent habitat. The Onsite ERA consisted of evaluating screening-level and definitive ecological risk assessments for soil, sediment, and water. The results of the Onsite ERA indicated that receptors are at risk from contaminated matrices at the Site and suggested that offsite receptors may be at risk as well. A more detailed ecological risk assessment (ERA) was conducted for the Swan Lake Salt Marsh area, OU No. 4, and completed in September 1998 by U.S. EPA Headquarters's Office of Emergency and Remedial Response. The purpose of the Swan Lake Salt Marsh ERA was to evaluate the risk posed by existing levels of contamination. The ERA included sampling of in-situ water, benthic macroinvertebrates, and sediments to determine the impact of the Site contaminants on OU No. 4.

In August and September 1999, additional surface sediment sampling was conducted at OU No. 4 to further determine the extent of contamination in the salt marsh area (Figure 3). The Office of Emergency and Remedial Response completed this sampling effort and presented the results in the Final Report for the Tex Tin Site Swan Lake Marsh. The results of this sampling were used to identify the area and volumes of soil contaminated with hazardous substances from the Site. A



**FIGURE 3
SAMPLING LOCATIONS**

Data Summary Report was prepared in June 2000, by CH2M Hill summarizing the findings of the Final Report for the Tex Tin Site Swan Lake Marsh.

Nature and Extent of Contamination

Metals contamination associated with the former Tex Tin smelter are present at OU No. 4. The identified contaminants of concern are aluminum, arsenic, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, silver, tin, and zinc. These contaminants are thought to be impacting the benthic macroinvertebrate community in the Swan Lake Salt Marsh and Swan Lake areas. The sediment samples collected during the ERA indicate that the highest concentrations of most inorganic contaminants were observed in sediment collected from the subtidal portion of the Swan Lake Salt Marsh. The contaminants detected in the highest concentrations are chromium, copper, lead, tin, and zinc. These contaminants are considered to be the primary contaminants of concern for OU No. 4 and were therefore selected for the additional sampling effort performed by EPA in 1999. Samples collected in August and September 1999 were gathered in the area of the Swan Lake Salt Marsh that is bounded by Route 197 to the west; the hurricane levee to the north; Wah Chang Ditch to the south; and the end of the wetland area of the Swan Lake Salt Marsh to the east. A few samples were collected south of the Wah Chang ditch and in the delta of the Swan Lake Salt Marsh, which leads to Swan Lake. Sampling results are presented in the Final Report for the Tex Tin Swan Lake Marsh.

Sample concentrations were compared to the No Observable Adverse Effect Levels (NOAELs) and Lowest Observable Adverse Effect Levels (LOAELs) for benthic macroinvertebrates developed during the ERA. The NOAELs and LOAELs were compared to the sampling results to determine the Hazard Quotient (HQ) for each sampling location. The HQ is defined as the concentration of contaminant present, divided by the NOAEL for the contaminant. HQs were also developed for the LOAELs. If the HQ exceeds a value of 1, there is a potential risk to the types of species being evaluated, in this case, benthic macroinvertebrates. The NOAELs, LOAELs, and HQs for the contaminants of concern and benthic macroinvertebrates at OU No. 4 are presented in the table below, along with the concentrations of contaminants found in the sediments and their associated average.

The calculated HQs in the Swan Lake Salt Marsh indicate that the entire sampling area exceeds the NOAEL HQ in varying degrees depending on the constituent and comparison value being evaluated. In comparison, the LOAELs are less conservative than the NOAELs, so a lesser area of OU No. 4 is above the LOAEL HQ. An estimate of the volume of soil that would need to be removed for each contaminant of concern and NOAELs and LOAELs is presented in the table below. Since only surface sediment samples were collected, a depth of 1 foot was used for the volume calculations.

	Chromium	Copper	Lead	Tin	Zinc
Concentration Range (ppm)	13 to 1,000	10 to 220	32 to 2000	9 to 600	28 to 340
Average (ppm)	123	46	168	73	81
NOAEL (ppm)	16	12	51	11	44
NOAEL HQ Range (ppm)	0.8 to 62.5	0.8 to 18.3	0.6 to 39.2	0.8 to 61.8	0.6 to 3.6
Number of HQs Above 1	96	100	96	99	99
LOAEL (ppm)	70	42	230	160	140
LOAEL HQ Range (ppm)	0.2 to 14.3	0.2 to 5.2	0.1 to 8.7	0.1 to 4.3	0.2 to 2.4
Number of HQs Above 1	49	42	15	10	4

ppm = parts per million or milligrams per kilogram (mg/kg)

HQ = Hazard Quotient

A total of one hundred-one (101) samples were collected to determine the extent of contamination.

CURRENT AND POTENTIAL FUTURE SITE AND RESOURCE USES

OU No. 4 is a marsh area associated with the Swan Lake ecological system. It is anticipated that OU No. 4 will remain a marsh area in the future. There are no known plans for its future development.

SUMMARY OF SITE RISKS

Human Health

A Human Health Risk Assessment and an Ecological Risk Assessment were prepared for the Site in 1996, prior to it being separated into the current four operable units. The Site risk assessment concluded that a specific ecological risk assessment was warranted for the Swan Lake Salt Marsh Area to address risk posed to ecological receptors. A human health risk assessment was not performed for OU No. 4. The maximum concentrations of chemicals of concern identified in the Swan Lake Salt Marsh Area did not exceed the Preliminary Remediation Goals (PRGs) established for human receptors at the former smelter facility site, OU No. 1. At the concentrations found in the Swan Lake Salt Marsh area, the contaminants of concern identified for OU No. 4 do not pose a threat to human health.

Ecological Risk Assessments

Ecological risk assessment activities for the Site were conducted in two phases. In 1996, Weston Inc., prepared the Onsite Ecological Risk Assessment (Onsite ERA) for the Tex Tin smelter site. The Tex Tin Onsite ERA consisted of screening-level and definitive ecological risk assessments for soil, sediment, and water. The screening-level assessment determined that the maximum concentrations of contaminants of concern in all media in the vicinity of the Site exceeded ecological screening benchmarks. The definitive Onsite ERA identified aluminum, arsenic, cadmium, chromium, copper, lead, nickel, tin, and zinc as contaminants of concern. Clean-up targets were developed for these contaminants based on likely adverse effects to aquatic, semiaquatic, and terrestrial biological receptors.

In 1998, EPA completed the Final ERA which was initiated based on the extent of contamination, historical drainage patterns, land use, and site disposal practices. This assessment focused on the historic Wah Chang Ditch channel east of Route 197, the Swan Lake Salt Marsh, and Swan Lake, all of which have received runoff from the former Tex Tin smelter facility. The Final ERA used existing data, a benthic macroinvertebrate survey, laboratory toxicity evaluations, food chain models for semiaquatic birds and omnivorous mammals, and literature-based toxicological values.

The Final ERA characterized in detail the dynamic nature of the study area in terms of contaminant sources and transport mechanisms, potential stressors, habitat-modifying factors and biological assemblages. A major focus of the Final ERA was the benthic macroinvertebrate organisms such as shrimp, crabs, and oysters and the higher trophic-level organisms that prey on them.

The benthic macroinvertebrate survey identified three main habitat types: salt marsh, channel (hard and soft bottom), and open water. Shifts in the characteristics of the benthic communities were identified based on a comparison to reference sites and related to physical environment conditions and contaminant levels. The taxonomic diversity and numerical abundance of benthic macroinvertebrates at three locations were strongly influenced by tidal cycles, substrate, physical degradation, and anoxic conditions. At five other locations, the taxonomic diversity and numerical abundance of benthic macroinvertebrates were reduced relative to reference sites. Based on the site-specific relationships between the impairment of the benthic community, habitat characteristics and contaminant concentrations, the following chemicals were identified as partly responsible for the observed distribution and abundance of benthic macroinvertebrates: aluminum, arsenic, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, silver, tin, zinc, and total polyaromatic hydrocarbons (PAHs).

Significant mortality was observed in laboratory toxicity tests in which common laboratory organisms serving as surrogates for benthic macroinvertebrates were exposed to site sediments. Comparisons of the laboratory toxicity test results to analytical chemistry data alone indicated that the toxicity was associated with cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, tin, zinc, and total (PAHs). An examination of the trends in the different types of data indicated that the following contaminants are consistently associated with depauperate

macroinvertebrate communities and mortality of test species: aluminum, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, tin, zinc, and total PAHs.

Models of food chain accumulation of contaminants for the semiaquatic avian receptor and the omnivorous mammal (raccoon) indicated that contamination was not expected to present a risk to the semiaquatic avian receptor, and aluminum was the only contaminant of concern that might present a risk to the omnivorous mammal. This risk to the mammalian receptors could not be explicitly verified, because the hazard quotient was greater than one for the NOAEL, but not the LOAEL.

The remedial target ranges derived from site-specific studies of sediment for protection of benthic macroinvertebrates were as follows:

Constituent	Concentration
Aluminum	3,439 to 32,000 milligrams per kilogram (mg/kg)
Cadmium	Not detected (ND) to 0.48 mg/kg
Chromium	16 to 70 mg/kg
Cobalt	3.6 to 48 mg/kg
Copper	12 to 42 mg/kg
Iron	9,000 to 61,000 mg/kg
Lead	51 to 230 mg/kg
Manganese	88 to 2,900 mg/kg
Mercury	ND to 0.13 mg/kg
Nickel	7.3 to 19 mg/kg
Tin	11 to 160 mg/kg
Zinc	44 to 140 mg/kg
Total PAHs	ND to 1.7 mg/kg

The remedial action selected in this ROD is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

REMEDIAL ACTION OBJECTIVES

Remedial Action Objectives (RAOs) for OU No. 4 were developed for contaminated sediments, the environmental medium that posed a significant risk to ecological health and the environment based on applicable or relevant and appropriate requirements (ARARs) and site-specific risk calculations presented in the ERA and Final ERA and summarized in the Feasibility Study

report. The RAOs refer to specific sources, contaminants, pathways, and receptors. The RAOs for OU No. 4 are:

- Protect offsite sediment-dwelling invertebrate organisms and omnivorous mammals from direct contact or ingestion of sediment-containing concentrations of metals greater than the remediation goals.
- Prevent release of chemicals from the Swan Lake Salt Marsh to Swan Lake where they would accumulate in sediments or water to levels greater than the remediation goals.
- Prevent direct contact/ingestion/inhalation of sediments by humans of sediment concentrations greater than the PRGs for OU No. 1.
- Minimize destruction of existing benthic macroinvertebrate ecosystem when addressing the contaminants of concern.

Preliminary remediation goals to address ecological risk are the concentrations for which there are no observable adverse effects levels (NOAEL) to defined ecological receptors. However, these are only considered goals and in performing the alternative evaluation, the goals are not always met in order to protect the existing benthic macroinvertebrate ecosystem.

DESCRIPTION OF ALTERNATIVES

Alternatives were developed in the FS to address contaminants found at OU No. 4 which pose a risk to human health and the environment, specifically environmental receptors. Five alternatives were evaluated using the nine criteria required by the NCP, 40 C.F.R. § 300.430(e)(9)(iii). The primary goal of each remedial alternative is to address the RAOs for OU No. 4. The five alternatives evaluated for OU No. 4 are summarized below.

Alternative 1: No Action alternative. This is required by the National Contingency Plan (NCP).

Alternative 2: Excavate/dredge and remove sediments to meet LOAELs. Dispose of contaminated sediments in a permitted landfill. Backfill and revegetate area to reestablish ecosystem.

Alternative 3: Excavate/dredge and remove sediments to meet NOAELs. Dispose of contaminated sediments in a permitted landfill. Backfill and revegetate area to reestablish ecosystem.

Alternative 4: Shore protection through the installation of a number of segmented breakwater modules, to be determined during the remedial design, at the eastern edge of Swan Lake. Placement of a gravel cap on the western edge of Swan Lake. This alternative is referred to as the Barrier Island Restoration Module (BIRM) Alternative.

Alternative 5: Shore protection through the installation of segmented wave barriers, to be determined during the remedial design, at the eastern edge of Swan Lake. This alternative is referred to as the Segmented Wave Barriers.

CERCLA requires that treatment alternatives and permanent solutions be emphasized whenever possible (CERCLA § 121(b)(1)). However, EPA has recognized that treatment alternatives may be impracticable or less useful than containment or similar alternatives at sites that involve large quantities of low-level contaminated wastes. For such sites, it is often not possible to develop a complete range of applicable alternatives that satisfy the above criteria.

Evaluation of Alternatives

Cost estimates for all alternatives were prepared based on current market prices as quoted by vendors and by costing information presented in cost-estimating handbooks such as those published by the R.S. Means Company. Cost estimates presented in these alternatives were developed for comparison purposes and are based on order of magnitude accuracy (+50 percent/-30 percent). Costs presented are the present-worth costs, including capital and O&M costs, if applicable. A description of each alternative is presented below.

Alternative 1 – No Action

Evaluation of the No Action Alternative is required by the NCP at 40 C.F.R. § 300.430(e)(6) and is used as a baseline against which other alternatives are evaluated. Under this alternative, no remedial action would be undertaken to treat, contain, or remove contaminated media in OU No. 4. No institutional or operational controls would be implemented to restrict access to OU No. 4 or to restrict exposure to contaminants and current risks would not be abated. Because the contaminated sediments would not be contained, the potential for offsite migration of contaminants would not be mitigated.

Estimated Capital Cost for Alternative 1: \$0

Estimated O&M Cost: \$0

Estimated Present Worth Cost for Alternative 1: \$0

Estimated Construction Timeframe: 0

Alternative 2 – Excavate to Meet LOAELs

This alternative includes the excavation/dredging of approximately 121,900 cubic yards of contaminated sediments from the Swan Lake Marsh and Swan Lake. This volume was calculated as the volume of sediment that would need to be removed to meet the LOAEL for chromium, copper, lead, tin, and zinc. As the sediments are excavated/dredged, they would be hauled to the appropriate landfill (probably Subtitle D). After the excavation is completed, the area would be backfilled with clean fill and revegetated to reestablish the marsh/wetland environment.

Determination of the type of landfill where the sediments would be sent would depend on whether the sediments are classified as characteristic hazardous waste, as defined by 40 C.F.R. § 261, Subpart C. Based on current information about the concentrations of contaminants in the sediments, they would not be classified as RCRA hazardous wastes. For purposes of cost estimation, it was assumed that the sediments could be disposed in a non-hazardous landfill.

Estimated Capital Cost for Alternative 2: \$14,463,694

Estimated O&M Cost: \$50,000

Estimated Present Worth Cost for Alternative 2: \$17,406,433

Estimated Construction Timeframe: 6 months

Alternative 3 – Excavate to Meet NOAELs

This alternative includes the excavation/dredging of approximately 234,500 cubic yards of contaminated sediments from the Swan Lake Marsh and Swan Lake. This volume was calculated as the volume of sediment that would need to be removed to meet the NOAEL for chromium, copper, lead, tin, and zinc. As the sediments are excavated/dredged, they would be hauled to the appropriate landfill (probably Subtitle D, as discussed above in connection with Alternative 2). After the excavation is completed, the area would be backfilled with clean fill and revegetated to reestablish the marsh/wetland environment.

Estimated Capital Cost for Alternative 3: \$27,732,058

Estimated O&M Cost: \$50,000

Estimated Present Worth Cost for Alternative 3: \$33,328,470

Estimated Construction Timeframe: 9 months

Alternative 4 – Barrier Island Restoration Module

Alternative 4, which is a variant of Alternative 5, is the Barrier Island Restoration Module (BIRM) Project. Alternative 4 makes use of natural processes to restore the barrier islands as much as possible and uses so-called “soft” structures wherever feasible. Under this alternative, a number of breakwater modules would be located near the east side of the present barrier islands to reduce the wave action inside Swan Lake and to partially restore the barrier islands with sand fill inshore of the modules. Contaminated lake bed sediments would be covered with a gravel cap to minimize/prevent erosion and re-suspension.

Sampling results indicate an oval area of contaminated lake sediment in the vicinity of the mouth of the Wah Chang Ditch. A gravel cap would cover the contaminated area and taper toward shore to provide erosion protection and prevent spread of these contaminants. Approximately 87,000 cubic yards of non-crushed 0.5-inch gravel would be placed in a minimum 0.75-foot-deep layer from the present edge of the salt marsh to the limit of the contaminated sediment area. The cap would extend approximately 2,100 feet north and 2,800 feet south of the mouth of Wah Chang Ditch and at its widest point, would be about 800 feet across. This cap would prevent contact with contaminated sediments by humans, animals, and sediment-dwelling invertebrates but would not reduce water circulation within the salt marsh.

Along the shore, a 1-foot-deep layer of 3- to 6-inch smooth cobbles would be placed to the elevation of the marsh bed. This cobble armor would provide high resistance to shore erosion from waves within the lake. Along the western limit of the gravel cap, a 20-foot-wide nose of cobbles would provide protection from waves. Thus, the gravel cap would be only subjected to erosive action from waves in very shallow water over the cap.

Each BIRM would be designed with a certain degree of porosity to permit limited pass-through of wave energy and would be constructed of rough angular quarry stones, concrete rubble, or other stable construction materials, and placed over a core of quarry spalls, concrete rubble, or other stable construction materials. A total of approximately 4,000 linear feet of breakwater segments would be constructed. Sand fill consisting of particles similar to the barrier island material would be placed along the inshore side of the modules in a 200-foot-wide, 1-foot-thick layer for a distance of approximately 5,340 feet starting at the south tip of the existing breakwater. Approximately 59,300 cubic yards of sand would be required.

Alternative 4 is designed to meet the requirements of the RAOs and to promote the natural rebuilding of the barrier islands and would reduce wave energy in Swan Lake. This alternative does not call for removing contaminated sediments from the salt marsh because that action would entail the destruction of a large part of a thriving marsh. Since the area is saturated with water, the contaminants will remain trapped in the sediment materials provided additional erosion is prevented by use of barrier modules or segmented wave barriers.

Estimated Capital Cost for Alternative 4: \$4,301,034

Estimated O&M Cost: \$803,825

Estimated Present Worth Cost for Alternative 4: \$5,965,066

Estimated Construction Timeframe: 9 months

Alternative 5 - Installation of Segmented Wave Barriers

Alternative 5 is based on the method of restoring the barrier islands and associated marsh lands presented by the Texas Parks and Wildlife Department (TPWD) and the National Marine Fisheries Service (NMFS) to the Natural Resource Trustee Council (NRTC). Although the report was not intended to address EPA remedial action requirements for OU No. 4, the report was used as a source of information about Swan Lake and for providing insights on restoring the barrier islands. Alternative 5 would involve the installation of a number of segmented wave barriers totaling approximately 5,200 linear feet; the exact number and length of each wave barrier would be determined during the remedial design phase. The segmented wave barriers would be designed to allow sufficient tidal flow into Swan Lake to maintain the adjacent marshes and to protect the marshes from the predominantly southeasterly fetch.

Each wave barrier would have a crest elevation of about 10 feet above the seabed, which would be approximately 10 feet mean low low water (MLLW) based on the National Oceanic and Atmospheric Administration (NOAA) chart 11324, Galveston and Texas City Harbors. The wave barrier core would consist of quarry rock, concrete rubble, or other stable construction materials. The barrier core would be covered with a filter fabric and include uniformly graded

rip-rap along the top and sides. The typical wave barrier section has a crown width of approximately 8 feet and a 3 (horizontal) to 1 (vertical) slope.

The segmented wave barriers under Alternative 5 would virtually eliminate waves from Galveston Bay entering Swan Lake and provide more protection than the modules of Alternative 4. Alternative 5, uses longer and higher wave barriers than Alternative 4 and would add 5,200 linear feet of new wave barrier construction. O&M will include monitoring of the segmented wave barriers and making repairs as needed.

Alternative 5 would meet the RAOs by preventing further erosion of the Swan Lake shore and marsh area, and preventing releases of contaminated sediments to the environment. Implementation of Alternative 5 would aid in the build up of sediments in the marsh area and cover contaminated sediments. This would prevent exposure of contaminants to invertebrate organisms, omnivorous mammals and humans. Implementing Alternative 5 would not destroy the existing benthic macroinvertebrate ecosystem which would result if Alternatives 2 or 3 are selected. Implementation of Alternative 4 could also cause some damage to the existing ecosystem during placement of the gravel cap and cobble armor along the shore.

Estimated Capital Cost for Alternative 5: \$5,047,635

Estimated O&M Cost: \$777,401

Estimated Present Worth Cost for Alternative 5: \$6,834,563

Estimated Construction Timeframe: 9 months

COMPARATIVE ANALYSIS OF ALTERNATIVES

Nine evaluation criteria have been developed by the EPA to address the CERCLA requirements and to address the additional technical and policy considerations that have proven to be important for selecting among the remedial alternatives. These evaluation criteria serve as the basis for conducting the detailed analyses and selecting an appropriate remedial action.

Each alternative is assessed against the screening criteria discussed below. The results of this assessment are then compared to determine the best approach for remedial action. This approach is designed to provide decision makers with sufficient information to adequately compare the alternatives, select an appropriate remedy, and demonstrate satisfaction of the CERCLA remedy selection requirements in the ROD.

EVALUATION CRITERIA FOR SUPERFUND REMEDIAL ALTERNATIVES
Overall Protectiveness of Human Health and the Environment determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.
Compliance with ARARs evaluates whether the alternative meets Federal and State environmental statutes, regulations, and other requirements that pertain to the site, or whether a waiver is justified.

EVALUATION CRITERIA FOR SUPERFUND REMEDIAL ALTERNATIVES
Long-term Effectiveness and Permanence considers the ability of an alternative to maintain protection of human health and the environment over time.
Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.
Short-term Effectiveness considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation.
Implementability considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.
Cost includes estimated capital and annual operations and maintenance costs, as well as present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.
State/Support Agency Acceptance considers whether the State agrees with the EPA's analyses and recommendations, as described in the RI/FS and Proposed Plan.
Community Acceptance considers whether the local community agrees with EPA's analyses and preferred alternative. Comments received on the Proposed Plan are an important indicator of community acceptance.

The first two of the nine criteria are minimum, or "threshold," criteria that must be met by all alternatives. The next five criteria are considered "balancing" criteria and are the primary criteria upon which this analysis is based. The last two are considered to be "modifying" criteria.

Alternatives 2 through 5 meet the threshold criteria which include RAOs, the requirement for overall protectiveness of human health and the environment, and compliance with ARARs. All alternatives, with the exception of Alternative 1, meet the long-term effectiveness and permanence criteria.

None of the alternatives involve treatment, rendering them all unacceptable under the fourth remedy selection criterion. CERCLA and the NCP express a preference for treatment as a response to hazardous substances; however, EPA guidance recognizes that treatment alternatives may not result in the optimum risk management decision, particularly at sites that involve large quantities of low-level contaminated wastes. For such sites, it is sometimes necessary to reduce toxicity, mobility, or volume through other means. In the present case, a variety of treatment methodologies were considered at the initial screening of alternatives for the Feasibility Study. If a process option was determined not to be effective or implementable based on initial screening, it was eliminated from further evaluation in the Feasibility Study.

A comparative analysis of alternatives is presented below to identify the advantages and disadvantages of each alternative relative to the other alternatives. The comparative analysis of each of the evaluation criteria is also presented in the table below.

Alternative 1 - No Action

Alternative 1 does not meet seven of the nine evaluation criteria. Since no remedial activities would be implemented under this alternative, long-term ecological and environmental risks from the sediments would be unchanged. Since tidal action is continually redistributing the sediments in the Swan Lake Salt Marsh and Swan Lake, the risks to the offsite ecological health and the environment would likely increase over time. With neither reduction in the contamination present nor isolation from the environment, this alternative will not achieve overall protectiveness or meet ARARs for OU No. 4. This alternative does not meet the threshold criteria and is, therefore, unacceptable as a remedial alternative, but is included as a basis for comparison of the other alternatives.

Alternative 2 – Excavate to Meet LOELs

This alternative is acceptable or moderately acceptable for three of the nine evaluation criteria. It is unacceptable for short-term effectiveness, implementability, cost, and reduction of toxicity, mobility, or volume of contaminants through treatment. This alternative would be difficult to implement, because marshy conditions in the area make it difficult to access and excavate the contaminated areas effectively using heavy construction equipment. Consequently, this alternative is not cost effective. Moreover, significant damage could result to the existing benthic macroinvertebrate ecosystem during excavation/dredging of the contaminated sediments. This alternative is also unacceptable to the TNRCC, the State and Federal Trustees, and the community.

Alternative 3 – Excavate to Meet NOAELs

This alternative is acceptable or moderately acceptable for three of the nine evaluation criteria. It is unacceptable for short-term effectiveness, implementability, cost, and reduction of toxicity, mobility, or volume of contaminants through treatment. As with Alternative 2, this alternative would be difficult to implement because of the marshy conditions in the area that make it difficult to access and excavate contaminated areas using construction equipment and consequently, is not cost effective. Significant damage could result to the existing benthic macroinvertebrate ecosystem during excavation/dredging of the contaminated sediments. This alternative is also unacceptable to the TNRCC, the State and Federal Trustees, and the community.

Alternative 4 – Barrier Island Restoration Module

Alternative 4 is acceptable for three of the nine evaluation criteria and moderately acceptable for five of the evaluation criteria. This is mainly because installing the gravel and cobble armor along the western shore of Swan Lake would be difficult to implement due to marshy conditions in the area. The marshy conditions could raise the cost of implementation and damage some of the ecosystem. Once implemented, this alternative would prevent further damage to the existing

benthic macroinvertebrate ecosystem. This alternative is unacceptable for reduction of toxicity, mobility, or volume through treatment. This alternative is moderately acceptable to the TNRCC, the State and Federal Trustees, and the community.

Alternative 5 - Installation of Segmented Wave Barriers

Alternative 5 is acceptable for six of the nine evaluation criteria and moderately acceptable for short-term effectiveness, and cost. This alternative is unacceptable for reduction of toxicity, mobility, or volume through treatment. Because principal threat waste materials are not present in the marsh area, this criteria is not applicable for OU No. 4. Implementing Alternative 5 would not destroy the existing benthic macroinvertebrate ecosystem. Alternative 5 would prevent future releases of contaminated sediments to the environment. This alternative is acceptable to the TNRCC, the State and Federal Trustees, and the community.

Evaluation Criteria	Alt. 1 No Action	Alt. 2 Excavate to LOAELs	Alt. 3 Excavate to NOAELs	Alt. 4 Barrier Island Restoration Module	Alt.5 Segmented Wave Barriers
Overall Protection of Human Health and the Environment	---	O	O	+	+
Compliance with ARARs	---	+	+	+	+
Long-Term Effectiveness and Permanence	---	+	+	+	+
Reduction of Toxicity, Mobility, or Volume through Treatment	---	----	----	----	---
Short-Term Effectiveness	---	---	---	O	O
Implementability	+	---	---	O	+
Cost	+	---	---	O	O
State Acceptance	---	---	---	O	+
Community Acceptance	---	---	---	O	+

+ - Acceptable/Best Fit
 O - Moderate/Acceptable
 --- - Unacceptable

SELECTED REMEDY

Alternative 5: Segmented Wave Barriers

Present Worth Cost: \$6,834,563

After evaluating comments received during the public comment period and discussions with TNRCC, the State and Federal Trustees, EPA has selected Alternative 5 as the remedy for OU No. 4. Alternative 5 consists of segmented wave barriers totaling approximately 5,200 feet. The wave barrier core would consist of quarry rock, concrete rubble, or other stable construction materials. The barrier core would include a filter fabric and uniformly graded rip-rap along the top and sides. The typical wave barrier section has a crown width of approximately 8 feet and a 3 (horizontal) to 1 (vertical) slope.

Alternative 5 was selected because it best met the nine criteria specified in the NCP, 40 C.F.R. § 300.430(e)(9) and (f)(1) that are used in selecting Superfund remedies and has successfully been implemented (1500-foot section) in the same area of Swan Lake. Alternative 5 meets the remedial action objectives for OU No. 4 by preventing future shore erosion, abating further releases of contaminated ditch sediments and marsh sediments and by reducing exposure to contaminated lake sediments. Implementing Alternative 5 would not destroy the existing benthic macroinvertebrate ecosystem. Construction of the segmented wave barriers can be accomplished with existing construction equipment and engineering methods.

Cost Summary

The following cost table shows the estimated costs for all of the components of the selected remedy.

ITEM	ESTIMATED QUANTITY	UNITS	ESTIMATED UNIT COST	ESTIMATED TOTAL COST
Access Road to Site	6,000	LF	\$19.50	\$117,000
Segmented Wave Barriers				
Section 2 (1,200 LF)				
Uniformly Graded Rip-Rap	14,850	TONS	\$16.25	\$241,313
Geotextile Fabric	110,880	SF	\$1.50	\$166,320
Rock	15,600	TONS	\$26.00	\$405,600
Section 3 (2,500 LF)				
Uniformly Graded Rip-Rap	30,938	TONS	\$16.25	\$502,734
Geotextile Fabric	231,000	SF	\$1.50	\$346,500
Rock	32,500	TONS	\$26.00	\$845,000

ITEM	ESTIMATED QUANTITY	UNITS	ESTIMATED UNIT COST	ESTIMATED TOTAL COST
Section 4 (1,500 LF)				
Uniformly Graded Rip-Rap	18,563	TONS	\$16.25	\$301,641
Geotextile Fabric	138,600	SF	\$1.50	\$207,900
Rock	19,500	TONS	\$26.00	\$507,000
Cleanup and Landscaping	1	Lump Sum	\$30,000.00	\$30,000
Subtotal Direct Capital Cost				\$3,671,008
Contractor Overhead and Profit			25%	\$917,752
Total Direct Capital Costs				\$4,588,759
Indirect Capital Costs				
Engineering and Design			6%	\$275,326
Legal Fees and License/Permit			4%	\$183,550
Total Indirect Capital Costs				\$458,876
TOTAL CAPITAL COSTS				\$5,047,635
Contingency			20%	\$1,009,527
TOTAL ESTIMATED COST				\$6,057,162
OPERATION & MAINTENANCE COST (O&M)		5 years		\$777,401
TOTAL ESTIMATED PRESENT WORTH COST				\$6,834,563

STATUTORY DETERMINATIONS

Under CERCLA §121 and the NCP, the lead agency must select remedies that are protective of human health and the environment, comply with applicable or relevant and appropriate requirements, are cost-effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. In addition, CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduce the volume, toxicity, or mobility of hazardous wastes as a principal element and a bias against off-site disposal of untreated wastes. The following paragraphs discuss how the remedy meets these statutory requirements.

Protection of Human Health and the Environment

The selected remedy, Alternative 5, will protect human health and the environment by preventing releases of contaminated marsh sediments to the environment. The remedy will result in sediment accumulation over contaminated materials and thus will prevent exposure to contaminated materials. Implementing the selected remedy will not result in adverse cross-media impacts and will not destroy the macroinvertebrate ecosystem in the construction process.

Compliance with Applicable or Relevant and Appropriate Requirements

The selected remedy complies with all Federal and State ARARs. Specific ARARs were listed in the nine criteria evaluation of the Feasibility Study Report.

Cost-Effectiveness

The EPA believes that the selected remedy is cost-effective and reasonable for the expected benefit and protection provided. Although Alternative 4 costs less, implementing Alternative 4 would result in destroying part of the ecosystem that the remedy is trying to protect.

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

Implementing the selected remedy would achieve a permanent solution to address the contaminants present in the marsh sediments. Because the contaminant concentrations at OU No. 4 are not considered highly toxic or mobile, treatment technologies were not considered with the alternatives evaluated for OU No. 4 and are not included for the selected remedy. No untreated hazardous waste materials will be disposed of off-site as part of the selected remedy.

Preference for Treatment as a Principal Element

No source materials are present at OU No. 4 which would constitute principal threat waste. Treatment technologies were not evaluated with alternatives considered for OU No. 4 and are not warranted to address the contaminants of concern identified at OU No. 4. Therefore, the selected remedy does not include treatment as a principal element. As a practical matter, principal threat wastes for the Site are being treated as part of the OU No. 1 remedial action at the former smelter facility which was the original source of OU No. 4 contamination.

Five-Year Review Requirements

Because this remedy will result in hazardous substances, pollutants, or contaminants remaining on OU No. 4 above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted within five years after initiation of remedial action to ensure that the remedy is protective of human health and the environment. Five year reviews will be conducted in accordance with OSWER Directive 9355.7-03B-P "Comprehensive Five-Year Review Guidance" dated October 1999.

DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan for OU No. 4 was released for public comment on April 13, 2001. The Proposed Plan identified Alternative 5, Segmented Wave Barrier, as the Preferred Alternative to address impacts to ecological receptors in the Swan Lake Salt Marsh area. The EPA reviewed verbal comments received at the Public Meeting held on April 26, 2001 and one written comment submitted during the Public Comment Period. Based on EPA's review of all comments, no significant changes to the remedy, as originally identified in the Proposed Plan, are necessary.

**RECORD OF DECISION FOR
TEX TIN CORPORATION SUPERFUND SITE
OPERABLE UNIT NO. 4
RESPONSIVENESS SUMMARY**

The United States Environmental Protection Agency (EPA) has prepared this Responsiveness Summary for the Tex Tin Corporation Superfund Site (Tex Tin Site), as part of the process for making final remedial action decisions for Operable Unit No. 4 (OU No. 4). This Responsiveness Summary documents, for the Administrative Record, public comments and issues raised during the public comment period on EPA's recommendations presented in the Proposed Plan for the contaminated areas of OU No. 4, and provides EPA's responses to those comments. The EPA's actual decisions for OU No. 4 are detailed in the Record of Decision (ROD) for OU No. 4. Pursuant to Section 117 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9617, EPA has considered all comments received during the public comment period in making the final decision contained in the ROD for OU No. 4.

Overview of Public Comment Period.

The EPA issued its Proposed Plan of Action detailing remedial action recommendations for OU No. 4 for public review and comment on April 13, 2001. Documents and information EPA relied on in making its recommendations in the Proposed Plan were made available to the public on or before April 13, 2001, in three Administrative Record File locations, including the Moore Public Library located in Texas City, Texas. Within the first week of the public comment period, EPA corrected a map depicting OU No. 4, added the corrected figure to the Administrative Record, and extended the 30-day comment period by one week through May 21, 2001, for a total public comment period of thirty-seven (37) days. The EPA held a public meeting to receive comments and answer questions on April 26, 2001, at the Charles T. Doyle Convention Center in Texas City, Texas. All written comments as well as the transcript of oral comments received during the public comment period are included in the Administrative Record for OU No. 4 and are available at the three Administrative Record repositories.

This Responsiveness Summary summarizes significant comments, criticisms, and new relevant information submitted during the public comment period and presents EPA's written response to each issue, in satisfaction of community relations requirements of the National Contingency Plan.

The EPA responses to comments received during the public meeting are provided below and in some cases include subsequent expanded responses to those comments as appropriate.

Summary of Public Comments and EPA Responses:

Public Meeting, April 26, 2001, Texas City, Convention Center - Comments received.

COMMENT: By Mayor Carlos Garza of Texas City: Good evening and welcome to the members of the EPA and the TNRCC that are here with us tonight. In 1991, when my

predecessor, Chuck Doyle was mayor of the city and I was on the Commission, the City received information that the Tex Tin Corporation Site was coming off the Superfund List. And we were concerned because people in Texas City knew what was out there at the Tex Tin Site. At that time efforts were begun to place this site back on the Superfund listing and through the involvement of our U.S. Senators, the cooperation of the TNRCC and the leadership there as well as the EPA folks out of Dallas, we were able to get this site back on the NPL, National Priority List for Superfund.

Last year, Phase 1 of the Tex Tin Site (OU No. 1) was initiated and was completed well within the time frame scheduled for completion. And we're getting ready to start with Phase 2, which will see the completion and the demolition of the Tex Tin Site.

With regards to OU No. 4, the Swan Lake salt marsh area, the city very much is in favor of remedial action at this site. We have looked at the five proposed alternative remedial actions. We feel that the recommended remedial action, which is Number 5 on the information packet that each of you have before you, is one that is most workable to address the contamination at the Swan Lake Salt Marsh area. This fits very much in hand with the efforts currently underway by the City of Texas City to develop at Shoal Point a container cargo terminal. And the reason that this fits almost as a hand in glove is because the proposal for the development of Shoal Point will require the deepening of the Texas City Channel from 40 feet currently, the depth that it's at, to a 45-foot depth. The materials that will be removed from the Texas City Channel can be utilized quite easily, very inexpensively to help remediate the Swan Lake area. Having said that, then let me say that the City of Texas City and whoever we choose to continue the development of that as our operator of Shoal Point as a container cargo terminal operator will not charge the TNRCC for that disposal nor will it charge the EPA for that disposal. However, I want to be perfectly clear that monies have been set aside from the PRPs for the remedial action here, and those monies should be fully utilized by the TNRCC as well as the EPA for the remedial action. The agencies should not try to encumber any prospective developer the city decides to bring in to Shoal Point for any financial responsibility for the design work or maintenance work.

The TNRCC has been, I believe, allotted \$3.2 million. In addition, there have been some monies allotted to EPA to conduct that work. We expect to have the remedial action conducted without burdening the people of Texas City or any operator if the city decides to lease that land for the operation of a major (potentially \$1 million in economic impact) development project in this area. But having said that, we are fully supportive of the Preferred Action Number 5 as the one that is recommended as the most workable by the EPA.

We have since 1991 monitored the Tex Tin Corporation Superfund Site and we will continue to work with the TNRCC as well as the EPA to see that the remedial action for the Swan Lake area is indeed completed. Ultimately, we feel that this project will benefit all the recreational users in this entire region of the state as well as those beyond this region that have a concern for enhancement of our local environment. Thank you very much.

EPA RESPONSE: Thank you Mayor Garza for your comments and support of EPA's preferred remedy for the site.

COMMENT: Representative for the Texas Natural Resource Conservation Commission (TNRCC): The State has looked at the Proposed Plan and we agreed that Alternative Number 5 is the preferred alternative. TNRCC concurs with the EPA's recommendation.

EPA RESPONSE: The EPA wants to thank the TNRCC for its assistance in the remedy selection process for the Tex Tin site and for its support for EPA's selected remedy.

COMMENT: Does contamination from the Tex Tin site extend past the site boundaries? There is a concern that Tex Tin contamination is present in the area of Highway 3 and 146 close to the Tex Tin site where bridge expansion work is proposed. An earlier study indicated the presence of contamination close to the existing bridge.

EPA RESPONSE: This comment relates to OU No. 1, which is located just to the east of State Highway 146. The EPA, TNRCC, and contractors for the Potentially Responsible Parties (PRPs) have conducted extensive investigations within and outside the site boundaries to determine the nature and extent of contamination associated with the Tex Tin site. There may be contamination beyond the fence boundary of the smelter facility. In that case, those areas that exceed the remediation goals would become part of the Tex Tin site. There were two studies conducted for the Texas Department of Transportation in 1991 and 1993. Those studies identified the presence of soil and ground water contamination. The contaminant levels found in this area will be further evaluated during the remedial design phase and if warranted, will be addressed as part of the remedy for the Tex Tin site. Although the shallow ground water has contaminant levels above drinking water standards, it does not pose a health risk since it is not considered a drinking water source. However, one of the goals of the selected remedy for OU No. 1 is to prevent migration of the contaminated shallow ground water to the medium and deep transmissive zone. The EPA and the Potentially Responsible Parties (PRPs) will coordinate activities with the Texas Department of Transportation (TXDOT) as well as TNRCC to ensure that the remedy addresses TXDOT concerns and also to ensure that TXDOT construction activities do not impact exposure pathways. Once the PRPs have selected the remedial design/remedial action contractor for OU No.1, the PRPs plan to work with TXDOT to address its concerns.

COMMENT: Is there a potential for ground water seeping to Galveston Bay? The preferred wave barrier alternative does not appear to prevent ground water seepage movement.

EPA RESPONSE: The segmented wave barriers are not designed or intended to prevent ground water seepage. The contaminants in the Swan Lake Salt Marsh area are located within the marsh sediments and not in the ground water. Ground water contamination has been identified on the former Tex Tin smelter site, OU No. 1 and is being addressed as part of the OU No. 1 response action. The OU No. 1 action calls for construction of a slurry wall along the western boundary of the property, a network of monitoring wells, and installation of an enhanced evapotranspiration system vegetation along the southern boundary of the property. It should be noted that a slurry wall was constructed near the eastern property boundary of OU No. 1 as part of the OU No. 2 response action.

Ground water investigations indicate that there has not been much movement of the contaminated shallow ground water for at least the past 10 years. No significant ground water movement is expected since the slope of the ground water gradient in this area is very flat. The EPA does not anticipate movement of the contaminated shallow ground water to Galveston Bay which is located over a mile away. Ground water monitoring will be conducted along the perimeter of the former smelter site to ensure that once the remedy is implemented, there are no increases of contaminant levels in the ground water beneath OU No. 1.

COMMENT: Statement from Texas City resident: I'm a member of the Environmental Committee and chairman of the Wildlife Committee. I agree with the method that you have chosen to restore the contaminated wetlands in Swan Lake. Through cooperative partnerships with the TNRCC, the Corps of Engineers, the public will get more restoration for the same amount of bucks. In addition to confining contaminated polluted solids, your goal is to create a productive estuary that will be a first-class hatchery for fish and a feeding and breeding ground for birds. The Swan Lake area has been studied for years by various state and federal agencies. And each study has resulted in it being designated at the top of the list for wetland restoration. This whole area, not only along the bay front but all the way back to Loop 197 South, is rich in wildlife. I would suggest that before proceeding independently on this project you might consider calling on the Galveston Bay estuary people to help in developing a complete plan for the entire Swan Lake area, especially in light of all the future dredging and port activity.

EPA RESPONSE: Thank you for your comments and recommendations. The EPA plans to coordinate site activities with other agencies including the United States Fish & Wildlife Service, Federal and State Natural Resource Trustees and the U.S. Army Corps of Engineers.

COMMENT: Why are you doing Operable Unit 4 before you do 1 and 2? If the contamination came from the site and drained into the bay, why don't you go to the source, turn it off, clean it up first, because the lower concentrations are farther away? There was drainage possibly from the radioactive material and other ponds.

EPA RESPONSE: The EPA conducts Superfund projects according to a sequential investigation and remediation process contained in the National Contingency Plan. At this site, investigation and cleanup of some operable units is far more complicated because of the nature and extent of the contamination found there. The EPA is attempting to address all of the operable units as quickly as we can under the law. In terms of priorities, EPA at the request of TNRCC actually completed a time critical removal action at the OU No. 3 residential properties in LaMarque as the first action at this site. The cleanup for OU No.2, Amoco property, was implemented by Amoco in 1998. At OU No. 4, the Wah Chang ditch no longer discharges water and sediments from the Tex Tin smelter facility to the Swan Lake Salt Marsh area, because it is cut off by the hurricane levee, so we don't believe that contamination continues to travel from OU No. 1 to OU No. 4.

The remedy for OU No. 1 has been selected and the PRPs have hired an RD/RA contractor to design and implement the selected remedy. Some building demolition work has been completed at OU No. 1. The rest of the OU No. 1 response action, which addresses the most complex

environmental problems found on the Site, includes neutralization and disposal of acid liquid and acidic sediments, stabilization and disposal of metal-bearing source materials, offsite disposal of organic wastes, capping of on-site landfill containing stabilized materials, onsite disposal and capping of NORM slag, onsite disposal and capping (where appropriate) of non-NORM slag, cover of contaminated soils, discharge of wastewater pond liquids and backfill of ponds, dispose of above ground storage tanks and their contents, construction of a slurry wall, evapotranspiration system, and groundwater monitoring network, and demolition of additional site buildings.

Time wise, EPA is only at the remedy selection stage for OU No.4. Current plans are to start work at OU No. 1 before work is started at OU No.4. Sampling results do not indicate radioactive concentrations in the surface waters at either OU No. 1 or OU No. 4 above health based levels.

COMMENT: The barrier island is not going to restore water quality or remove those metals. It's a barrier bar restoration, but that's sort of a value added to the overall project.

EPA RESPONSE: The segmented wave barriers remedy will serve as a containment remedy to prevent releases of contaminated sediments and prevent exposure to contaminated sediments through the buildup of sediment deposits that will cover the contaminants. As indicated earlier, excavating and removing contaminated sediments from the marsh area would result in destruction of the ecosystem that the remedy is trying to protect. Previous testing indicates that water quality restoration is not an issue at OU No. 4, since the existing surface water levels already meet the Texas Water Quality standards.

COMMENT: EPA locks itself in a box with the same five or six options. Then it comes to the public for innovation. A hurricane or a large tropical storm is simply not in this report. If people are just concerned about putting a port in there as opposed to working with the natural system, it's not going to be destroyed. If the tax dollars are going to be spent, it ought to be spent not only wisely but with the best use for long term. And if there were minor checkerboarded excavations done prudently or some innovative approach, I'm not going to object to that. I do strongly object to leaving heavy metals in place because you open Pandora's Box because I don't know where the other channel is going to go, and I have no idea whether or not the metals have escaped and are going out there, so when people start dredging even only five feet, that could be major contamination.

EPA RESPONSE: As part of the NCP process, EPA conducts a feasibility study to ensure that appropriate remedial alternatives are developed and evaluated. This process assures that relevant information concerning the remedial action options can be presented and a remedy appropriate to the site or operable unit can be selected. The number of options should reflect the scope and complexity of the action and the site problems being addressed. The EPA presents those alternatives to the public for comments as part of the community involvement in the Superfund remedy selection process. As stated in the Proposed Plan, the public can comment on the alternatives presented or can recommend other alternatives or changes for EPA to consider before selection of the remedy in the ROD.

During the design stage for OU No. 4, hurricanes and other conditions will be evaluated in designing the segmented wave barriers. The EPA does not believe that limited excavation would protect the macroinvertebrates without causing some destruction of the ecological system. The EPA has sought technical assistance and information from the state and federal natural resource trustee agencies in considering the excavation alternatives. Construction activities would adversely impact not only contaminated areas, but also other marsh areas.

In response to the issue of dredging for port construction, the proposed port terminal expansion area is not located where the Wah Chang ditch drained to Swan Lake. The port is located north of Swan Lake, upgradient from the Swan Lake Salt Marsh area.

COMMENT: On the Tex Tin Superfund Site, you did say that that area is considered clean enough or you have tested that area and the contaminants were not high enough and that's why you're concentrating on the Operable Unit Number 4?

EPA RESPONSE: At this public meeting, EPA is concentrating on OU No. 4, which is one of four operable units for the Tex Tin site. However, cleanup efforts have already started or have been completed for the other three operable units. The EPA has completed the cleanup in the residential properties of La Marque, OU No. 3. The cleanup at the Amoco property, OU No.2, has also been completed. The EPA has started some cleanup activities at the former smelter facility, OU No. 1. Two large site buildings, the Smelter and the Roasting and Leaching buildings have been demolished and removed from the site. The PRPs are scheduled to select a RD/RA contractor by the end of September 2001 to complete the design and clean up the former smelter site.

COMMENT: Has the Corps of Engineers had any input for this project. If we eventually have to widen or improve Loop 197 with this upcoming port facility, that area right next to 197 is going to eventually be a wetlands. And if you want to do any additional improvements maybe the Corps of Engineers needs to look at this so you can negotiate more permanent things. In the future, you won't be able to do anything with 197 as far as widening or improving beyond the original existing road.

EPA RESPONSE: The EPA has been working with the Federal and State Trustees in the remedy selection process for OU No. 4. There will be further involvement with other agencies during the remedial design to coordinate planned activities for this area and the implementation of the selected remedy. The EPA is considering the Corps of Engineers to be the remedial design and remedial action contractor for OU No. 4. The Corps of Engineers, Galveston District, has significant experience in the design and construction of breakwater structures in this area and EPA plans to utilize that experience by working with the Corps. We will also continue to work with TXDOT on highway construction projects which may be affected by the Superfund site.

COMMENT: Alternatives 2 and 3 to excavate and remove, means basically transferring or proposing to transfer the problem from one location to another based on sampling that was only one foot deep. Based on other Superfund sites there is no documentation here that you know the depth of the contamination. Based on what happened in Operable Unit 3 in the residential

community, what would be there to prevent checkerboard? If the distribution of the metals is erratic, then basically for the proposed cost, 17 to 34 million dollars, are they really proposing to remove all of it to one foot or just checkerboard it?

EPA RESPONSE: The question invites a comparison between OU No. 3 and OU No. 4 which is not really supported by the results of field investigations conducted at each operable unit. The EPA and TNRCC conducted sampling to identify the nature and extent of contamination at each operable unit. Many of the contaminants originating on OU No. 1 followed different pathways to OU No. 3 than they did at OU No. 4. Based on historical information about operations of the smelter, much of the soil contamination in OU No. 3 came by way of air deposition from the smelter stack, whereas contaminants at OU No. 4 arrived mostly through contaminated surface water and waste water traveling through the Wah Chang, an industrial drainage ditch.

At OU No. 4, for Alternatives 2 and 3, the excavated materials would be placed in a landfill that is designed and permitted to handle the contaminated sediments. The contaminants would go to another location but in the landfill they would not present a risk to human health and the environment. The estimated cost and volumes under Alternatives 2 and 3 are based on excavating to a depth of one foot. In some areas it may be deeper and others it may be shallower. Actual depths would be determined during cleanup activities, to be sure that concentrations of contaminants did not remain in the environment at depths where they would present a risk to ecological receptors or continue to be available for biological uptake.

Soil contamination in the residential area presents a somewhat different set of problems than those presented at OU No. 4. Soil contamination in a residential area can vary property by property depending on many variables, such as the kind of earth work conducted before construction of the houses, whether fill material from other places was brought in for home construction or landscaping, and the presence of other man-made or vegetative barriers on the property at different times in history. The EPA and TNRCC collected soil samples on properties lying within the area of air deposition from the smelter, and conducted a removal action at those properties where the concentrations of arsenic in soil exceeded the conservative health-based action level.

COMMENT: Alternatives 4 and 5 have nothing to do with restoration of the area. It's basically covering up the problem. You've got a proposed barrier island, but what's the historical impact of a hurricane and depth of erosion. I would be generally opposed to burying the sediments in place. The pebbles and cobbles are just going to be picked up and moved and the heavy metals moved around. I do, however, think it is creative. If there is going to be a port facility, a barrier island system would be there to protect the erosion. I didn't see any engineering design. At this time I'm not recommending or suggesting any alternative. If we were going to clean something up or restore it, that would be my preference. I haven't seen any alternatives actually restoring to what the community or this area actually has. Indirectly, I support the local group. I came from the Galveston Bay Society. It was the State of Texas that has for years funded those studies. The preferred alternative does not change the water quality. I didn't see where any of the work that the state had funded put into the consideration of this report.

EPA RESPONSE: The proposed remedy would in time cover the contaminated sediment and prevent exposure to those contaminants, so that covering the contaminants actually results in restoration of the area. The segmented wave barrier remedy would also prevent releases of contaminated sediments by preventing further erosion of the marsh area. The segmented wave barriers, combined with the marsh restoration proposed by the Trustees, will help restore the Swan Lake Salt Marsh area to a much more productive ecosystem. Other alternatives that removed the contaminated sediments would result in massive destruction of the macroinvertebrates as well as harm to other ecological receptors that the remedy is trying to protect. The EPA believes that the proposed remedy is the best method of protecting the Swan Lake Salt Marsh area without destroying the existing ecosystem and wildlife habitats.

Engineering designs are not part of the Proposed Plan. Under the NCP, design of the remedy begins after the remedy is selected. Engineering design details will be part of the remedial design and will take into consideration historical wave data, including hurricane impacts. The cross-section presented in the Proposed Plan is based on a 1,500-foot segment constructed in the Swan Lake area in the mid-1990s. This segment is performing well, but potential impacts will be considered during the remedial design phase.

Studies conducted by the State were considered in selecting the remedy for OU No. 4. The selected remedy is the preferred alternative of the State and Federal Natural Resource Trustees and is based on studies to restore the barrier islands which were presented by the Texas Parks and Wildlife Department and the National Marine Fisheries Service to the Natural Resource Trustee Council.

COMMENT: It was indicated that there are no more sediments going out the Wah Chang Ditch into Swan Lake so there's no additional contaminants draining into that lake in recent times because the water is being pumped into the Industrial Canal. Have the sediments in the lagoon behind the flood protection levee been tested? And are we pumping sediments, harmful sediments over into the Industrial Canal so that we've now contaminated the Industrial Canal?

EPA RESPONSE: The pond waters and sediments behind the hurricane levee have been tested in the remedial investigations conducted for OU No. 1. As recently as 1999, at the request of the TNRCC, fish samples were collected from these ponds and tested. The results did not indicate a health threat from fish consumption from these ponds. Contaminated sediments and water are not being pumped into the Industrial Canal. The pond water that is discharged into the Industrial Canal meets the Texas Water Quality Standards. Sediments are not being pumped into the Industrial Canal, only surface water. The sediments in the bottom of the ponds do not pose a risk to human health or the environment. If necessary, the pond sediments will be evaluated as part of the remedy for OU No. 1.

COMMENT: I oppose any alternative that would involve dredging, excavating or covering marshland that exists out there. I believe that Mother Nature has a way of taking care of that. And just as consultants and experts have chosen to use natural attenuation in subsurface ground water plumes as the best alternative, I believe that Mother Nature will take care of many of the problems here. As has been indicated many of these metals are bound up in sediments and I

think we should not disturb them. I support Alternative Number 5, as other speakers have indicated, in that I believe a barrier at the mouth of that lake, on the east side of that lake, is important to stem the erosion of the lake. I also would encourage projects to add cordgrass to help regain some of those losses of 30,000 acres over the last 30 or 40 years. That's very important and should be a part of this project.

EPA RESPONSE: The EPA's selected remedy calls for construction of segmented wave barriers only. However, the State and Federal Natural Resource Trustees will enhance the segmented wave barriers remedy by adding material to create additional marsh areas west of the segmented wave barriers. The work that the Trustees will conduct for OU No.4 is a separate action, but will be coordinated with the EPA remedial action for this operable unit. The Natural Resource Trustee agencies will seek to restore natural resources damages that resulted from releases from the former smelter site. As part of the settlement of natural resource damages associated with this site, the Trustees are expected to build a minimum of 93 acres of marsh. The Trustees would build the area behind the breakwater as a way for it to protect the marsh. Therefore, additional marsh would be built in conjunction with the segmented wave barrier remedy. The Trustees would welcome other partners or potential parties that can help make this an even greater project than the 93 acres that the Trustees are expected to build.

COMMENT: I am a member of the Residential Area Operable Unit 3. And I wanted to get your input on Table 3 on alternative evaluations where it said "reduction of toxicity, mobility, or volume through treatment." And, also, I want to know will the land in the residential area be checked again and will the water be checked again in the future or how often?

EPA RESPONSE: The reduction of toxicity, mobility, or volume through treatment criteria refers to some type of treatment such as incineration that would destroy the contaminants or stabilization that would reduce mobility. Treatment is generally used to address highly toxic and high mobile hazardous materials which are considered principal threat wastes. Those types of materials are not present at the Tex Tin OU No. 4. This criteria is not being met by the alternatives considered for the site because it is not applicable to the contaminants present at OU No. 4.

Right now there are no plans to resample the residential properties in La Marque. Two hundred and fifty three (253) residential properties were sampled and cleanups were conducted at the properties where soil contamination exceeded the health-based cleanup levels. The EPA has no plans to resample residential properties unless we receive new information that indicates a need to sample additional properties. The EPA is aware of the concerns that the residents have regarding re-contamination during cleanup of the smelter facilities. At the residents' request, EPA is not planning to propose deleting the OU No. 3 La Marque area from the Superfund list until cleanup activities have been completed for the smelter facility, OU No.1. Monitoring of the ground water around the former smelter facility, OU No. 1, is part of the selected remedy for the former smelter site. So ground water monitoring will be conducted on a regular basis.

COMMENT: Are there any kits available to members of the community to check it themselves?

EPA RESPONSE: There are home kits to screen for lead paint. However, there are no home kits available to screen for arsenic levels. To obtain concentration levels for metals and other chemicals, samples would need to be sent to a specialized laboratory for analysis.

COMMENT: My question is for Alternative Number 5. Can you explain what you mean by overall protection of human health? What would be the overall benefit to human health by building a barrier? Has any sampling of fish been conducted for Swan Lake and how extensive an area is that for fishing?

EPA RESPONSE: By protecting the environment, human health is also protected, by preventing potential uptake of site contaminants into the food chain. Building the segmented wave barriers would prevent potential release of contaminated sediment into the environment. The barriers are intended to prevent future releases and with time, cover the contaminated sediment, thereby preventing exposure of human or ecological receptors. We are not aware of the extent of fishing in the Swan Lake area, but assume that fishing is conducted in the Swan Lake area. However, since Swan Lake is not a confined lake but open to Galveston Bay, fish sampling may not indicate the source of the contamination, if any, found in the fish samples.

COMMENT: People fish on the ponds along the side of Highway 146. I fished there.

EPA RESPONSE: Fish samples were collected from the ponds adjacent to the former smelter facility. Tests indicated a potential concern at one of the ponds if fish are consumed on a daily basis for a number of years. Information developed by EPA does not indicate that people eat fish from these ponds on a daily basis. Test results were presented to the Texas Department of Health (TDH) to determine if a fishing ban is warranted. At this time, TDH has not issued a fishing ban for the ponds adjacent to the Tex Tin site.

COMMENT: It's hard to have confidence and you've lived in a place for 20 years before you even knew that it was contaminated. I know it was known, but we didn't know it. According to the National Environmental Policy Act of 1969, the citizens of the subdivision were not kept in the loop.

EPA RESPONSE: Someone may have been aware of contamination at the Tex Tin Site for the last twenty years, but the smelter facility (OU No. 1 and 2) was not referred to EPA until the late 1980s, when the facility was still in operation. At that time, EPA attempted to work with the facility owner to secure investigation and cleanup. Subsequent investigation in 1994-95 led to discovery of contaminated soil in the LaMarque residential area, which was then designated OU No. 3 and addressed in a removal action.

Part of the Superfund process of involving the community in the remedy selection is to have public meetings like the ones we have had for the Tex Tin site beginning in 1997. We also keep the community informed by mailing out fact sheets about the site and announcing certain milestones, such as the Proposed Plan and public meetings, in local newspapers. The Proposed Plan is intended to provide summary information regarding the documents and reports that are available for the public to review. The EPA also maintains documents and reports at the local

library where the community can go and find out more information about the site. The EPA will continue to keep the community informed during the remedial action phase of OU No. 4, as well as OU No. 1.

At Superfund Sites, EPA is legally obligated to follow the CERCLA and National Contingency Plan processes for community involvement rather than the processes prescribed by NEPA.

COMMENT: The Technical Assistant Grant (TAG) is not a viable way to allow the citizens in the community to get their own representative, to have their own independent point of view and contribute like the CAT meetings. The TAG requirements are really complicated. The communities largely do not have the finances. And we literally need a team. It is that complex a problem. It is not a simple hydrological problem. It isn't just the awarding, it's who do they get to hire to answer the questions, in Texas it's not simple. There is no registration for scientists for the public.

EPA RESPONSE: The EPA involves the community in the Superfund process by various means and receives direct input from the public. The TAG is a way for the community to hire its own technical consultant who could also voice the concerns of the community. The EPA is still trying to award a TAG grant to the community for the Tex Tin Superfund site. Although the TAG paper work takes time and may be difficult, TAGs have been awarded at most if not all Superfund sites in Region 6. Many of these TAGs have been awarded to minority community representatives. There are ways that the community representative can meet the financial requirements of the TAG.