# UNITED STATES DEPARTMENT OF COMMERCE
# NATIONAL OCEANIC AND
# ATMOSPHERIC ADMINISTRATION
# NATIONAL MARINE FISHERIES SERVICE
# SILVER SPRING, MARYLAND

# ENVIRONMENTAL ASSESSMENT
# OF
# PECAN ISLAND TERRACE CREATION
# CWPPRA PROJECT ME-14

## VERMILION PARISH, LOUISIANA

**JANUARY 2002**

# U.S. DEPARTMENT OF COMMERCE
# NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
# NATIONAL MARINE FISHERIES SERVICE
# SILVER SPRING, MARYLAND

## ENVIRONMENTAL ASSESSMENT
## OF
## PECAN ISLAND TERRACE CREATION

**CWPPRA PROJECT ME-14**

**VERMILION PARISH, LOUISIANA**

**JANUARY 2002**

**Prepared by**

**GOTECH, INC.**
**8383 BLUEBONNET BOULEVARD**
**BATON ROUGE, LOUISIANA 70810**

**And**

**NESBIT ECOLOGICAL SERVICES, INC.**
**A Division of C-K Associates, Inc.**

**TABLE OF CONTENTSTABLE OF CONTENTS{tc \l1 "TABLE OF CONTENTS}**
**Environmental Assessment of Pecan Island Terrace Creation**

**Section** **Page No.**

## LIST OF FIGURES



## LIST OF APPENDICES

# ENVIRONMENTAL ASSESSMENT
# OF
# PECAN ISLAND TERRACE CREATION
# CWPPRA PROJECT ME-14

**Vermilion Parish, Louisiana**

## 1.0 INTRODUCTION

This Environmental Assessment (EA) evaluates the impacts of proposed activities to enhance wetlands in the southeastern quadrant of the Mermentau Basin, approximately five miles (eight kilometers) north of the Gulf of Mexico. The project is called the Pecan Island Terrace Creation and will be referred to as "the project" throughout this document. The project is located in southwestern Vermilion Parish (Figure 1).

This project is authorized and funded through the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) of 1990 (16 U.S.C. §§ 777c, 3951-3956). In accordance with CWPPRA, the heads of five Federal agencies and the Governor of the State of Louisiana comprise a Task Force to implement a comprehensive approach to restore and prevent the loss of coastal wetlands in Louisiana (16 U.S.C. § 3952 (b) (2)). The Federal agencies involved are the United States Army Corps of Engineers (USACE), the United States Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS), the United States Department of Interior, Fish and Wildlife Service (USFWS); the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS); and the United States Environmental Protection Agency (EPA). The project was on the Seventh Priority Project List Report, approved by the CWPPRA Task Force in September 1998, and will soon be ready for construction.

### 1.1 Project Location

The project is located in the southwestern portion of Louisiana (Figure 1) in Vermilion Parish and consists of a 3,550-acre (1,437 hectare) project area. The project includes two areas; Area 1 is the northern portion of the entire project area consisting of 1,950 acres (789 ha), while Area 2 consists of 1,600 acres (647 ha) south of Area 1. The project area lies within Sections 3, 4, 5, and 6 of Township 16 South, Range 1 West and in a small portion of Section 31, Township 15 South, Range 1 West. The project area is bordered to the north by agricultural land and Louisiana Highway (LA Hwy) 82, to the west by the Rockefeller Wildlife Refuge, to the east by boundary or management levees, and to the south by existing marsh and the Gulf of Mexico. Pecan Island, Louisiana is the nearest community and is located on the northern boundary of the project area.

## 1.2 Project Funding

CWPPRA is providing 85 percent of the funding for this project with 15 percent of the cost shared by the State of Louisiana, Department of Natural Resources (LDNR). The project is administered by cooperative agreement between the LDNR and the NMFS.

## 1.3 Technical Background

The Louisiana Coastal Zone is composed of nine hydrologic basins containing 7.9 million acres (3.2 million ha), of which approximately three million acres (1.2 million ha) are coastal marshes. The proposed 3,550-acre (1437 ha) project lies within the Mermentau Basin which is divided into two distinct subbasins that include the Lakes Subbasin north of LA Hwy 82 and the Chenier Subbasin south of LA Hwy 82. The Mermentau Basin contains approximately 450,000 acres (182,109 ha) of wetlands consisting predominately of fresh (approximately 190,000 acres, 76,890 ha), intermediate (approximately 135,000 acres, 54,632 ha), and brackish marsh (approximately 101,000 acres, 40,873 ha). The proposed project is located in the Chenier Subbasin as shown in (Figure 1).

Understanding the causes of wetland loss in coastal Louisiana requires knowledge of how these wetlands were created and maintained before they began to deteriorate. The Mississippi River formed two distinct geomorphic regions of coastal Louisiana over the last 7,000 years - the Deltaic Plain and the Chenier Plain. The Deltaic Plain, located in the central and southeastern portions of the coast, has been described extensively (Fisk, 1944; Gagliano and Van Beek, 1970; Penland *et al*., 1991). Since the end of the last ice age, the river built wetlands in extensive delta lobes and then gradually abandoned the lobes as they became large enough to become hydraulically inefficient. Abandoned delta lobes slowly subsided, although the wetlands maintained themselves for extended periods. Eventually most wetlands disintegrated as the delta lobe subsided to the point that wetland vegetation drowned. Frequently, the river built wetlands in delta lobes on top of the sunken remains of former delta lobes. This cycle of creation, maintenance, and destruction is called the delta lobe cycle and describes landscape evolution in large and small river deltas around the world (Coleman, 1988).

The Chenier Plain, which supports the project area within the Mermentau Basin, was formed from marine transport of westward flowing near-shore currents of mostly fine grained Mississippi River sediments. Depending on the amount of material and the duration of flow, mud flats of various widths and lengths accumulated against the shoreline. When the elevation became high enough to support vegetation, marsh plants colonized the area. When deposition ceased or declined because the Mississippi River shifted its course to the east, these deposits were reworked by coastal processes, concentrating the coarse grained marine sediments, and forming shore-parallel ridges or "cheniers" (Gould and McFarlan, 1959). Ridges are often

covered with live oak trees, hence, the name Chenier from the French word *chene* for oak.

In general, a combination of natural and anthropogenic causes are responsible for land loss throughout coastal Louisiana. Natural causes include surface compaction and subsidence, eustatic sea level rise, physical substrate scouring and erosion, and periodic tropical cyclonic storms. Anthropogenic activity suspected of contributing to coastal land loss includes levee construction for flood-protection along the Mississippi River (Boesch and Turner, 1984), extensive canal construction associated with oil and gas exploration, and failed agricultural endeavors within marshes using forced pump drainage. Collectively, these activities have advanced marsh loss by altering existing patterns of surface hydrology over large areas and facilitating saltwater intrusion into coastal marshes. The specific contribution of either natural or man-made influences on the rate of land loss varies significantly within each basin. Natural freshwater inputs from the Lakes Subbasin into lower marshes of the Chenier Subbasin were greatly reduced with the construction of LA Hwy 82 and the Catfish Point control structures. The natural salinity and tidal regime of the Mermentau Basin was altered by the construction of the Freshwater Bayou Channel, Mermentau River-Gulf of Mexico Navigation Channel, and numerous access canals. These hydrological alterations advanced saltwater intrusion, destroyed fresh and intermediate marsh vegetation and left unconsolidated organic marsh soils unprotected and easily eroded by tidal movement. These processes, plus the failure of former forced drained agricultural areas, accelerated internal marsh loss within the Mermentau Basin. The ultimate result was a rapid conversion of internal marsh to open water.

### 1.3.1 Wetland Loss Rates

It is not possible to accurately estimate wetland loss rates prior to the 1930s because quantifying the area of ponds and lakes in the marsh interior requires aerial photographs or satellite imagery which did not exist. Wetland loss rates in coastal Louisiana increased geometrically from the 1930s through the 1960s, but declined in the most recent period of measurement. Wetland loss in coastal Louisiana increased dramatically during the second half of the twentieth century and approximately 34.9 square miles of coastal wetlands continue to be lost each year (Barras *et al*., 1994).

In the Mermentau Basin, a total of 117,825 acres of marsh have converted to open water since 1932, which accounts for 18 percent of the historical wetlands in the Mermentau Basin, and represents nine percent of wetland loss in Louisiana (LDNR, 2001a). Current land loss rates for the Mermentau Basin are approximately 2,600 acres (1,052 ha) per year (LDNR, 2001a; Barras *et al*. 1994), representing an estimated 52,000-acre (21,044 ha) loss of wetlands during the next 20 years without restoration efforts.

An indication of land loss within the project is evidenced by conducting a review of the 1979 United States Department of Interior, United States Geological Survey (USGS), 7.5-minute Quadrangle "Pecan Island, LA" and the 1998 Color Infrared (CIR) Digital Orthophoto Quarter Quadrangle (1998 DOQQ) of the project area. In 1979, the USGS 7.5-minute Quadrangle shows that Area 1 was an active 1,950-acre (789 ha) agricultural field. Whereas, the 1998 DOQQ shows Area 1 of the project area as mostly open water with small islands of broken marsh. This indicates that land loss in Area 1 occurred between 1979 and 1998.

The same review process for Area 2 indicates that significant land loss had occurred by 1979. Unlike Area 1, Area 2 was not historically in agricultural production suggesting that natural processes and anthropogenic activity, other than agricultural uses, have lead to extensive marsh loss in this area. The Pecan Island Gas Field lies just southeast of the project area and remnants of access canals are still evident in portions of Area 2, thereby suggesting that land loss, at least in part, has resulted from oil and gas exploration.

The project area historically was fresh marshland. Habitat analysis in 1956 classified Area 1 as 99.1 percent fresh marsh and 0.9 percent open water and Area 2 as 89.7 percent fresh marsh and 10.3 percent open water. The marshland in Area 1 was converted in the late 1950s to a dry pasture area by constructing continuous dikes around the perimeter and draining the interior. By 1978, Area 1 was classified as 93.4 percent pasture, 0.5 percent open water, 0.2 percent fresh marsh, and 1 percent intermediate marsh with Area 2 being 16 percent intermediate marsh, 14.3 percent brackish marsh, and 69.4 percent open water. Deterioration and loss of the perimeter levees between 1978 and 1988 had converted the entire area into a shallow, open water lake with some sporadic small islands. The analysis performed from 1988 through 1990 indicated that Area 1 had converted to 98 percent open water with only 1.6 percent of the land left and it being brackish marsh. Additionally, Area 2 had converted to 68.2 percent open water and 31.7 percent brackish marsh (LDNR 2001b).

### 1.3.2 Habitat Diversity

Area 1 of the proposed project area is presently open water with sporadic vegetated islands typical of abandoned agricultural practices in marsh areas. Because of the continuous open water habitat, emergent vegetation is limited to islands, levees of previous agriculture operations, and surrounding marsh. This was confirmed in the field during a site visit made on April 30, 2001. Area 2 is also dominated by open water but contains some marsh.

Wildlife resources in the entire proposed project area include game and nongame animals and commercially important furbearers and alligators

(*Alligator mississippiensis*). Birds and waterfowl traverse the western portion of the Mississippi flyway in which the project is located.

The brackish marshes surrounding the project area provide nursery and forage habitat for numerous recreationally and commercially important estuarine and estuarine-dependent finfish, mollusks, and crustaceans.

### 1.3.3 Existing Conditions

The project area is bordered to the immediate north by current agricultural operations, the chenier ridge supporting LA Hwy 82, and the community of Pecan Island. Land use north of the project area up to LA Hwy 82 is agriculture. Rockefeller Wildlife Refuge borders the project area to the west-southwest. The project area is bordered to the south by broken marsh supporting remnants of extensive oil and gas exploration. Unbroken marsh with less remnants of oil and gas activity lies south of the broken marsh to the Gulf of Mexico. The extensive Pecan Island Gas Field lies to the east and southeast of the project area.

Marsh types are subdivided into three salinity classes: fresh, brackish, and saline. The entire 3,550-acre (1437-ha) project area is classified as brackish marsh (Chabreck and Linscombe, 1988). This marsh is underlain by soils that have a mucky surface layer and/or mucky and clayey underlying subsoil. The brackish vegetative class reflects the salinity of the soil surface layer, not the salinity of the soil profile.

Area 1 is mostly open water with an average depth of one to two feet because of previous failed forced drainage agricultural practices. Such practices accelerated oxidation of organic soils resulting in a rapid and uniform loss of surface elevation and conversion to open water. Breaks in original levees have connected this open water body with adjacent broken marsh, resulting in extended areas of open water and increased shoreline erosion from wind generated wave energy. These processes, coupled with adverse impacts related to oil and gas exploration and natural subsidence, have promoted rapid land loss within the interior marsh of the chenier subbasin. Evidence of oil and gas exploration activity includes a substantial north-south access canal through the center portion of Area 2 as well as other smaller access canals.

Six other CWPPRA projects are located in the Mermentau Basin. Cameron Prairie National Wildlife Refuge (NWR) Bank Stabilization (ME-9), Freshwater Bayou Wetlands (ME-04, XME-21), and Freshwater Bayou Canal Stabilization (ME-13, XME-29), have been constructed, while Freshwater

Introduction South of Highway 82 (ME-16, PME-7a), Humble Canal Hydrologic Restoration (ME-11, PME-15), and Little Pecan bayou Control Structure (ME-17, XME-42a) are still being planned.

Of most significance to the proposed project area may be the Pecan Island Freshwater Introduction project (ME-01) sponsored solely by the LDNR. This project may benefit the project area because of its proximity and ability to provide freshwater from White Lake to the chenier subbasin at certain times of the year. This project involves water control structures at White Lake and near LA Hwy 82 to allow water flow across the chenier. High water levels in the Lakes Subbasin afford the opportunity to divert water into the chenier subbasin.

### 1.4 Preliminary Performance and Cost Analysis

Problems and potential solutions in the Pecan Island area were identified by the Task Force during the developmental stages of the Louisiana Coastal Wetlands Restoration Plan (Louisiana Coastal Wetlands Conservation & Restoration Task Force 1993) and further documented in the Coast 2050 Report (Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority 1998). The CWPPRA Wetland Value Assessment (WVA) Team visited the area in August 1995. The baseline cost estimate for the project was $2,185,900. This project will be maintained and monitored for 20 years.

### 1.5 Authorization

The NMFS is the Federal sponsor for implementation of the project, which was included on the Seventh Priority Project List (Louisiana Coastal Wetlands Conservation and Restoration Task Force, 1998). The sponsor's responsibility includes conducting the evaluation and other activities involved for final decision-making in compliance with the National Environmental Policy Act (NEPA) of 1969. To meet NEPA compliance requirements, an EA must be conducted for each wetland project site that is modified or restored.

The project is included in Strategy number six Region 4 and is consistent with the coastwide strategy for terracing in Coast 2050 Report (Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority, 1998). Strategy number six involves the use of dredge material from channels or lakes to create marsh in rapidly eroding units.

## 2.0 PURPOSE AND NEED FOR ACTION

The major goal of CWPPRA is to restore and prevent the loss of coastal wetlands in Louisiana. The project was proposed and designed to partially meet that goal in an area of Vermilion Parish and to respond to the need for action as outlined below.

## 2.1 Purpose

The purpose of the project is to convert areas of open water in the project area back to vegetated marsh through the construction of earthen terraces and vegetative plantings. Specifically, this restoration project was designed to reduce marsh erosion by minimizing wave fetch. This direct creation of marsh habitat and the reduction of turbidity should encourage emergent and submerged vegetative growth, thereby promoting organic accumulation and stabilize the elevation of the marsh surface.

## 2.2 Need for Action

There is a critical need to protect and extend the life of emergent coastal wetlands in Louisiana because wetlands are rapidly being converted to open water. Coastal wetlands are important to the production of renewable resources in south Louisiana. The previous agricultural program within Area 1 adversely influenced the physical integrity of the organic surface soil and resulted in the conversion of inland marsh to open water. The conversion of land to open water occurs rapidly and often results in connections to other failed agricultural operations or to areas of internal land loss creating large open water bodies. Such large water bodies quickly erode adjacent marsh, advancing internal land loss exponentially.

### 2.2.1 Protection of Existing Wetlands

Marshes are among the most productive ecosystems and their rapid disappearance may significantly impact the economy of south Louisiana. In the Mermentau Basin, a total of 117,825 acres (47,682 ha) of marsh have converted to open water since 1932, which accounts for 18 percent of the historical wetlands in the Mermentau Basin (LDNR, 2001a) and represents nine percent of wetland loss in Louisiana. Current land loss rates for the Mermentau Basin are approximately 2,600 acres (1,052 ha) per year (LDNR, 2001a; Barras *et al*. 1994). At this rate, approximately 52,000 acres (21,044 ha) of wetlands will be lost during the next 20 years without restoration efforts.

The proposed project has been designed to promote the restoration of marsh within open water of the Chenier Plain Subbasin. Without the restoration of the marsh within the project area, adjacent wetlands and existing agricultural areas to the north will rapidly convert to open water. Levees surrounding the agricultural areas to the north will continue to be eroded by wave action from open waters of the project area.

### 2.2.2 Protection of Wildlife Habitat

Species diversity declines when any marsh converts to open water. Prior to the conversion to open water, the project area provided high quality habitat for nutria (*Myocastor coypus*), raccoon (*Procyon lotor*), puddle ducks, and American alligator (Palmisano, 1973). Reversing declines in habitat availability for wetland wildlife species requires slowing the rate at which wetlands convert to shallow open water. Action is needed therefore to provide immediate protection to existing wetlands.

### 2.2.3 Protection of Fisheries Habitat

Fresh and intermediate wetlands are essential habitats for some fish species because wetlands provide refuge from predators and produce smaller benthic invertebrates for foraging than unvegetated areas (Boesch and Turner, 1984; Rader, 1984; Rozas and Hackney, 1984, Rozas, 1993). Intermediate to fresh wetland losses in the project area, associated with conversion of marsh to open water areas, reduced the food supply for recreationally and commercially harvested fish species. The carrying capacity of many other wildlife, fish, and plant species is reduced as well. Action is needed therefore to protect and restore habitat critical to fish in the project area and statewide.

The brackish marsh in the project area also is Essential Fish Habitat (EFH) for many estuarine dependent marine organisms. Many species immigrate from offshore into the wetlands while still in the post larval stage. The young organisms become widely dispersed and often concentrate at the interface between marsh and water bodies where food is abundant and shelter available. Nearing adulthood, the organisms return to more saline or Gulf waters. Action is needed to protect brackish marsh.

### 2.2.4 Protection of Infrastructure

LA Hwy 82 lies north of the project area and is the only road access into the village of Pecan Island. Land use north of the project area up to LA Hwy 82 is forced drainage agriculture as was land use in Area 1 in 1979. Wave and wind erosion from open water in the project area could compromise existing levees to the north, thereby threatening the stability of LA Hwy 82 which is immediately adjacent to this agricultural area. Since LA Hwy 82 represents the only access to the residences and recreational areas of Pecan Island, the stability of this road is of primary concern. Without the project, adjacent levees are more susceptible to erosion and possible failure from wave energy and storm surges. There are no marked pipelines in the

project area. A recent magnetometer survey failed to locate any unmarked pipelines in the project area (Aucoin and Associates, 2001).

## 3.0 ALTERNATIVES

The area and scope of project were identified by the NMFS as part of Task Force submittal on the seventh Annual Priority Project List. This project was selected by the CWPPRA Task Force on January 16, 1998. A DNR-contracted Preliminary Engineering Report was prepared by Aucoin & Associates, Inc. in September 2001.

The range of alternatives for meeting the objectives for the project are discussed below. Consequences of the proposed action are discussed in Section 5.0.

Each alternative evaluated considered the same terrace cross section (4:1 side slopes with a 10-foot top width) and plantings of smooth cordgrass (*Spartina alterniflora)* plugs every five linear feet on both sides of the terraces. The estimated unit cost for terrace construction was nine dollars per linear foot, plantings not included. This cost was derived from discussions with contractors familiar with this type of construction and knowledge of project site conditions. It was determined the unit cost for each alternative would be relative as the volume of excavation for each terrace concept and resultant man-hour/equipment were basically equivalent.

### 3.1 No-Action Alternative

NEPA refers to the no-action alternative as the continuation of baseline conditions without implementation of the proposed action. Evaluation of the no-action alternative is required by Council of Environmental Quality (CEQ) regulations. The no-action alternative would fail to restore the open waters of the project area to marsh, thus allowing continued erosion caused by wave energy and subsidence. The no-action alternative also would fail to protect the surrounding marsh that provides habitat for numerous commercially and recreationally important aquatic and terrestrial species. As a result of the loss of vegetative habitats, there would be a continued decline in nursery and forage areas that provide much of the food (detritus, attached algae and sessile organisms, and small herbivorous and carnivorous residents) comprising the basis of the food web. Without the dampening effect of the proposed earthen terraces, wind driven waves would continue to erode marsh surrounding the project area and the water would remain too turbid for submerged aquatic vegetation (SAV) to establish.

### 3.2 Alternatives Considered, but Eliminated from Further Analysis

#### 3.2.1 Cell Configuration

This concept consists of 609 300-foot square cells formed by 250-foot long terraces with 50-foot gaps at each end. 312,000 linear feet or 344 acres of

terrace would be constructed at an estimated cost of $2,808,000. The cell configuration has been quite successful on other projects. This concept was rejected for this project because of budget constraints.

3.2.2 Duckwing Configuration

This concept features 600 foot long terraces running generally east to west with 30 degree changes in direction every 200 feet. The spacing between terraces would vary from 200 to 400 feet as a result of the duckwing configuration. Approximately 194,500 linear feet or 214 acres of terrace would be created at an estimated construction cost of $1,750,500. A version of this terrace concept is being used by Ducks Unlimited. The concept would provide excellent protection from prevalent north and south winds and moderate protection during infrequent periods because of east or west winds. This configuration would require a tremendous amount of construction layout and staking and was eliminated from further consideration.

3.2.3 Linear (Staggered east/west) Configuration

This concept features 500 foot long terraces running east and west. Approximately 172,000 linear feet or 190 acres of terrace would be created at an estimated construction cost of $1,548,000. This configuration is most feasible for construction and layout. It also offers excellent barriers from prevalent north and south winds; however, this concept offers relatively no protection during the brief periods of east or west winds. For this reason, it was also eliminated from consideration.

### 3.3 Preferred Alternative. Linear [staggered east/west and staggered north/south] Configuration

The preferred alternative includes the linear (staggered east/west + north/south) configuration (Figure 2 & 3). This alternative features the Linear (Staggered east/west) configuration with the addition of terraces running north to south. The north/south terraces are placed at the ends of the eastern and western project areas and spaced at roughly 1,000 foot intervals. The addition of north/south terraces will offer excellent protection from periods of east/west winds. Approximately 171,700 linear feet or 189 acres of terrace would be created at an estimated construction cost of $1,545,300. This configuration was selected for project implementation.

## 4.0 AFFECTED ENVIRONMENT

The project is located in Vermilion Parish in southwest Louisiana, south of LA Hwy 82 and the village of Pecan Island. Region 4 of coastal Louisiana consists of two basins including the Mermentau and the Calcasieu–Sabine basins. The project area is within the Mermentau Basin that extends from Freshwater Bayou Canal westward to LA Hwy 27. The proposed 3,550-acre (1,437-ha) project lies within the Mermentau Basin, which is divided into two

distinct subbasins including the Lakes Subbasin north of LA Hwy 82 and the Chenier Subbasin south of LA Hwy 82. The natural barrier between the two is an east-west line in the vicinity of Pecan Island and Grand Chenier ridges.

The Mermentau Basin contains approximately 450,000 acres (182,109 ha) of wetlands in Vermilion and Cameron parishes. In the Mermentau Basin, a total of 117,825 acres (47,682 ha) of marsh have converted to open water since 1932, which accounts for 18 percent of the historical wetlands in the Mermentau Basin (LDNR, 2001a) and represents nine percent of wetland loss in Louisiana. Current average land loss rates for the Mermentau Basin are approximately 2,600 acres (1,052 ha) per year (LDNR, 2001a; Barras *et al*. 1994). At this rate, approximately 52,000 acres (21,044 ha) of wetlands will be lost during the next 20 years without restoration efforts.

The natural salinity and tidal regime of the Mermentau Basin was altered by the construction of the Freshwater Bayou Channel, Mermentau River-Gulf of Mexico Navigation Channel, The Gulf Intracoastal Waterway, The Inland Waterway, five USACE water control structures and irrigation canals, and numerous oil and gas access canals. These hydrologic alterations resulted in increased saltwater intrusion into the marsh, a loss of fresh and intermediate marsh vegetation and left unconsolidated marsh soils unprotected and susceptible to erosion. In general, hydrologic changes within the basin include reduced freshwater inflow from the uplands north of the project area, increased magnitude and duration of tidal fluctuations, increased salinities, higher water levels, excessive water exchange, and artificial water circulation patterns because of failed agricultural practices and oil and gas exploration. Combined with other natural pressures, these hydrologic changes have collectively accelerated the loss of emergent vegetation and conversion of interior marsh to open water.

Because of the construction of LA Hwy 82, the Lakes Subbasin and the Grand Chenier ridge now function almost like a large freshwater impoundment as freshwater inputs from this subbasin into lower Chenier Subbasin were virtually eliminated by the highway's construction. The main hydrologic features of the Lakes Subbasin of the Mermentau Basin include Grand and White Lakes, Mermentau River, Laccassine Bayou, Bell City Drainage Canal, Gueydan Canal, and Warren Canal. The Mermentau River, which runs diagonally (northeast to southwest) across the basin, is the main freshwater supply to this subbasin.

The Chenier Subbasin contains the project area and lies between the Gulf of Mexico and the Pecan Island/Grand Chenier ridge complex. The lower Mermentau River dominates the hydrology of the Chenier Subbasin. Drainage of the subbasin can occur eastward to

Freshwater Bayou Canal, southward to the Gulf of Mexico, and westward to the Mermentau River and Ship Channel (Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority, 1998).

In summary, the 3,550-acre (1,437-ha) project area is largely open water supporting only small areas of vegetated, brackish marsh. A CWPPRA project that may influence the project area is the Freshwater Introduction South of LA Hwy 82 (ME-16, PME-7a) that is located in north central and eastern portions of the Rockefeller Wildlife Refuge in Cameron and

Vermilion parishes. This project may influence the proposed project because of its proximity and goal of providing fresh water to the Chenier Subbasin. The Freshwater Introduction south of LA Hwy 82 includes installation of eight water control structures (weirs and culverts), breaching the spoil bank in areas near LA Hwy 82 to allow water flow across the chenier, and removal of plugs to facilitate water flow from the Lakes Subbasin south into the Chenier Subbasin. High water levels in the Lakes Subbasin afford the opportunity to divert water into the Chenier Subbasin.

The project area is divided into two distinct areas. Area 1 is the northern portion of the project and consists of 1,950 acres (789 ha) while Area 2 lies south of Area 1 and consists 1600 acres (647 ha). Area 1 is mostly open water and angular in shape with an average depth of one to two feet (0.3-0.6 meters) because of failures of forced drainage agricultural practices. Such practices accelerated oxidation of organic soils resulting in a rapid and uniform loss of surface elevation and conversion to open water. Because of the continuous open water habitat, emergent vegetation is limited to islands, levees of previous agriculture reclamation, and surrounding marsh. Plant species in the surrounding marsh and on the isolated islands include marshay cordgrass (*Spartina patens*), big cordgrass (*Spartina cynosuroides)*, inland saltgrass (*Distichlis spicata*), saltmarsh bulrush (*Schoenoplectus robustus*), wax myrtle (*Myrica cerifera*), and seashore paspalum (*Paspalum vaginatum*). Breaks in original levees have connected this open water body with adjacent broken marsh, resulting in extended areas of open water and accelerated shoreline erosion from wind generated wave energy. These processes coupled with adverse impacts related to oil and gas exploration and natural subsidence have promoted rapid land loss within the project and the Chenier Subbasin at large. The area is also dominated by open water. Area 2 includes the same vegetative species composition found in Area 1.

## 4.1 Physical Environment

### 4.1.1 Geology, Soils, and Topography

The project is located in the southern part of the Chenier Plain. Pleistocene age deposits form the geologic substrate of the chenier plain, including the project area. Most of the surface sediments are Holocene (recent) age with small remnants of Pleistocene age deposits (Gosselink *et al*., 1979). Alluvial sediments from the Mississippi and Red Rivers were transported westward along the coastline via littoral drift and deposited above Pleistocene age material (USDA, 1995).

The elevation in Vermilion Parish ranges from sea level near the Gulf of Mexico to about 25 feet above mean sea level (MSL) near the parish boundary north of the town of Abbeville, Louisiana (USDA, 1996).

The fragile soils in the project area are easily broken and dispersed by currents. Marsh soils are composed of fluid or firm sediments (mineral soils) and organic material (organic soils). These two classes are subdivided into three salinity groups: saline, brackish, and fresh. The major soil association

in the majority of the project area is Clovelly. Banker associations are present in the northern most portion of the project area. Both of these soil types share the characteristics of level, poorly drained soil. Bancker and Clovelly soil types both occur in brackish marshes and have a very fluid, mucky surface layer over a fluid, mucky or clayey underlying layer. Since both of these soil types are ponded most of the time and are frequently flooded, they support native wetland vegetation (USDA, 1996).

Undisturbed marsh soils within the project area have 40 percent organic material from 0-10 inches (0-25.4 cm) (Oa1 horizon), and thick organic material from 10-40 inches (25.4-101.6 cm) (Oa2-3 horizon) in the soil profile (USDA, 1996). The majority of marsh in the project area has been modified or strongly influenced by previous agricultural practices where emergent wetlands were levied and water was pumped out. Organic oxidation and deterioration of the perimeter levees in recent times has converted the land into an open water area.

Of the 1,950 acres (789 ha) under consideration in Area 1, approximately five acres of vegetative marsh are now present on sporadic islands. The open water area for this portion of the project currently is approximately 99 percent of the 1,950 acres (789 ha). The open water area has a muck bottom with no apparent aquatic vegetation present. The lack of sediment deposition and minimal organic accumulation source suggest that the area will remain as open water. Area 2 contains 1,600 (647 ha) acres of broken emergent vegetation and is located just south of the previously impounded 1,950-acre (789-ha) area known as Area 1.

### 4.1.2 Climate and Weather

Mild winters and hot summers characterize climate in the Mermentau Basin. Average annual rainfall for the region is near 60 inches (152.4 cm) with the northern part of the region receiving slightly more than the coastal region. Average annual temperature for these basins is $68^{o}$ F with a mean high of $83^{o}$ F ($28.3^{o}$ Celsius) in the warmest months and a mean low of $54^{o}$ F ($12.2^{o}$ Celsius) in the winter [Louisiana Department of Environmental Quality, (LDEQ) 1987].

Of the approximately 60 inches (152.4 cm) of rainfall per annum, the greatest amounts occur during the months of May in the northern part and July in the southern part of the basin. The minimums occur during the months of September and October in the north and south respectively. Hurricanes and tropical storms periodically visit this area during summer and fall. These storms usually bring high winds, heavy rainfall, and high tides (LDEQ, 1987).

### 4.1.3 Air Quality

Air quality of the project area is good. Air masses are unstable in this area because of the proximity to the coast and the influence of open water bodies such as White Lake. There are minimal automotive air emissions from the few vehicles traveling along shell roads. Boat engines, ranging in size from small trolling motors to those of commercial outboards probably contribute the greatest amount of air emissions as well as vehicular traffic along LA Hwy 82. Also, there may be a small amount of emissions from the oil or gas production activity from the Pecan Island Gas Field southeast of the project area.

#### 4.1.4 Surface Water Resources

The Vermilion River is the major source of surface water in Vermilion Parish. Bayou Queue de Tortue, which forms the northwestern boundary of Vermilion Parish, is another source of surface water. The bayou is a tributary to the Mermentau River that forms the western boundary of the parish. Vermilion Parish also is host to several large coastal bodies of water, including Vermilion Bay, Lake Arthur, and White Lake. The Gulf of Mexico is the southern boundary of the parish. Approximately 307.47 million gallons (1.2 billion liters) of water per day is drawn from surface water sources in Vermilion Parish, most of which is used for rice irrigation (USDA, 1996).

Produced water or oil field brine is a by-product of crude oil or natural gas. This saline water [35 to 200 parts per thousand (ppt)] may have been discharged into wetlands adjacent to the project area prior to the effective compliance date of the USEPA's no-discharge of produced water.

The project area is tidally influenced and, therefore has variable salinities. A 1992 annual monitoring report for the adjacent marsh area found salinity values ranging from one to four ppt. Because this was a high rainfall period, it is expected that average salinities are slightly higher than those values. Therefore, five ppt is suggested as a probable 20-year average. Because the project area hydrology is controlled by the Vermilion Corporation's water control structures and perimeter levees, predicted future salinity levels are not expected to be affected.

## 4.2 Biological Environment

#### 4.2.1 Vegetative Communities

The project area was visited by the WVA team in August of 1995 during the planning phase of this project. The team divided the area into two habitat types: emergent marsh and open water. Plant species observed in the surrounding marsh and on the isolated islands include giant foxtail (*Setaria magna*), goldenrod (*Solidago sempervirens*), pink hibiscus (*Kosteletzyka*

*virginica*), big-leaf sumpweed (*Iva frutescens*), deerpea (*Vigna luteola*), Cyperus (*Cyperus* sp.), marshay cordgrass, morning-glory (*Ipomea sagittata*), and eastern baccharis (*Baccharis halimifolia*). Other common plants in the area include, big cordgrass, inland saltgrass, saltmarsh bulrush, and seashore paspalum. Other vegetative species that may be present in the project area include common reed (*Phragmites australis*), three-corner grass (*Scirpus pungens*), and smooth cordgrass (*Spartina alterniflora*). Aquatic vegetation in the project area may consist of widgeongrass (*Ruppia maritima*) and dwarf spikesedge (*Eleocharis parvula*).

4.2.2 Essential Fish Habitat

Under the Magnuson-Stevens Fishery Conservation and Management Act, the Gulf of Mexico Fishery Management Council identified EFH for those species managed under its fishery management plans for coral and coral reefs, spiny lobster (*Panulirus argus*) , stone crab (*Menippe* sp), coastal migratory species, reef fish, red drum (*Sciaenops ocellatus*), and shrimp (*Penaeus* sp) (Gulf of Mexico Fishery Management Council, 1998). Tidally influenced aquatic habitats in the project vicinity are considered as EFH for post larval, juvenile and subadult life stages of brown shrimp (*Penaeus azetecus*) , white shrimp (*Penaeus setiferus*) and red drum. Categories of EFH that would be affected or benefited by project implementation are estuarine emergent wetlands, estuarine mud bottoms, estuarine water column, and submerged aquatic vegetation (SAV). Specific EFH microhabitats that are considered to be in the project area and may be impacted or benefited by project implementation for each species and life stage are as follows:

Brown shrimp
Postlarvae and juveniles: marsh edge, SAV, subadults marsh edge, estuarine mud bottoms.

White shrimp
Postlarvae and juveniles: marsh edge, SAV, marsh ponds subadults marsh edge, SAV, marsh ponds.

Red drum
Postlarvae and juveniles: SAV, estuarine mud bottoms, marsh edge subadults estuarine mud bottoms.

In addition to serving as EFH for Penaeid shrimp and red drum, the project area provides nursery and foraging habitat that supports various forage species and economically – important marine fishery species such as spotted sea trout, southern flounder, Atlantic croaker, black drum, gulf menhaden striped mullet and blue crab. These estuarine – dependent organisms serve as prey for other fisheries managed under the Magnuson-Stevens Fishery Conservation and Management Act by the Gulf of Mexico Fishery Management Council (*e.g.*

mackerels, snappers and groupers) and highly migratory species managed by the NMFS (*e.g.* billfishes and sharks).

Habitats in and near Pecan Island, including adjacent areas that could be affected by construction and benefit from the proposed action, are now recognized as EFH for eggs, larvae, juveniles, adults, and spawning adults. Managed species and their period of habitat use in the Pecan Island area include brown shrimp juveniles (year round), pink shrimp *Penaeus duorarum* juveniles and adults (year round), red drum juveniles and adults (year round), white shrimp adults (March through May), and white shrimp juveniles (year round).

The proposed terraces are designed to allow fishery ingress and egress while reducing water currents and wave erosion which currently threatens marsh vegetation. All berm structures are designed to allow fishery ingress and egress along historical or more natural routes.

The project will help to ensure the long-term sustainability of important habitats and the managed species that depend on those habitats during some stage in their life. The need for restorative action in this area has been recognized for many years and was selected by a public process that offered ample opportunity for public input and debate prior to funding through the CWPPRA process.

4.2.3 Fishery Resources

Marine fish and shellfish such as the Atlantic croaker (*Micropogonias undulates)*, spot (*Leiostomus xanthurus),* gulf menhaden (*Brevoortia patronus),* bay anchovy (*Anchoa mitchilli)*, brown shrimp, and white shrimp occur in the estuarine waters of the project area (Herke, 1978; Rogers *et al*., 1993). Even fish species that do not frequent flooded marshes may depend on marshes to complete part of their life cycle because detritus originating from wetland vegetation provides food for juvenile fish (Deegan *et al*., 1990). Gulf menhaden, which constitute part of the largest commercial fishery in the contiguous United States, illustrate one of the many possible relationships between fish and wetlands. Gulf menhaden spend most of their life in deep water where they are harvested, but juvenile gulf menhaden grow and develop in estuaries where detrital marsh vegetation is an important food source (Deegan *et al*., 1990). Juvenile gulf menhaden, in turn, are an important food source for carnivorous fish, turtles, and many fish-eating birds.

Aquatic resources of national importance found near the project site include Atlantic croaker, red drum, sand seatrout (*Cynoscion arenarius)*, spotted seatrout (*Cynoscion nebulosus)*, southern flounder (*Paralichthys lethostigma)*, gulf menhaden, spot, striped mullet (*Mugil cephalus)*, brown

shrimp, white shrimp, and blue crab (*Callinectes sapidus)* (Hoese, 1976). These resources are species of national economic importance in accordance with Section 906(e)(1) of PL 99-602, the Water Resources Development Act (WRDA) of 1986. These species vary in abundance from season to season because of their migratory life cycle. Most spawn offshore in the open Gulf of Mexico and enter estuarine areas as larvae or young juveniles to use the shallow bay bottoms and brackish marshes as a nursery. Usually these species return to the open gulf as sub-adults or adults.

4.2.4 Wildlife Resources

Coastal wetlands in Louisiana provide high quality habitat for the American alligator, furbearers such as nutria (*Mycastor coypus*), muskrat (*Ondatra zibethicus)*, raccoon (*Procyon lotor*), mink (*Mustela vison)*, and river otter (*Lutra Canadensis)*, game such as white-tailed deer (*Odocoileus virginianus)*, rabbit (*Sivilagus* sp.), squirrel (*Sciurus* spp.), and snapping turtle (*Macroclemys temmincki)* (Bellrose, 1976 and Palmisano, 1973).

Snow goose *(Chen caerulescens)*, Canada goose (*Branta canadensis*), dabbling ducks; mallard (*Anas platyrhynchos)*, northern pintail *(Anas acuta)*, gadwall (*Anas strepera)*, blue-winged teal (*Anas discors*,) mottled duck (*Anas fulvigula),* green-winged teal (*Anas crecca),* American wigeon (*Anas americana*), and diving ducks; lesser scaup (*Aythya affinis),* greater scaup (*Aythya marila)*, red-breasted merganser (*Mergus merganser)*, ring-necked duck *(Aythya collaris)*, redhead (*Aythya americana)*, canvasback (*Aythya valisneria)*, and bufflehead (*Bucephala albeola*) are abundant in the Mermentau Basin. Most of these waterfowl breed in the northern plains and migrate to the coastal marshes of Louisiana for the winter. Geese are primary grazers and feed on rice, bulrush and marshay cordgrass. Puddle ducks feed in water up to 15 inches (0.4 meter) deep and diving ducks feed in deeper water. Only mottled ducks nest within the project area (Condrey *et al*., 1995; USDA, 1994).

In 1990 a census of wading birds and seabird nesting colonies was conducted in Louisiana. Twenty-seven species of colonial nesting water birds were studied (Martin and Lester, 1990). The closest documented nesting site to the project area is located approximately 2.2 miles (3.5 km) east-northeast of the northeast boundary of the project area. Nests were located in individual trees or shrubs in an area classified as mainland marsh. In 1990, species of birds noted were anhinga (*Anhinga anhinga)*, olivaceous cormorant (*Phalacrocorax olivaceosus)*, cattle egret (*Bubulcus ibis)*, snowy egret (*Egretta thula)*, great egret (*Casmerodius albus)*, black-crowned night heron (*Nycticorax nycicorax),* white ibis (*Eudocimus albus),* roseate spoonbill *(Ajaia ajaia)*, and great blue heron (*Egretta caerulea)*. The colony size was estimated to contain over 15,000 birds. Seabirds frequently feed on small fish within the shallow open water areas present within the project area.

Wading birds live in coastal marshes and swamps, and most feed on small fish, insects, frogs, and snakes. Wading birds such as the great blue heron (*Egretta caerula*), great egret, little blue heron (*Florida caerulea*), snowy egret, cattle egret, white ibis, and black-crowned night heron are common in the Mermentau Basin (USDA, Soil Conservation Service, 1994).

### 4.2.5 Threatened and Endangered Species

Federally listed threatened (T) and endangered (E) species occurring in the project area include the bald eagle (T), brown pelican (E), piping plover (T), and American alligator (threatened due to similarity of appearance). Several species of threatened/endangered sea turtles are known to forage in the coastal waters of the project area. Those species are the loggerhead sea turtle (T), Kemp's ridley sea turtle (E), green sea turtle (T), leatherback sea turtle (E), and hawksbill sea turtle (E).

Threatened bald eagles *(Haliaeetus leucocephalus)* nest in Louisiana from October through mid-May. Eagles typically nest in baldcypress trees near fresh to intermediate marches or open water in the southeastern parishes; no nests are known to occur within the project area. This area, however, may be utilized by bald eagles for feeding or foraging. Major threats to this species include habitat alteration, human disturbance, and environmental contaminants (i.e., organochlorine pesticides and lead).

Endangered brown pelicans *(Pelecanus occidentalis)* may also occur within the project area. No know brown pelican nesting colony locations occur within the project area, however, this species may feed in the shallow estuarine waters of the project area. Major threats to this species include chemical pollutants, colony site erosion, disease, and human disturbance.

The threatened piping plover *(Charadrius melodus)* winters in coastal Louisiana, and may occasionally occur within the project area. Piping plovers may be present in Louisiana for up to 8 months, arriving from the breeding grounds as early as late July and remaining until late March. Piping plovers feed extensively on intertidal beaches, mudflats, sandflats, algal flats, and was-over passes with no or very sparse emergent vegetation and require unvegetated or sparsely vegetated areas for roosting. Roosting areas may have debris, detritus, or micro-topographic relief offering refuge to plovers from high winds and cold weather. In most areas, wintering piping plovers are dependant on a mosaic of sites distributed throughout the landscape, as the suitability of a particular site for foraging or roosting is dependent on local weather and tidal conditions. Plovers may move among sites as environmental conditions change. Critical habitat, which has been designated for the piping plover, identifies specific areas that are essential to the conservation of the species. The primary constituent elements for piping plover wintering habitat are those habitat components that support foraging,

roosting, and sheltering and the physical features necessary for maintaining the natural processes that support these habitat components. Those elements are found in geologically dynamic coastal areas that support intertidal beaches and flats (between annual low tide and annual high tide) and associated dune systems and flats above annual high tide. Important components (or primary constituent elements) of intertidal flats include sand and/or mud flats with no or very sparse emergent vegetation. Adjacent unvegetated or sparsely vegetated sand, mud or algal flats above high tide are also important, especially for roosting plovers. Major threats to this species include the loss and degradation of habitat due to development, disturbance by humans and pets, and predation.

The American alligator, common in marshes with the project area, is classified as "threatened due to similarity of appearance." They are biologically neither endangered nor threatened, and regulated harvest is permitted under State law.

Although the northern Gulf of Mexico is within the range of five species of sea turtles, the Kemp's ridley (*Lepidochelys kempi)*, which is a Federally-listed endangered species, is the only one that feeds on crabs, clams, snails, fish, jellyfish, and barnacles in shallow coastal waters (Condrey *et al*., 1995). Although a long distance from the gulf, marshes and open water areas of the project area rarely might serve as foraging and development sites for the Kemp's ridley sea turtle. Dundee and Rossman (1989) report that Kemp's ridley occasionally appears along the Louisiana gulf coast. Possible factors related to this occurrence include the widespread availability of shallow water marine and estuarine habitat with high turbidity levels from proximity to the Mississippi and Atchafalaya Rivers (Frazier, 1980).

None of the other four species of endangered sea turtles are expected in the project area. The loggerhead turtle (*Caretta caretta)* and the green turtle (*Chelonia mydas)* are relatively common in the nearshore waters of the Gulf of Mexico. The loggerhead feeds on sponges, jellyfish, mollusks, crustaceans, sea urchins, fishes, seaweeds and grasses while the green turtle's diet is primarily marine grasses and macrophytic algae. The hawksbill turtle (*Dermochelys coriacea)* is usually found in seawaters less than 50 feet (15 meters or eight fathoms) and feeds on invertebrates, marine grasses and macrophytic algae. The leatherback turtle (*Dermochelys coriacea)* is found in deeper oceanic waters and feeds primarily on jellyfish (Condrey *et al*., 1995).

## 4.3 Cultural Environment

### 4.3.1 Historical or Archaeological Resources

Native Americans of the Attakapas Tribe lived along the cheniers and possibly along the shore of the Gulf of Mexico prior to European colonization. Fishing, farming of sugarcane (*Saccharum officinarum L.*) and rice (*Oryza sativa*), and trading were the occupations of the first settlers. Exploration for oil and gas resources first occurred during the early part of the 20th century.

4.3.2 Economics (Employment and Income)

With all of the area classified as wetlands, the economy of the project area is dependent upon the commercial and recreational harvest of furbearers, alligators, finfish, and invertebrates. Agricultural practices including rice, sugarcane, and cattle production generated revenues of $38.7 million, $20.1 million, and $11.8 million, respectively (Louisiana State University Agricultural Center, 2001).

More then 40 percent of the total wild fur harvested in the United States comes from Louisiana's wetlands. In 1999 Vermilion Parish produced 6,306 pelts and 12,155 pounds of meat for a gross value of $25,104 from wild fur harvest.

The southwestern marshes of Louisiana produced the highest nesting density for alligators (one nest per 90 acres (36.5 ha)), with the greatest density in intermediate marsh, followed by fresh and brackish marsh (McNease *et al*., 1994). Total coast wide marsh nest projections during 1970-1993 ranged from a low of 6,700 to a high of 34,500 with an increasing trend over time. Alligator management and harvest programs in Vermilion Parish yielded $341,280 in 1999 (Louisiana State University Agricultural Center, 2001).

About 90 percent of the fish harvested from the Gulf of Mexico rely on aquatic habitats such as those found in the marshes of the project area. There are two major commercial fishery ports near the project area. Delcambre, Louisiana is located just north of Vermilion Bay and is one of the major seafood producing communities in Vermilion Parish. Dockside seafood value at Vermilion Parish ports totaled $29,503,887 in marine fisheries revenues in 1999 (Louisiana State University Agricultural Center, 2001).

In addition to the economic impact from the commercial fishing industry, revenue is generated from recreational wildlife and fisheries activities in or near the project area. Businesses in Vermilion Parish market equipment, bait, food, and gas necessary for trips to the Gulf of Mexico, area bays and surrounding wetlands.

Oil and gas exploration has been conducted in Vermilion Parish for about 50 years. Parish revenues and employment resulting from oil and gas exploration and production reached their highest level between 1970 and

1985. There were 6,366 active wells in Vermilion Parish in 1999 that employed 2,194 people and generated $112,005,570 in revenue (Mid-Continent Oil and Gas Association, 1999).

4.3.3 Land Use

Most of the land in Vermilion Parish is rural and used as marshes or for agricultural purposes. About 783,360 acres (313,344 ha) are land and 332,171 acres (132,868 ha) are large water areas consisting of lakes, bays, and streams (USDA, 1996).

4.3.4 Recreation

The project area marshes provide varied recreational opportunities for local and visiting fishermen, boaters, trappers, hunters of waterfowl and furbearers, bird watchers, and campers. Access is by boat, since there are no roads in the project area.

4.3.5 Noise

The project area has no industry other than the commercial and recreational hunting, fishing, and trapping. Ambient noise in the area would originate from boat traffic, people hunting or fishing in the area, and local wildlife.

4.3.6 Infrastructure

There are no parish or state roads directly in the project area. LA Hwy 82 lies just north of Area 1. There are no marked pipelines in the project area. A recent magnetometer survey failed to locate any unmarked pipelines in the project area (Aucoin and Associates, 2001).

## 5.0 ENVIRONMENTAL CONSEQUENCES

The adverse environmental consequences of the no-action alternative are extensive compared to the benefits of the preferred plan. The project would restore approximately 100 acres of emergent marsh initially and it is anticipated that 300 acres would be created or restored over the 20-year life of the project.

### 5.1 Physical Environment

5.1.1 Geology, Soils, and Topography

The proposed activity will have minimum impact on the geology and soils of the project area. Vegetative plantings would stabilize soil and encourage sedimentation. Material used for construction of the earthen terraces would

be free of contaminants. Impacts from construction would be minimal, localized and short-term.

5.1.2 Climate and Weather

Inclement weather could temporarily delay the implementation of the proposed activities. Construction of the terraces would provide increased protection from water currents and waves caused by wind and storms.

5.1.3 Air Quality

Exhaust emissions from construction equipment would be temporary and minor. Airborne pollutants would be dissipated quickly by prevailing winds and be limited to the construction phase of the project.

5.1.4 Surface Water Resources

Impacts to surface waters would be minor and would occur only at the construction sites and during the construction phase of the project. Increased turbidity would occur during construction of the terraces. There would be no adverse impacts to water quality within the project area. There would be no adverse impacts to salinity levels within the project area.

## 5.2 Biological Environment

5.2.1 Vegetative Communities

The proposed activity would result in positive long-term impacts on vegetative communities within the project area. Re-establishing emergent vegetation on earthen terraces would reduce wave energy across open water, thereby protecting adjacent plant communities and promoting submerged aquatic vegetation. Since the dredged material would be deposited at elevations conducive to the establishment of marsh vegetation, those sites should vegetate quickly, thus slightly increasing the area of marsh.

5.2.2 Essential Fish Habitat

The proposed activities would improve EFH by re-establishing marsh, protecting existing marsh and increasing marsh edge. Detrital material, formed by the breakdown of emergent vegetation, would contribute to the aquatic food web of the project area. Marsh edge is classified as one of the EFH microhabitats. Because 343,400 feet of marsh edge will be added as a result of terrace creation, project implementation will significantly increase the marsh edge EFH.

Short-term adverse impacts to shrimp and red drum would occur during the

construction phase of the project. These impacts include entrapment of slow-moving organisms. Increased turbidity would occur in waters near the designated construction sites. These impacts are minor and would be limited to the immediate vicinity of action and only for the duration of construction of the project.

5.2.3 Fishery Resources

Project implementation will increase areas of marsh by 189 acres. These marshes will produce nutrients and detritus, important components of the aquatic food web that supports marine fishery species. Project implementation should help improve fishery productivity in the project area by increasing both marsh and marsh edge.

Short-term adverse impacts to fishery resources would occur during the construction phase of the project. These impacts include entrapment of slow-moving organisms and benthic animals during dredging, and smothering of non-mobile benthic organisms in the deposition sites. Deposition of the dredge material for construction of the earthen terraces could crush benthic organisms. Increased turbidity would occur in waters near the designated construction sites. These impacts are minor and would be limited to the immediate vicinity of action and only for the duration of construction of the project. The earthen terraces and associated emergent vegetation would provide cover and foraging opportunity to local fish.

5.2.4 Wildlife Resources

The proposed activities would improve wildlife habitats by reestablishing and maintaining marsh. Alligator, furbearers and game would benefit from improved marsh. Reduction of water currents in open water areas would enhance growth, thus providing additional food for native and wintering waterfowl. During the construction phase of the project, furbearers, game, and waterfowl would avoid the area, but are expected to return after cessation of activity.

5.2.5 Threatened and Endangered Species

The threatened piping plover *(Charadrisu melodus)* winters in coastal Louisiana, and may occasionally occur within the project area. The proposed construction activities, however, are located within open water habitats outside of areas used by the plovers, or those designated as critical habitat. Therefore, the proposed terraces would not impact those constituent elements essential for the conservation for the species.

Depending on the time of year when construction activities take place, piping plovers, bald eagles, and brown pelicans may be temporarily displaced but

should easily relocate because of the large amount of suitable habitat in the vicinity of the project area. Accordingly, we have determined that the proposed work is not likely to adversely affect those threatened or endangered species or their critical habitat.

Although not likely to occur in the project area, if Kemp's ridley or other sea turtles ventured into the region, it is likely they would avoid the areas of construction because of the increased turbidity and activity surrounding construction sites.

## 5.3 Cultural Environment

### 5.3.1 Historical or Archaeological Resources

No impacts would be anticipated to historical or archeological resources within the project area since archeological sites are not located near construction areas.

### 5.3.2 Economics (Employment and Income)

No adverse impacts to economic resources would result from the proposed project. Nearby businesses would continue to profit from supplies necessary to reach fishing, hunting, or other recreational areas. Project construction would provide temporary employment. The oil and gas industry would not be affected by the project.

### 5.3.3 Land Use

No adverse impacts to current land use would result from the proposed activity.

### 5.3.4 Recreation

Minor temporary adverse impacts to recreation would occur as a result of construction activity. These include increased turbidity of surface waters and increased noise within the project area during the time of construction. Improved habitat also would improve the carrying capacity of the wetlands, thus sustaining or increasing fish and wildlife for recreational use.

### 5.3.5 Noise

Short-term adverse impacts, limited to the construction phase, include increased noise associated with supply boats and construction machinery.

### 5.3.6 Infrastructure

There would be no adverse impacts to infrastructure.

## 6.0 CONCLUSIONS

This EA finds that no significant adverse environmental impacts are anticipated by the implementation of the project. This conclusion is based on a comprehensive review of relevant literature, site-specific data and project-specific engineering reports. This finding supports the recommendation of the CWPPRA Task Force, including the NMFS, the sponsoring agency. As evidenced by their funding, the State of Louisiana supports the project. The Vermilion Parish government and the general public have encouraged construction of the project. The natural resource benefits anticipated from the implementation of the project would enhance and sustain the diverse ecosystem found within the Mermentau Basin.

## 7.0 PREPARERS

This EA was prepared by GOTECH, Inc. under contract to the NMFS. Mr. Bruce Dyson of GOTECH, Inc. provided administrative duties and the production of figures and messers Chris Chambers, Tre' Wharton, and Scott Nesbit (Nesbit Ecological Services, L.L.C.) authored the majority of the text. Aucoin and Associates supplied the engineering drawings. Direction, guidance and invaluable reference materials were provided by Ms. Joy Hunter and Mr. John Foret, Ph.D with the NMFS.

## 8.0 FINDING OF NO SIGNIFICANT IMPACT

Based on the conclusion of this document and the available information relative to project, including hydraulic modeling, there would be no significant environmental impacts from this action. Furthermore, preparation of an Environmental Impact Statement on this action is not required by the National Environmental Policy Act or its implementing regulations.

Rebecca Hank

2/11/02

William T. Hogarth, Ph. D.
Assistant Administrator for Fisheries
National Marine Fisheries Service

Date

## 9.0 LITERATURE CITED


Aucoin and Associates. 2001. Preliminary Engineering Design Report: Pecan Island Terrace Creation Project (ME-14, XME-22). File 99-33. Louisiana Department of Natural Resources, Baton Rouge, Louisiana.

Barras, J.A., P.E. Bourgeois, and L.R. Handley. 1994. Land Loss in coastal Louisiana 1956-90. National Biological Survey, National Wetlands Research Center, Open File Report 94-01.

Bellrose, F.C. 1976. Ducks, Geese, and Swans of North America. Stackpole Books, Harrisburg, Pennsylvania.

Boesch, D.F., and R.E. Turner. 1984. Dependence on Fishery Species on Salt Marshes: The Role of Food and Refuge. Estuaries. 7:460-468.

Chabreck, R.H., and G. Linscombe. 1968, 1978, and 1988. Vegetative Type Map of the Louisiana Coastal Marshes. Louisiana Department of Wildlife and Fisheries, New Orleans, Louisiana.

Chambers, C. 2001. Personal Communication with Mary Courville, Nesbit Ecological Services, L.L.C.

Chambers, C. 2001. Personal Communication with Tom Hess Nesbit Ecological Services, L.L.C.

Coleman, J.M. 1988. Dynamic Changes and Processes in the Mississippi River Delta. Geological Society of America Bulletin. 100:999-1015.

Condrey, R., P. Kemp, J. Visser, J. Gosselink, D. Lindstedt, E. Melancon, G. Peterson, and B. Thompson. 1995. Status, Trends, and Probable Causes of Change in Living Resources in the Barataria and Terrebonne Estuarine Systems. BTNEP Publ. No. 21, Barataria-Terrebonne National Estuary Program, Thibodaux, Louisiana, 434 pp.

Deegan, L.A., B.J. Peterson, and R. Potier. 1990. Stable Isotopes and Cellulase Activity as Evidence for Detritus as a Food Source for Juvenile Gulf Menhaden. Estuaries. 13:14-19.

Dundee, H.A., and D.A. Rossman. 1989. The Amphibians and Reptiles of Louisiana. Louisiana State University Press. Baton Rouge and London. 300 pp.

Fisk, H.N. 1944. Geological Investigations of the Alluvial Valley of the Lower Mississippi River. USACE Report, Mississippi River Commission, 78p.

Frazier, J.G. 1980. Marine turtles and problems in coastal management, pp. 2395-2411. In B.L. Edge (ed.). Coastal Zone 80: Proceedings of the Second Symposium on Coastal and Ocean Management. American Society of Engineers, New York.

Gagliano, S.M., and J.S. Van Beek. 1970. Geologic and Geomorphic Aspects of Deltaic Processes: Mississippi Delta System. Center for Wetland Resources, Louisiana State University. Baton Rouge. Hydrologic and Geologic Studies of Coastal Louisiana No. 1.

Gosselink, J.G., C.L. Cordos and J.W. Parsons. 1979. An Ecological Characterization Study of the Chenier Plain Coastal Ecosystem of Louisiana and Texas. 3 vol. USFWS, Office of Biological Services. FWS/OBS-78/9 through 78-11.

Gould, H.R., and S. McFarlan, Jr. 1959. Geologic History of the Chenier Plain, Southwestern Louisiana. Transactions of the Gulf Coast Association of Geologists Society 9:261-270.

Gulf of Mexico Fishery Management Council. 1998. Generic Amendment for Addressing EFH Requirements in the Following Fishery Management Plans of the Gulf of Mexico Shrimp Fishery of the Gulf of Mexico, United States Waters, Red Drum Fishery of the Gulf of Mexico, Reef Fish Fishery of the Gulf of Mexico, Coastal Migratory Pelagic Resources (Mackerels) in the Gulf of Mexico and South Atlantic, Stone Crab Fishery of the Gulf of Mexico, Spiny Lobster in the Gulf of Mexico and South Atlantic, Coral and Coral Reefs of the Gulf of Mexico.

Herke, W.H. 1978. Some effects of Semi-Impoundment on Coastal Louisiana Fish and Crustacean Nursery Usage, p. 325-346. In R.H. Chabreck, ed. Proceedings of the Third Coastal Marsh and Estuary Management Symposium. Division of Continuing Education, Louisiana State University, Baton Rouge, Louisiana.

Hoese, H.D. 1976. Final Report: Study of Sport and Commercial Fishes of the Atchafalaya Bay Region. Conducted for the USFWS by the Department of Biology, University of Southwestern Louisiana, Lafayette, Louisiana. 54 pp.

Louisiana Coastal Wetlands Conservation and Restoration Task Force. 1993. Louisiana Coastal Wetlands Restoration Plan; Main Report and Environmental Impact Statement.

Louisiana Coastal Wetlands Conservation and Restoration Task Force. 1998. Seventh Priority Project List Report. 57 pp. plus plates and appendices.

Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority. 1998. Coast 2050 Report: Toward a Sustainable Coastal Louisiana. Louisiana Department of Natural Resources. Baton Rouge, Louisiana. 161 pp.

Louisiana Department of Enviornmental Quality. 1987. State of Louisiana Water Quality Management Plan Volume 4: Basin/Segment Boundaries and Inventories.

LDNR, 2001a. Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) Website: www.lacoast.gov/cwppra/reports. CWPPRA Basin Information.

LDNR, 2001b. Monitoring Plan Project No. ME-14 (XME-22) Pecan Island Terracing.

Louisiana State University Agricultural Center. 2001. Facts on Vermilion Parish. Website: www.agctr.lsu.edu.com.

Martin, R.P., and G.D. Lester. 1990. Atlas and Census of Wading Bird and Seabird Nesting Colonies in Louisiana. Louisiana Department of Wildlife and Fisheries and Louisiana Natural Heritage Program. 182 pp.

McNease, L., N. Kinler, T. Joanen, D. Richard, and D. Richard 1994. Distribution and Relative Abundance of Alligator Nests in Louisiana Coastal Marshes, p. 108-119. In Proceedings of the 12th Working Meeting of the Crocodile Specialist Group of the Species Survival Commission of IUCN – The World Conservation Union Convened at Pattaya, Thailand, 2-6 May 1994. IUCN – The World Conservation Union, Rue Mauverney 28, CH-1196. Gland, Switzerland.

Mid-Continent Oil and Gas Association. 1999. Louisiana Oil and Gas Facts. Website: www.lmoga.com.

Palmisano, A.W. 1973. Habitat Preference of Waterfowl and Fur Animals in the Northern Gulf Coast Marshes, p. 163-190. In R.H. Chabreck, ed. Proceedings of the Coastal Marsh and Estuary Management Symposium. Louisiana State University Division of Continuing Education. Baton Rouge, Louisiana.

Penland, S., R. McBride, J.R. Suter, R. Boyd, and S.J. Williams. 1991. Holocene Development of Shelf-Phase Mississippi River Delta Plains. In Coastal Depositional Systems in the Gulf of Mexico: Quaternary Framework and Environmental Issues, 182-185. Gulf Coast Section, Society of Economic Paleontologists and Mineralogist Foundation, Twelfth Annual research Conference, Austin, Texas.

Rader, D.N. 1984. Salt-marsh benthic invertebrates: small-scale patterns of distribution and abundance. Estuaries. 7:413-420.

Rogers, B.D., R.F. Shaw, W.H. Herke, and R.H. Blanchet. 1993. Recruitment of Postlarval and Juvenile Brown Shrimp (*Penaeus aztecus Ives*) from Offshore to Estuarine Waters of the Northwestern Gulf of Mexico. Estuarine, Coastal and Shelf Science. 36:377-394.

Rozas, L.P. 1993. Nekton use of salt marsh of the southeast region of the United States. Coastal Zone '93. Proceedings of the 8th Symposium Coastal Ocean Management. American Society of Civil Engineers. New York.

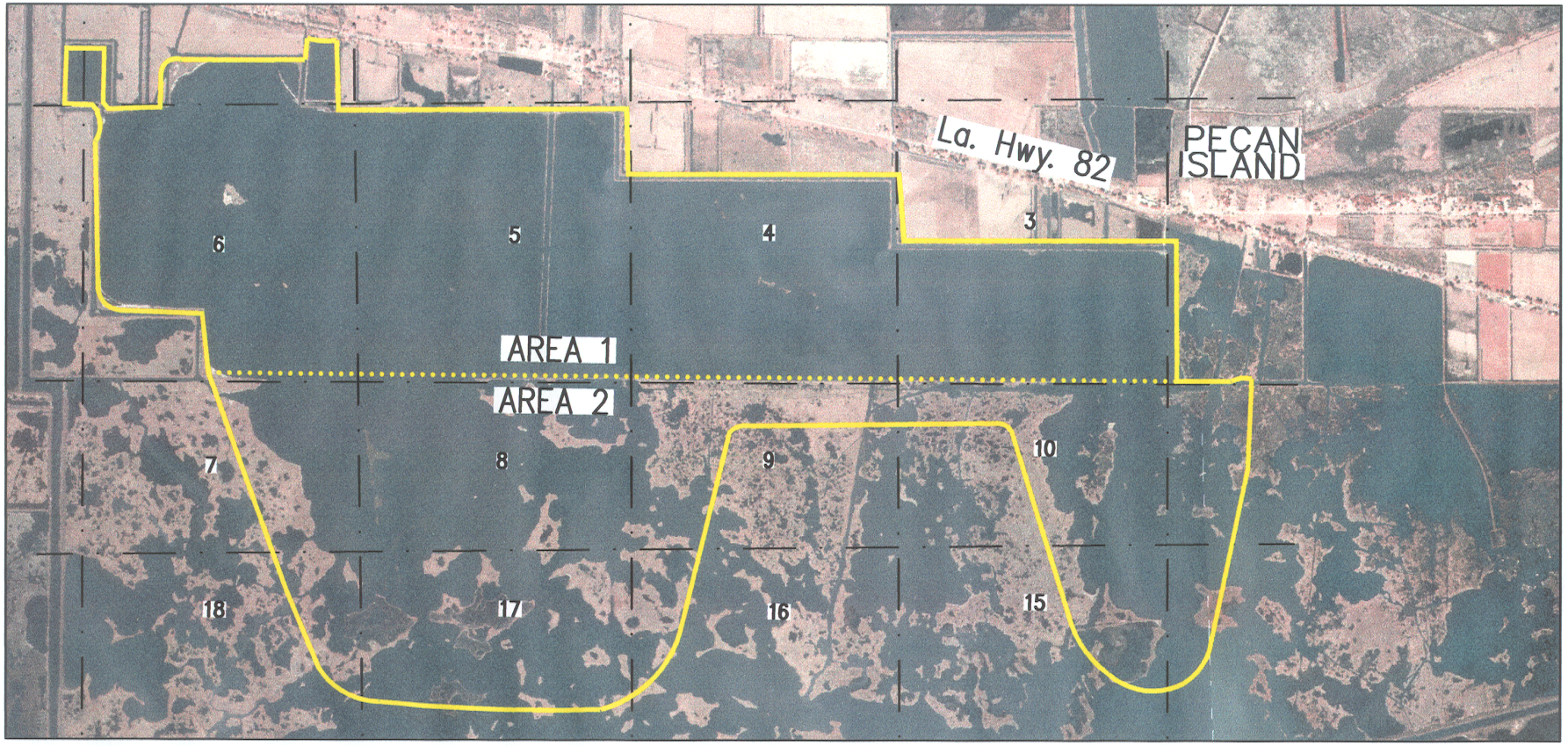
Rozas, L.P., and C.T. Hackney. 1984. Use of oligohaline marshes by fishes and macrofaunal crustaceans in North Carolina. Estuaries. 7:213-224.
United States Fish and Wildlife Service. 1999. Endangered Species List

USDA. 1995. Preauthorization Planning Report Sabine-Black Bayou Watershed Cameron and Calcasieu Parishes, Louisiana. Natural Resources Conservation Service, Alexandria, Louisiana. 16 pp.

USDA. 1996. Soil Survey of Vermilion Parish, Louisiana. Natural Resources Conservation Service in Cooperation with Louisiana Agricultural Experiment Station and Louisiana Soil and Water Conservation Committee. 183 pp. plus maps.

USDA Soil Conservation Service. 1994. Calcasieu-Sabine Cooperative River Basin Study Report. USDA in Cooperation with Gulf Coast Soil and Water Conservation District, USFWS, Louisiana Department of Natural Resources, Louisiana Department of Wildlife and Fisheries, and Louisiana Department of Agriculture and Forestry. 151 pp. plus maps and appendices.

USFWS. 1999. Threatened and Endangered Species List.
Website: http://endangered.fws.gov/wildlife.html/#species.




GRAPHIC SCALE
2000 0 1000 2000
( IN FEET )
1 inch = 2000 ft.


# PECAN ISLAND TERRACE CREATION PROJECT

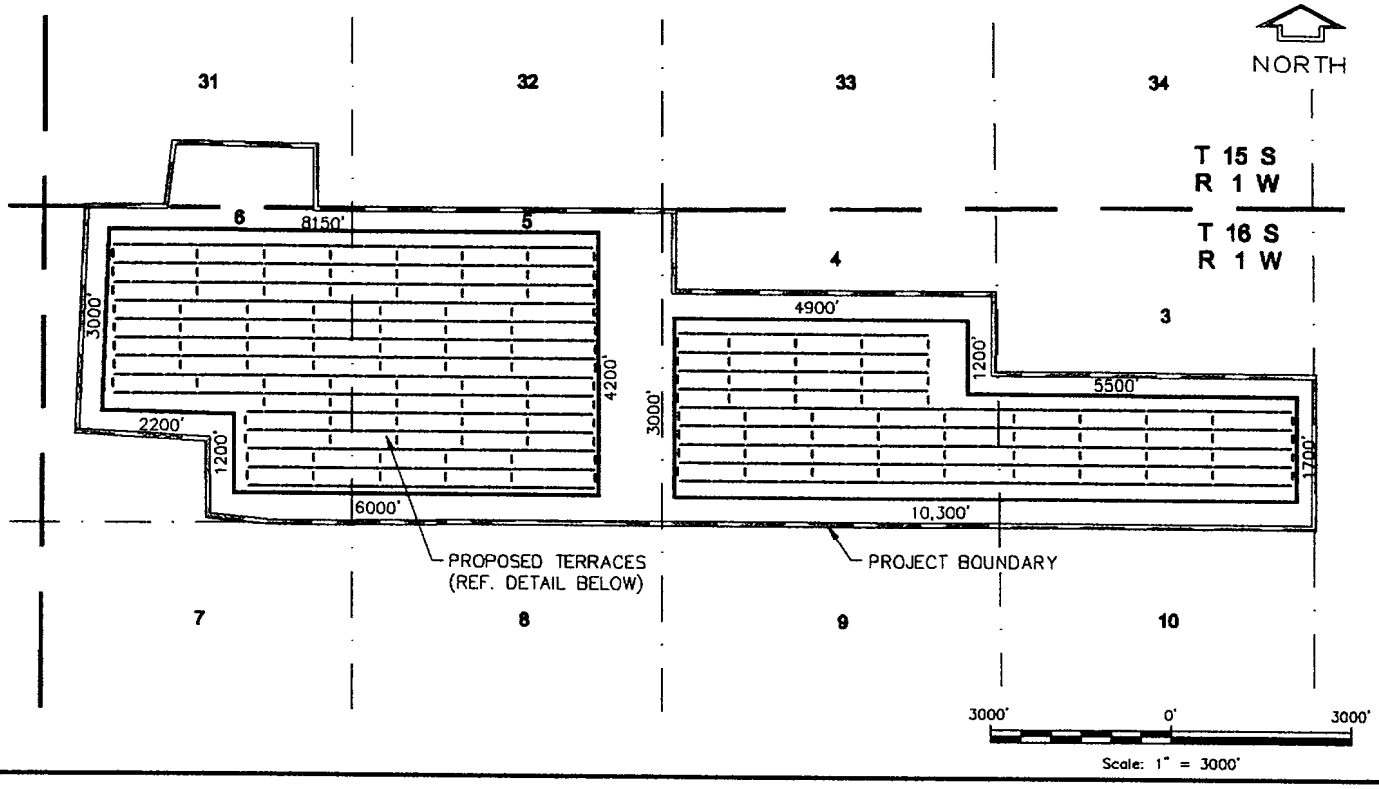
VERMILION PARISH, LOUISIANA
for
National Marine Fisheries Service
N.O.A.A.
U.S. Department of Commerce

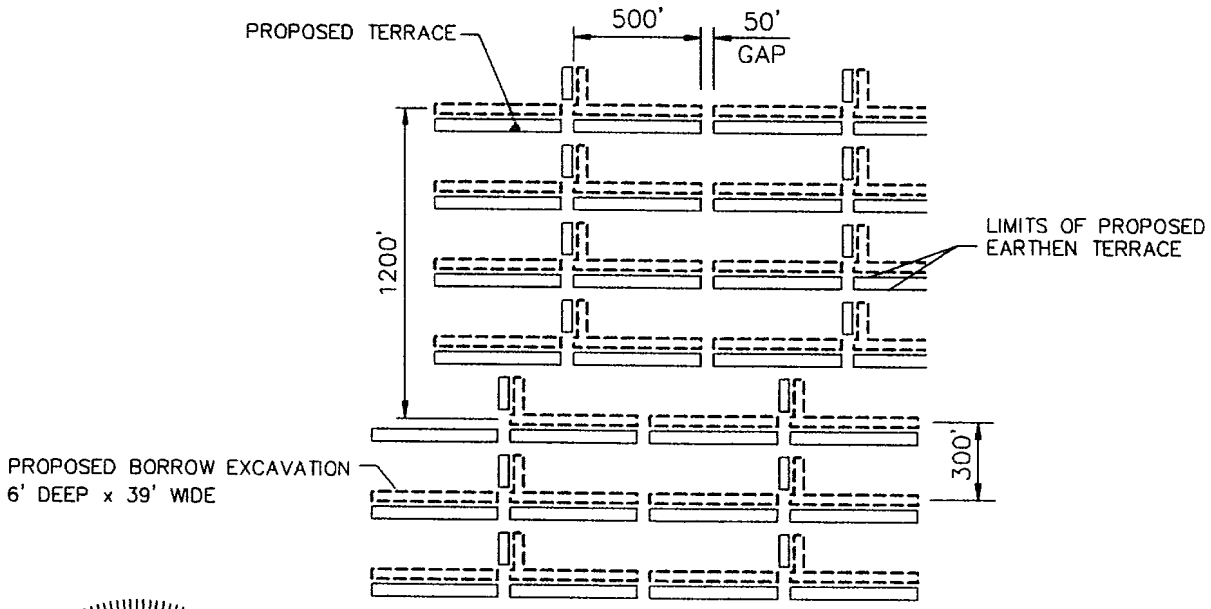
NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

FIGURE 1

GOTECH, INC.
CONSULTING ENGINEERS 8383 BLUEBONNET BLVD. BATON ROUGE, LA. 70810

| | | | | | |
|---|---|---|---|---|---|
| Date: | AUGUST, 2001 | Job No.: | 275 | File: | PECANPLAN.dwg |
| Approved By: | BKD | Checked By: | BKD | Drawn By: | DAB |




DETAIL
NOT TO SCALE

NOTE:

THIS PLAT IS TO BE USED EXCLUSIVELY FOR THE ACQUISITION OF REGULATORY PERMITS.

STATE OF LOUISIANA
KARL J. AUCOIN
REG. No. 22005
REGISTERED
PROFESSIONAL ENGINEER
CIVIL ENGINEERING

PREPARED BY:

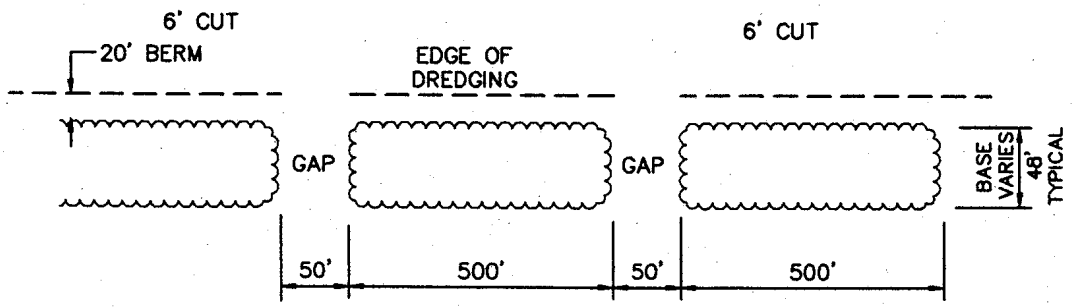
AUCOIN & ASSOCIATES, INC.
CONSULTING ENGINEERS
EUNICE, LOUISIANA

A & A FILE: 99-33

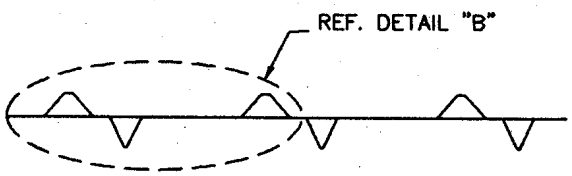
DNR NO. 2511-01-01

# PECAN ISLAND TERRACE CREATION PROJECT (ME-14) VERMILION PARISH, LOUISIANA

| | | |
|---|---|---|
| PROJECT NO.: 99-33 | SCALE: AS SHOWN | DATE: 06/01 |
| DRAFTSPERSON: KOV | CHECKED: KJA | |
| DATE: 06/01 | REVISED: | SHEET 2 OF 3 |



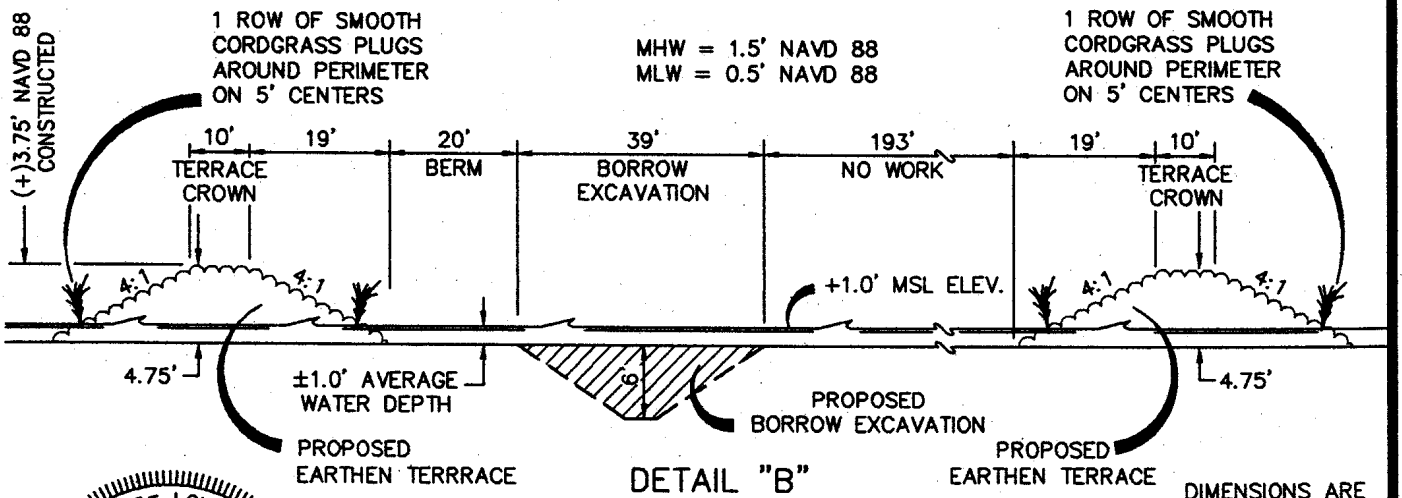

SPOIL DETAIL
NOT TO SCALE




TYPICAL SECTION
NOT TO SCALE

PROPOSED EXCAVATION

APPROX. 187,700 L.F. OF DREDGING
APPROX. 876,000 CU. YDS. OF DREDGING
APPROX. 168 ACRES OF DREDGING
APPROX. 171,700 L.F. OF TERRACES
APPROX. 189 ACRES OF TERRACES




DETAIL "B"
NOT TO SCALE

DIMENSIONS ARE APPROXIMATE

STATE OF LOUISIANA
KARL J. AUCOIN
REG. No. 22005
REGISTERED
PROFESSIONAL ENGINEER
CIVIL ENGINEERING

PREPARED BY:
AUCOIN & ASSOCIATES, INC.
CONSULTING ENGINEERS
EUNICE, LOUISIANA

DNR NO. 2511-01-01

# PECAN ISLAND TERRACE CREATION PROJECT (ME-14) VERMILION PARISH, LOUISIANA

| | | |
|---|---|---|
| PROJECT NO.: 99-33 | SCALE: AS SHOWN | DATE: 07/01 |
| DRAFTSPERSON: KOV | CHECKED: KJA | |
| DATE: 07/01 | REVISED: | SHEET 3 OF 3 |

File Name: H:\Const\99-33\PERMIT-3.dwg

A & A FILE: 99-33

# Appendix A

*Agency Coordination Letters*

# United States Department of the Interior

FISH AND WILDLIFE SERVICE
646 Cajundome Blvd.
Suite 400
Lafayette, Louisiana 70506


December 20, 2001

Mr. John Foret
National Marine Fisheries Service
Southeast Fisheries Center
Lafayette Office
U. L. L. Post Office Box 42451
Lafayette, LA 70504

Dear Mr. Foret:

The U.S. Fish and Wildlife Service (Service) has reviewed the draft Environmental Assessment (EA) for the Pecan Island Terrace Creation Project (ME-14), located in Vermilion Parish, Louisiana. The preferred alternative plan consists of linear terraces running in an east/west direction with north/south terraces staggered every 1,000 ft. The Service submits the following comments in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) and the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

**General Comments**

The brackish marshes surrounding the project area provide important habitat for several Federal trust species including wading birds, shorebirds, and migratory waterfowl. The Service agrees that the creation of terraces should reduce water turbidity and increase the growth of submerged aquatic vegetation, and reduce shoreline erosion affecting the marshes in and around the project area. The resulting decrease in the rate at which those emergent wetlands are converting to shallow, open water would increase the area's habitat value for a number of wetland-dependent species. The EA provides an adequate description of fish and wildlife resources in the project area and project impacts on those resources. Specific comments are provided in the following section.

**Specific Comments**

Page 10, Section 3.3, Paragraph 1, Sentence 3 - It is unclear how the addition of north/south terraces would offer protection from north/south winds. The EA should explain this projected result in more detail.

Page 18, Section 4.2.5, Threatened and Endangered Species, Paragraph 1 - We recommend that the following paragraphs be substituted for this paragraph; they list the threatened and endangered species that may occur in the project area, and concisely describe their habitat preferences,

threats, and seasonal presence in the project area.

Federally listed threatened (T) and endangered (E) species occurring in the project area include the bald eagle (T), brown pelican (E), piping plover (T), and American alligator (threatened due to similarity of appearance). Several species of threatened/endangered sea turtles are known to forage in the coastal waters of the project area. Those species are the loggerhead sea turtle (T), Kemp's ridley sea turtle (E), green sea turtle (T), leatherback sea turtle (E), and hawksbill sea turtle (E).

Threatened bald eagles (*Haliaeetus leucocephalus*) nest in Louisiana from October through mid-May. Eagles typically nest in baldcypress trees near fresh to intermediate marshes or open water in the southeastern parishes; no nests are known to occur within the project area. This area, however, may be utilized by bald eagles for feeding or foraging. Major threats to this species include habitat alteration, human disturbance, and environmental contaminants (i.e., organochlorine pesticides and lead).

Endangered brown pelicans (*Pelecanus occidentalis*) may also occur within the project area. No known brown pelican nesting colony locations occur within the project area, however, this species may feed in the shallow estuarine waters of the project area. Major threats to this species include chemical pollutants, colony site erosion, disease, and human disturbance.

The threatened piping plover (*Charadrius melodus*) winters in coastal Louisiana, and may occasionally occur within the project area. Piping plovers may be present in Louisiana for up to 8 months, arriving from the breeding grounds as early as late July and remaining until late March. Piping plovers feed extensively on intertidal beaches, mudflats, sandflats, algal flats, and wash-over passes with no or very sparse emergent vegetation and require unvegetated or sparsely vegetated areas for roosting. Roosting areas may have debris, detritus, or micro-topographic relief offering refuge to plovers from high winds and cold weather. In most areas, wintering piping plovers are dependant on a mosaic of sites distributed throughout the landscape, as the suitability of a particular site for foraging or roosting is dependent on local weather and tidal conditions. Plovers may move among sites as environmental conditions change. Critical habitat, which has been designated for the piping plover, identifies specific areas that are essential to the conservation of the species. The primary constituent elements for piping plover wintering habitat are those habitat components that support foraging, roosting, and sheltering and the physical features necessary for maintaining the natural processes that support these habitat components. Those elements are found in geologically dynamic coastal areas that support intertidal beaches and flats (between annual low tide and annual high tide) and associated dune systems and flats above annual high tide. Important components (or primary constituent elements) of intertidal flats include sand and/or mud flats with no or very sparse emergent vegetation. Adjacent unvegetated or sparsely vegetated sand, mud, or algal flats above high tide are also important, especially for roosting plovers. Major threats to this species include the loss and degradation of habitat due to development, disturbance by humans and pets, and predation.

The American alligator, common in marshes within the project area, is classified as

"threatened due to similarity of appearance." They are biologically neither endangered nor threatened, and regulated harvest is permitted under State law.

Page 23, Section 5.2.5, Threatened and Endangered Species, Paragraph 1 - We recommend that the following two paragraphs be substituted for the first sentence of this paragraph; the two paragraphs address the temporary impacts to three Federally listed bird species that may utilize the project area, and conclude that the proposed work would not adversely affect the listed species or their critical habitat.

> The threatened piping plover (*Charadrius melodus*) winters in coastal Louisiana, and may occasionally occur within the project area. The proposed construction activities, however, are located within open water habitats outside of areas used by the plovers, or those designated as critical habitat. Therefore, the proposed terraces would not impact those constituent elements essential for the conservation of the species.
>
> Depending on the time of year when construction activities take place, piping plovers, bald eagles, and brown pelicans may be temporarily displaced but should easily relocate because of the large amount of suitable habitat in the vicinity of the project area. Accordingly, we have determined that the proposed work is not likely to adversely affect those threatened or endangered species or their critical habitat.

The Service fully supports implementation of the proposed measures for the Pecan Island Terrace Creation Project. Thank you for the opportunity to provide comments on the EA. If you have any questions regarding our comments, please contact Robert Dubois of this office at 337/291-3127.

Sincerely,

Russell C. Watson
Acting Field Supervisor

cc. NMFS, Baton Rouge, LA
EPA, Baton Rouge, LA
U.S. Army Corps of Engineers, New Orleans, LA
LA Dept of Wildlife and Fisheries, Baton Rouge, LA
LA Dept of Natural Resources (CRD), Baton Rouge, LA

**UNITED STATES DEPARTMENT OF COMMERCE**
**National Oceanic and Atmospheric Administration**
NATIONAL MARINE FISHERIES SERVICE
Southeast Fisheries Center
Lafayette Office
P.O. Box 42451

Lafayette, LA 70504

11/15/01

Date: 11-29-01

No known archaeological sites or historic properties will be affected by this undertaking. This effect determination could change should new information come to our attention.

Laurel Wyckoff
State Historic Preservation Officer

Geri Hobdy
Office Of Cultural Development
P.O. Box 44247
Baton Rouge,LA 70804-4247

Dear Ms. Hobdy,

Please find enclosed an environmental assessment concerning the Pecan Island Terrace Creation Project (ME-14), funded under the Coastal Wetlands Planning, Protection and Restoration Act.

The project is anticipated to create marsh through the construction of terraces in the open water project area. Please review this document with regard to any possible impacts to cultural resources in the region and return your comments to my office no later than December 20, 2001.

Sincerely,

Joy Hunter
Biologist

Enclosure

NRCS Natural Resources Conservation Service
United States Department of Agriculture

Natural Resources Conservation Service

3737 Government Street
Alexandria, Louisiana
71302

December 19, 2001

Joy Hunter
Biologist
National Marine Fisheries Service
Southeast Fisheries Center
Lafayette Office
P.O. Box 42451
Lafayette, Louisiana 70504

Dear Ms. Hunter,

My staff and I have reviewed the environmental assessment for the Pecan Island Terrace Creation Project (ME-14). We feel that the document is accurate in its assessment of potential impacts to wetlands within the project area. We do not have any comments to offer. Thank you for the opportunity to review on this document.

Sincerely,

Bruce Lehto
Assistant State Conservationist/Water Resources/Rural Development

cc: Britt Paul, Water Resources Planning Staff Leader, Alexandria, LA

**UNITED STATES DEPARTMENT OF COMMERCE**
**National Oceanic and Atmospheric Administration**
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
9721 Executive Center Drive North
St. Petersburg, Florida 33702

December 19, 2001 F/SER44/RS:jk
225/389-0508

Ms. Joy Hunter
Southeast Fisheries Center
National Marine Fisheries Service
Post Office Box 42451
Lafayette, Louisiana 70504

Dear Ms. Hunter:

The National Marine Fisheries Service (NMFS) has received the draft Environmental Assessment (EA) for the **Pecan Island Terrace Creation (ME-14)** project transmitted by your November 15, 2001, letter. The proposed project was authorized under the auspices of the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) and is jointly sponsored by the NMFS and the Louisiana Department of Natural Resources. As described in the draft EA, the proposed project is located in Vermilion Parish and would involve the construction of approximately 172,000 feet of terraces and the installation of vegetative plantings.

The NMFS has reviewed the EA and finds it extremely well written and with few areas needing revision. As such, we offer only the following specific comments:

**1.0 INTRODUCTION**
**1.5 Authorization**
Page 6, paragraph 4. We believe this paragraph incorrectly references "Regional Strategy 6" as the Coast 2050 strategy most applicable to the proposed project. The use of dredged materials for marsh creation is generally used to describe projects designed to create large areas of contiguous marsh. The most appropriate strategy for the proposed project would be the coastwide strategy for terracing.

**2.0 PURPOSE AND NEED FOR ACTION**
**2.2 Need for Action**
Page 7, paragraph 2. We find the fourth sentence of this paragraph confusing and recommend the document be revised to clarify the processes associated with the development of connections between open water areas.

**4.0 AFFECTED ENVIRONMENT**
Page 12, paragraphs 1 and 2 and page 13, paragraph 4. This section of the EA provides numerous details regarding the existing conditions in the project area, including data regarding the amount of existing wetlands in the project area. In various places, the EA states that the project area is 95% open water (page 12, paragraph 1), 10% marsh (page 12, paragraph 2), and less than 1% marsh (page

13, paragraph 4). We recommend that the EA be revised to clearly characterize the marsh-to-open water ratios in the project area and subareas.

**6.0 CONCLUSIONS**

Page 24, paragraph 5. This section of the EA indicates that hydraulic modeling was used in the evaluation of the proposed project, yet the document does not describe that modeling or its results. We recommend the document be revised to include a description of the modeling or that the reference to modeling be deleted.

As indicated in the EA, the project site is located in an area identified as Essential Fish Habitat (EFH) by the Gulf of Mexico Fishery Management Council (GMFMC) for white and brown shrimp, and red drum. Your November 15, 2001, letter initiates EFH consultation, as required by the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) and its implementing regulations. After review of the EA and your office's EFH assessment, we concur with your determination that the proposed project will substantially enhance EFH through the creation of over 343,000 feet of marsh edge in an area which is currently open water. Provided that the project is implemented as described in the EA, this concludes your EFH consultation responsibilities under the Magnuson-Stevens Act.

In addition to the above comments, we are returning a copy of the draft EA with penciled in notations on minor typographical or grammatical errors. If you wish to discuss these comments further, please do not hesitate to contact Rachel Sweeney at 225/389-0508.

Sincerely,

Rachel M. Sweeney for

Andreas Mager, Jr.
Assistant Regional Administrator
Habitat Conservation Division

Enclosure

**c:**
**FWS, Lafayette - Clark**
**EPA, Dallas - McQuiddy**
**NRCS, Alexandria - Paul**
**COE, Planning - Podany**
**LA DNR, Consistency - Ducote**
**F/SER4**
**Files**

**UNITED STATES DEPARTMENT OF COMMERCE**
**National Oceanic and Atmospheric Administration**
NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office
9721 Executive Center Drive North
St. Petersburg, FL 33702
(727) 570-5312, FAX 570-5517
http://caldera.sero.nmfs.gov

DEC 20 2001

MEMORANDUM FOR: F/SEC5 - Joy Hunter F/SER3:TLG

FROM: F/SE - Joseph E. Powers, Ph.D.

SUBJECT: Environmental Assessment for Pecan Island Terrace Creation Project (ME-14)

We have received and reviewed your letter and environmental assessment dated November 15, 2001, referencing above-mentioned subject. You have requested section 7 consultation with the National Marine Fisheries Service (NMFS) pursuant to the Endangered Species Act (ESA) of 1973. We have assigned log number I/SER/2001/01166 to this consultation. Please refer to this number in future correspondence on this project.

The Louisiana Department of Wildlife and Fisheries Natural Heritage Division indicated that there are no resident threatened or endangered species in the action area. Although the five species of sea turtles protected by the ESA (loggerhead, green, Kemp's ridley, hawksbill, and leatherback) can be found near the action area, NMFS does not believe that the action area is preferred habitat for sea turtles and if they are found in the action area, their occurrence is rare. Construction methods used for the proposed action (the deposition of spoil material by hydraulic dredge) have not been shown to adversely affect sea turtles, which are highly mobile and may be frightened away from the project area by construction activity; therefore, the chance of the proposed action affecting sea turtles is discountable.

This concludes consultation responsibilities under section 7 of the ESA for the proposed activity. Be advised that 50 CFR 402.16 requires that consultation be reinitiated if any take occurs or new information reveals effects of the action, or the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat in a manner or to an extent not previously considered, or if a new species is listed or critical habitat designated that may be affected by the identified action.

In addition to the ESA section 7 consultation requirement, Federal action agencies must consult with NMFS' Habitat Conservation Division (HCD) on the potential effects of the proposed action on NMFS fishery resources, pursuant to the Magnuson-Stevens Fishery Conservation and Management Act section 305 essential fish habitat consultation requirement (50 CFR 600.9 subpart k). We are forwarding a copy of this memorandum to HCD. They may be reached at (225) 389-0508.

If you have any questions, please contact Eric Hawk, fishery biologist, at the number listed above, or by e-mail at eric.hawk@noaa.gov. Please note that future ESA correspondence should be addressed to Ms. Georgia Cranmore, Assistant Regional Administrator, Protected Resources Division.

cc: F/PR3
F/SER44 - Richard Hartman
File: 1514-22.e (NOAA Consults)
O:\SECTION7\INFORMAL\PECANISL.WPD

**U.S. Department of Commerce**
**National Oceanic and Atmospheric Administration**
**National Marine Fisheries Service**
**Southeast Regional Office**

# FAX

**To:** Joy Hunter

**Fax #:** 337-482-6630

**Subject:**

**Date:** 12/20/01

**Pages:** 3, including this cover sheet

COMMENTS:

From the desk of...
**Maria D. Holliday**
Secretary to the
Assistant Regional Administrator
for Protected Resources Division
9721 Executive Center Drive North
St Petersburg, FL 33702

Fax: (727) 570-5517
Telephone: (727) 570-5312

o:\forms\fax0402.cov

State of Louisiana

M.J. "MIKE" FOSTER, JR.
GOVERNOR

JACK C. CALDWELL
SECRETARY

DEPARTMENT OF NATURAL RESOURCES

December 11, 2001

Joy Hunter, Biologist
National Marine Fisheries Service
Southeast Fisheries Center
Lafayette Office
P.O. Box 42451
Lafayette, LA 70504

RE: Pecan Island Terrace Creation Environmental Assessment

Dear Ms. Hunter,

Thank you for the opportunity to review and comment on the Environmental Assessment of the Pecan Island Terrace Creation (ME-14) project. Please find attached our comments and edits. If you have any questions, please do not hesitate to contact me at (225) 342-2179.

Yours very truly,

William K. Rhinehart
Natural Resources Program Manager

WKR:kb

Enclosure

Coastal Restoration Division
P.O. Box 44027 . Capitol Station . Baton Rouge, Louisiana 70804-4027 . Telephone (225)342-7308 . Fax (225)342-9417

# Environmental Assessment of Pecan Island Terrace Creation
# CWPPRA Project (ME-14)
## Draft 12/05/2001
## Restoration Technology Section Comments

### General Comments

The Environmental Assessment is thorough, with useful background information on the Mermentau Basin and the project area. The impacts of increased salinity on marsh vegetation growth should however be omitted from sections 2.2 (Need for Action), 2.2.2 (Protection of Wildlife Habitat), and 2.2.3 (Protection of Fisheries Habitat). The Environmental Assessment contends that the project area has experienced an increase in salinity, but there is no reference or supporting documentation. Moreover, the project feature (vegetated terraces) is not intended to address salinity changes.

### Specific Comments

**Comment #01:** Replace "part of" with "authorized and funded through...". "This project is authorized and funded through the Coastal...". (Pg 1, para 2, sentence 1).

**Comment #02:** Replace "Rockefeller State Wildlife Refuge" with "Rockefeller Wildlife Refuge" throughout text. (Page 1, para 3, sentence 4)

**Comment #03:** Replace "...into lower marshes of the Chenier Subbasin were virtually eliminated with the construction of LA HWY 82." with "...into lower marshes of the Chenier Subbasin were greatly reduced with the construction of LA HWY 82 and the Catfish Point control structures." (Page 3, para 2, sentence 6)

**Comment #04:** Replace "...loss rates are approximately..." with "...loss rates for the Mermentau Basin are approximately...". (Pg 3, last para, sentence 2).

**Comment #05:** "...that Area 1 had converted to 98 percent open water with only six percent of the land..." Six should be 1.6 according to LDNR 2001b. (Pg 4, para 3, sentence 6).

**Comment #06:** Replace "endeavors" with "operations". (Pg 4, para 4, sentence 2).

**Comment #07:** "...flyway of which the ..." Replace "of" with "in". (Pg 5, para 1, sentence 2).

**Comment #08:** Replace "continued agriculture" with "current agricultural operations". (Pg 5, para 3, sentence 1).

**Comment #09:** "Land use north the project area" should be "Land use north of the project area." (Pg 5, para 3, sentence 2).

**Comment #10:** "Rockefeller State Wildlife Refuge". See Comment #02. (Pg 5, para 3, sentence 3).

**Comment #11:** Replace "...by soils that have mucky surface..." with "...by soils that have a mucky surface...". (Pg 5, para 4, sentence 3).

**Comment #12:** Replace "...failed forced pump agricultural.." with "...failed forced drainage agricultural..." (Pg 5, para 5, sentence 1).

**Comment #13:** Replace "...of open water and accelerated shoreline..." with "...of open water and increased shoreline..." (Pg 5, para 5, sentence 3).

**Comment #14:** Delete "(fetch)". (Pg 5, para 5, sentence 3).

**Comment #15:** Replace "..activity includes a substantive north-south..." with "...activity includes a substantial north-south...." (Pg 5, para 5, last sentence).

**Comment #16:** Remain consistent with listing project numbers. List as (state, federal). Example (ME-04, XME-21). Also Introduction south of Highway 82 is ME-16 not ME-6. (Pg 5, para 6).

**Comment #17:** Project number is (ME-01). (Pg 6, para 2, sentence 1).

**Comment #18:** Change sentence to reflect that terrace construction results in the direct creation of marsh habitat and reduces turbidity and wave action thereby encouraging emergent and submerged vegetation growth. (Pg 7, para 1).

**Comment #19:** Replace "...saltwater penetration.." with "...saltwater intrusion..". (Pg 7, para 2, last sentence).

**Comment #20:** Delete "Intertidal". (Pg 7, para 3, sentence 1).

**Comment #21:** "Current land loss rates in coastal Louisiana". See comment #04. (Pg 7, para 3, sentence 3).

**Comment #22:** Replace " Nearing adulthood, the organisms..." with "As they become adults, the...." (Pg 8, para 3, sentence 4).

**Comment #23:** Delete "and statewide" (Pg 8, para 3, last sentence).

**Comment #24:** Delete "as there are no parish roads" (Pg 8, para 4, sentence 1).

**Comment #25:** Replace "...LA HWY 82 is forced pump agriculture.." with "...LA HWY 82 is forced drainage agriculture..." (Pg 8, para 4, sentence 2).

**Comment #26:** Add the construction of the GIWW, the Inland Waterway, five USACE water control structures and irrigation canals. (Page 11, para, sentence 1)

**Comment #27:** "ME-6". See Comment #16. (Pg 12, para 2, sentence 3).

**Comment #28:** "Rockefeller State Wildlife Refuge". See comment #02. (Pg 12, para 2, sentence 3).

**Comment #29:** Replace "...of failures of forced pump agricultural.." with "...of failures of forced drainage agricultural..." (Pg 12, para 3, sentence 3).

**Comment #30:** Replace "..fish species that do not swim in flooded..." with "..fish species that do not inhabit flooded..." (Pg 17, para 1, sentence 1).

**Comment #31:** LDNRa 2001 and LDNRb 2001 should be referenced as LDNR 2001a and LDNR 2001b. Make appropriate changes in reference section and throughout text. (Pg 28).

**Comment #32:** LDNRa 2001. Website address is: www.lacoast.gov. (Pg 28).

**UNITED STATES DEPARTMENT OF COMMERCE**
**National Oceanic and Atmospheric Administration**
NATIONAL MARINE FISHERIES SERVICE
1315 East-West Highway
Silver Spring, MD 20910

THE DIRECTOR

FEB 11 2002

MEMORANDUM FOR: Scott B. Gudes
Deputy Under Secretary for Oceans and Atmosphere

FROM: for William T. Hogarth, Ph.D.
Assistant Administrator for Fisheries

SUBJECT: Finding of No Significant Impact on the Environmental Assessment for the Pecan Island Terrace Creation Project, Vermilion Parish, Louisiana

Based on the subject environmental assessment, I have determined that no significant environmental impacts will result from the proposed action. I request your concurrence in this determination by signing below. Please return this memorandum for our files.

1. I concur. _____.
Date

2. I do not concur. _____.
Date

Attachments

**UNITED STATES DEPARTMENT OF COMMERCE**
**Office of the Under Secretary for**
**Oceans and Atmosphere**
Washington, D.C. 20230

FEB 20 2002

TO ALL INTERESTED GOVERNMENT AGENCIES AND PUBLIC GROUPS:

Under the National Environmental Policy Act, an environmental assessment (EA) has been performed on the following action:

TITLE: Pecan Island Terrace Creation Project

LOCATION: Vermilion Parish, Louisiana

SUMMARY: The Pecan Island Terrace Creation Project (CWPPRA Project No. ME-14), is funded under the Coastal Wetlands Planning, Protection, and Restoration Act or CWPPRA (16 U.S.C. §§ 777c, 3951-3956). The U.S. Department of Commerce, represented by the National Marine Fisheries Service, is one of five Federal agencies (i.e. The CWPPRA Task Force) responsible for coordinating projects to restore and prevent the loss of coastal wetlands in Louisiana. The other members of the Task Force are: the U.S. Army Corps of Engineers; the U.S. Environmental Protection Agency; the U.S. Department of Interior, represented by the U.S. Fish and Wildlife Service; the U.S. Department of Agriculture, represented by the Natural Resource Conservation Service; and the State of Louisiana. Thus far, over 140 projects have been authorized by the Task Force. As stipulated by CWPPRA, all projects are funded through a grant or cost-share agreement between the sponsoring Federal agency and the Louisiana Department of Natural Resources. A programmatic environmental impact statement addressing the Louisiana Coastal Wetlands Restoration Plan was prepared by the CWPPRA Task Force and a Record of Decision to proceed with the plan was signed March 18, 1994.

The major goal of CWPPRA is to restore and prevent the loss of coastal wetlands in Louisiana. The purpose of the Pecan Island Terrace Creation Project is to convert areas of open water within the 3,550 acre project area back into vegetated marsh through the construction of earthen terraces and vegetative plantings. Terrace construction in the proposed action would initially create 187 acres of wetland with 343,400 linear feet of marsh edge. It is anticipated that approximately 300 acres of brackish vegetated wetlands will ultimately be created and restored by the project.

In addition, the preferred alternative would reduce marsh erosion by minimizing wave fetch, reduce turbidity, and encourage emergent and submerged vegetative growth thereby promoting organic accumulation and stabilize the elevation of the marsh surface. In summary, implementation of the project would provide additional habitat for fish and wildlife, and enhance habitat quality in the project area. Without construction, the wetlands in the Pecan Island area will continue to deteriorate thus decreasing essential fish habitat and other habitat for wildlife resources.

RESPONSIBLE OFFICIAL:

William T. Hogarth, Ph.D.
Assistant Administrator for Fisheries
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, Maryland 20910
301/713-2239

The environmental review process led us to conclude that this action will not have a significant effect on the human environment. Therefore, an environmental impact statement will not be prepared. A copy of the finding of no significant impact including the supporting EA is enclosed for your information. Please submit any written comments to the responsible official named above within 30 calendar days, and to Ramona Schreiber, Office of Policy and Strategic Planning, Room 6117, U.S. Department of Commerce, Herbert Hoover Building, 14th and Constitution Avenue, N.W., Washington, D.C. 20230

Sincerely,

Scott B. Gudes
Deputy Under Secretary for
Oceans and Atmosphere

Enclosure

**UNITED STATES DEPARTMENT OF COMMERCE**
**National Oceanic and Atmospheric Administration**
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, MD 20910

FEB 11 2002

MEMORANDUM FOR: F - William T. Hogarth, Ph.D.

FROM: F/HC - Rolland A. Schmitten R.A. Schmitten

SUBJECT: Recommendation of the Issuance of a Finding of No Significant Impact (FONSI) for the Pecan Island Terrace Creation Project, Vermilion Parish, Louisiana

Under the Coastal Wetlands Planning, Protection, and Restoration Act or CWPPRA (16 U.S.C. §§ 777c, 3951-3956), the U.S. Department of Commerce is part of a multi-agency Task Force responsible for implementing a comprehensive approach to restore and prevent the loss of coastal wetlands in Louisiana. The National Marine Fisheries Service is the Federal sponsor for implementing the CWPPRA-funded Pecan Island Terrace Creation Project (CWPPRA Project No. ME-14) located in Vermilion Parish, Louisiana. The Restoration Center (RC) has coordinated the development of engineering plans and anticipates construction to be initiated in 2001.

The RC recently reviewed the final environmental assessment (EA) for the project. The EA now must be formally submitted to the Ecology and Conservation Office for its concurrence.

On the basis of the information presented in the EA for the Pecan Island Terrace Creation Project, the RC believes that no significant impact to the environment will result from the proposed restoration actions.

NOAA Administrative Order 216-6 recommends that the Assistant Administrator make the determination for a FONSI and request the concurrence and clearance of the Office of Ecology and Conservation. I request your concurrence with our recommendation, and the formal submittal of the EA and accompanying documents to the NOAA Office of Policy and Strategic Planning.

Attachments

I agree TCL I disagree _____ Let's discuss _____