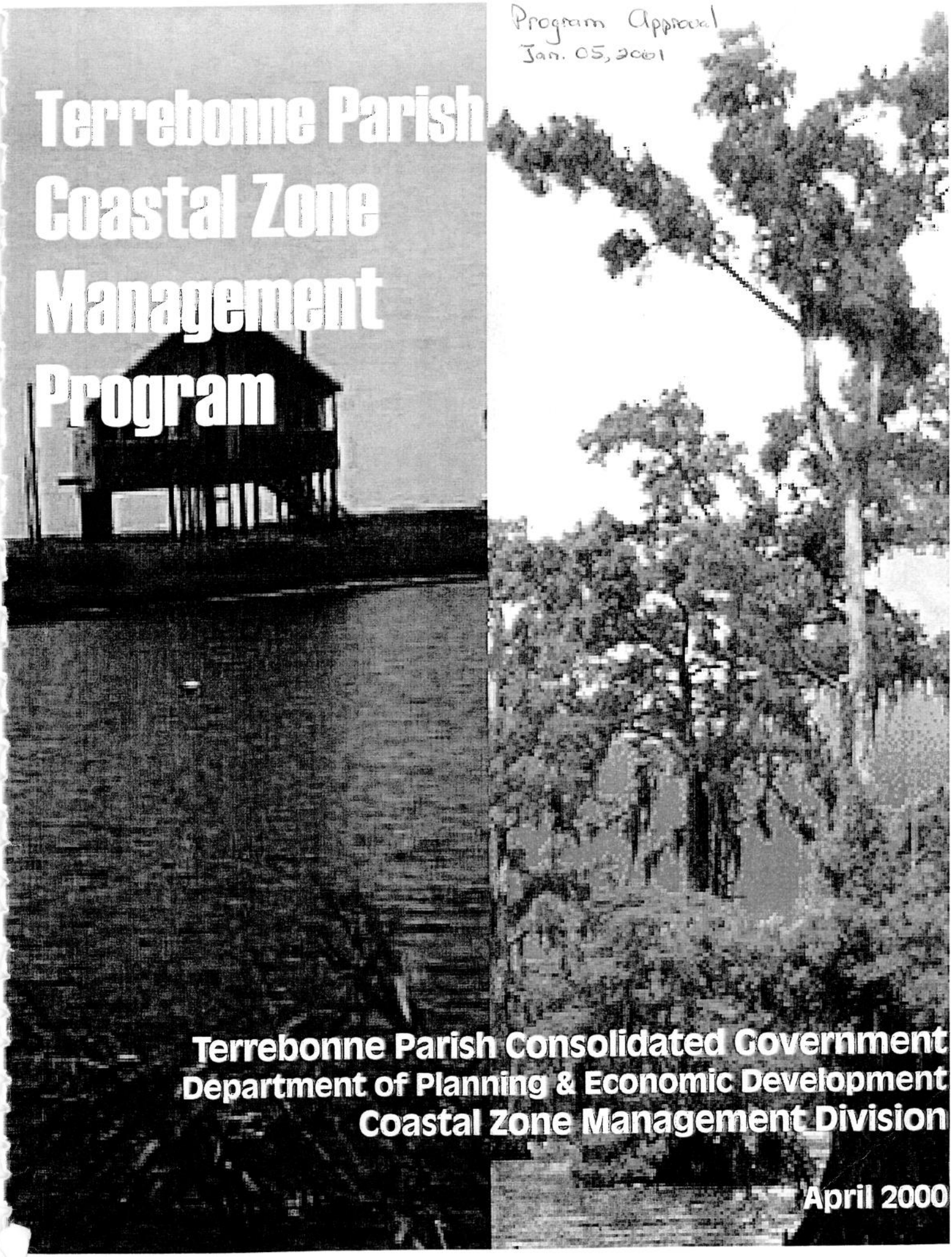
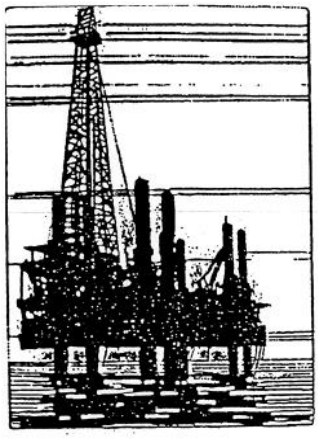
Program Approval
Jan. 05, 2001

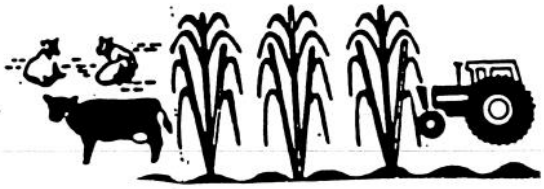
Terrebonne Parish Coastal Zone Management Program



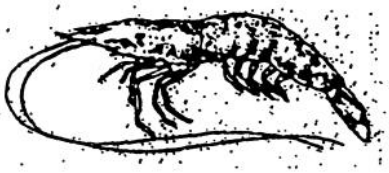
Terrebonne Parish Consolidated Government
Department of Planning & Economic Development
Coastal Zone Management Division

April 2000





USES OF THE TERREBONNE PARISH COASTAL ZONE



COMMERCIAL FISHERIES
CRABS, OYSTERS, FINFISH
SHRIMP,
INLAND / OFFSHORE
ECOTOURISM
MIGRATORY BIRDS
PETROLEUM INDUSTRY,
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RECREATIONAL FISHING & HUNTING
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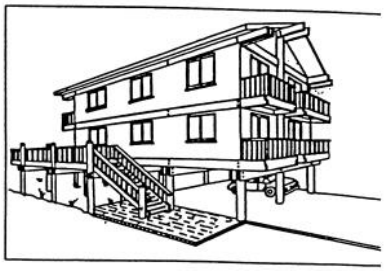

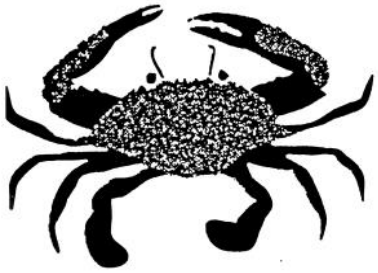

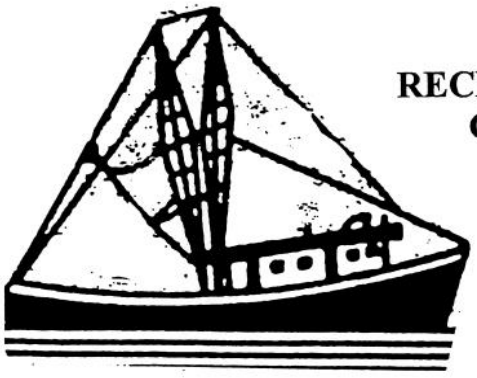

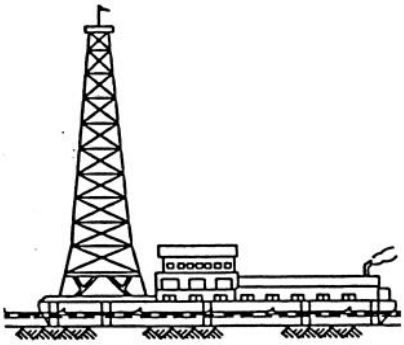

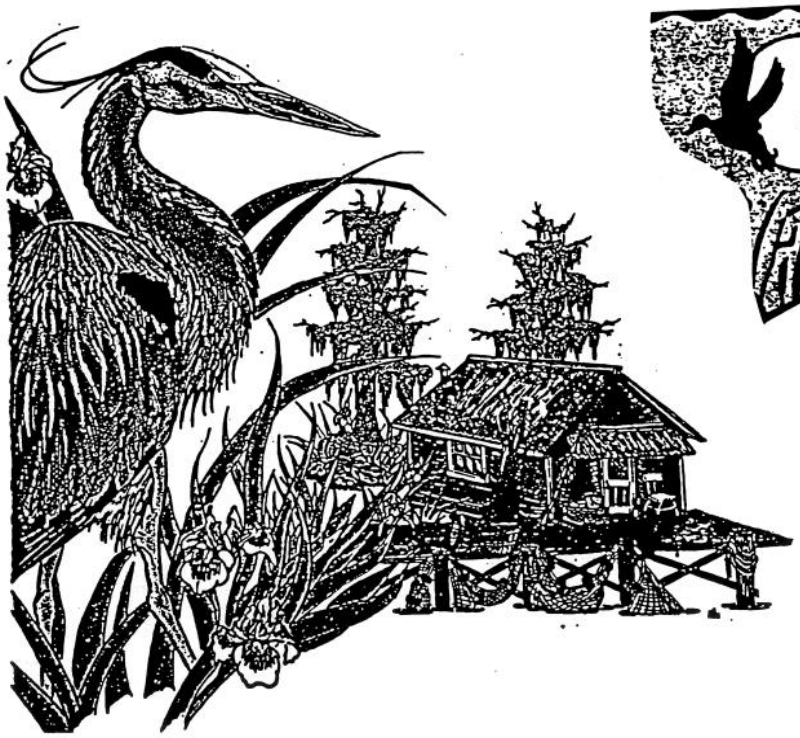

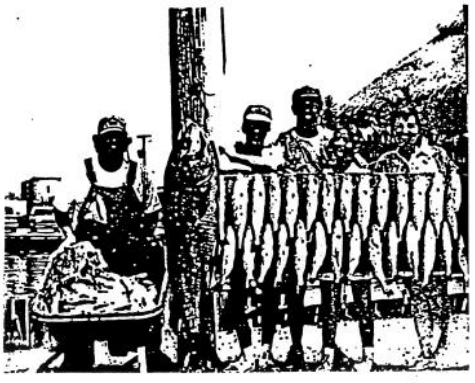

TERREBONNE PARISH

LOCAL COASTAL ZONE MANAGEMENT PROGRAM

DRAFT

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Houma, LA

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April 2000

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ACKNOWLEDGEMENTS

Many thanks are extended to:

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Barry Bonvillain, Terrebonne Parish President 1/1992-1/2000

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I. SUMMARY OF THE LOCAL PROGRAM

Terrebonne Parish, located in south central Louisiana, is the largest parish in land and water area and the second largest in land area in the state. Tragically, coastal erosion cost the parish over 120, 000 acres of land since the mid-1950s. The parish is situated on the abandoned Teche and Lafourche deltaic lobes. Major physiographic features include narrow natural levee ridges along old channels that radiate from Houma; interdistributary basins of fresh swamps nearest the levees through fresh marshes to salt marshes along the Gulf of Mexico; shallow, protected bays and estuaries; and barrier islands on the shoreline. The parish is a region of low elevations and low relief with much of the land very close to or at sea level. In fact, hurricane storm surge frequently inundates vast areas as far inland as Houma.

Development concentrates on the natural levees which are the highest and best-drained lands and the most suitable for construction of urban and industrial centers. Agriculture exists on the wider ridges in the northern and eastern parts of the parish. Besides agriculture, the levees serve as the most suitable sites for homes and commercial activities. For this reason virtually all of the hardwood forests originally covering the area have been cleared for more intensive land uses such as subdivisions, malls, and commercial or industrial operations. The southern three-quarters of the parish are primarily tidal wetlands, open water, and distributary ridges. These ridges provide areas for habitation and historically were used for homesteads, communities, agriculture, and "jump-off" locations to access the vast wetland areas. The barrier island complex consists of a long, broken chain of narrow, low-lying islands separated from the interior by bays and shallow lakes. These islands are undergoing rapid erosion and shoreward retreat. Life expectancy of the islands has decreased dramatically during the past 40 years. Within the next 50 years the major barrier islands protecting interior Terrebonne Parish will disappear, exposing the wetlands to the direct impact of higher energy Gulf conditions.

The economy of Terrebonne Parish centers on the oil and gas industry (production, service, and support) and renewable resources (fish, shellfish, and agriculture). With more than 42,000 individuals working, the parish enjoys a low unemployment rate, although this rate fluctuates in response to the world price of oil and gas. Growth around Houma, the retail and trade center, and to the north show a prosperous parish. Unfortunately, some of this expansion comes from families moving from the southern extremes of the parish where subsidence, wetland loss, and storm surge are major controls of life. Today, tourism is

gaining in importance as individuals offer swamp tours, provide boats and guides for charter fishing both inland and offshore, open their homes to bed and breakfast visitors, and give tours of historic homes. The population is projected to continue to grow, but not as rapidly as other parts of the state. Given the natural and human-related problems facing the parish and a population base that is not inclined to move, the citizens of Terrebonne Parish decided to take a more formal approach to managing the valuable natural resources in its coastal zone.

In 1997, the Terrebonne Parish Council created a Coastal Advisory Committee to investigate the advantages of creating a Terrebonne Parish Local Coastal Zone Management Program. The Coastal Advisory Committee first met on December 8, 1997, in Houma. They organized into a formal working body with elected officers, scheduled meetings, and a vision of preparing a Local Coastal Zone Management Program for Terrebonne Parish that would be a recognized and sanctioned body. The Coastal Advisory Committee contracted with Dr. Denise Reed and the South Central Planning and Development Commission, Thibodaux, LA, to provide technical information and ideas for a local coastal program. Once the information and data were collected, the Coastal Advisory Committee divided the parish into 13 environmental management units. These Environmental Management Units (EMU) correspond to those depicted in *Coast 2050: Toward a Sustainable Coastal Louisiana*, the state's strategic plan for sustaining the coastal ecosystem. An Environmental Management Unit (EMU) is an area that is distinguished by certain common physical and cultural characteristics, such as geology, vegetation, drainage patterns, and uses. Each of these EMU was considered individually when setting goals, objectives, and policies for planning, management, and regulatory functions. These differences imply that the consequences of permitted coastal activities will have unique effects in individual EMU because the environments are different, especially in the ability to withstand stress. What is perfectly acceptable and harmless in one EMU may be devastating if attempted elsewhere. Therefore, these differences must be recognized when evaluating or proposing activities that will occur in Terrebonne Parish.

The Terrebonne Parish Local Coastal Zone Management Program has been developed:

1. to protect, preserve, enhance, and, where possible, restore the renewable resources of the coastal wetlands for the enjoyment and long-term benefit of parish residents;

2. to promote those water dependent uses in riparian areas and wetlands that preserve and protect the physical, biological, scenic, and historical resources of the parish;

3. to develop a local coastal program that has clear and concise administrative procedures and does not conflict with federal and state legislation and regulations;

4. to protect public health, safety, and welfare;

5. to implement those goals, objectives, and policies that make possible a viable local coastal management program; and

6. to educate the general public on the value of renewable coastal resources and ways to avoid conflicts between user groups.

The Terrebonne Parish Local Coastal Zone Program includes a description of the physical, biological setting, and the Coastal Zone boundary of the parish (Chapter II); a general description of the environmental management units (EMU) of the parish (Chapter III); an overview of the social and economic characteristics of the parish (Chapter IV); a concise discussion of the existing and future resource-use conflicts facing the parish (Chapter V); a process for dealing with areas that deserve special recognition and management (Chapter VI); a declaration of parishwide and environmental management unit goals, objectives, and policies (Chapter VII); a declaration that the parish program is consistent with the state coastal zone management program (Chapter VIII); and the administrative process of the parish's local coastal zone management program (Chapter IX).

A local administrator who works in the Parish's Department of Planning and Economic Development manages the Terrebonne Parish Local Program. The local administrator works closely with the Local Advisory Committee, 15 residents of the parish appointed by the Terrebonne Parish Council and the Parish President. Final decisions on all issues related to the local program remains with the Parish Council. (See IX. A. The Local Coastal Zone Management Program Process). The focus of the parish program is on issues of local concern. However, the Local Advisory Committee will coordinate with the Coastal

Management Division, Louisiana Department of Natural Resources, on issues of state concern. Uses of local concern shall include, but not be limited to:

a. Privately funded projects, which are not uses of state concern.
b. Publicly funded projects, which are not uses of state concern.
c. Maintenance of uses of local concern.
d. Jetties or breakwaters.
e. Dredge or fill projects not intersecting more than one water body.
f. Bulkheads.
g. Piers.
h. Camps and cattlewalks.
i. Maintenance dredging.
j. Private water control structures of less than $15,000 in cost.
k. Uses on cheniers, salt domes, or similar landforms.

Some activities are exempted from the coastal permit process. (See IX. B. Activities Requiring a Coastal Use Permit). An applicant should confer with the local administrator to determine if and which kind of permit is needed.

For issues of local concern, permit applicants will use the standard state permit form to avoid duplication or confusion when undertaking an activity in the coastal zone. The completed form and supporting documentation will be sent to the local administrator who initiates the review process and coordinates activities with the Local Advisory Committee, the Louisiana Department of Natural Resources, the US Army Corps of Engineers, and further intergovernmental coordination. At the time of submitting an application, the individual should ask the local administrator for an estimate of the processing schedule, the fee, and other requirements. A public hearing may be held. If the applicant disagrees with a decision, she/he may appeal the decision. A Terrebonne Parish permit for a use of local concern is valid for two (2) years from the date of issue. A permit may be extended for an additional year. However, after three years a new permit must be obtained (see Chapter IX. G.).

Variances are possible and after-the-fact permits are possible under limited circumstances (See Chapter IX).

By accepting the permit, the applicant agrees to act in accordance with the plans and specifications as contained in the approved application; to comply with permit conditions imposed to ensure compliance with the Coastal Zone Management Program; and to adjust, alter, or remove any structure or physical alteration if the local administrator and a majority of the Committee determine such action is necessary to achieve compliance with the Coastal Zone Management Program.

The permit recipient agrees to hold the state of Louisiana, Terrebonne Parish, and all officers and employees thereof harmless from any injury to persons or property resulting from actions undertaken to carry out the permit; to certify that the permitted activity has been completed in accordance with the permit or, upon request of the local administrator, provide certification from a licensed professional to that effect; and to allow reasonable inspection of the project for purposes of monitoring and compliance inspections.

The Terrebonne Parish Local Coastal Zone Management Administrator may suspend a local use permit upon finding that:

1. the permittee has failed or refused to comply with the terms and conditions of the permit or any modification thereof; or

2. the permittee has submitted false or incomplete information in his application or otherwise; or

3. the permittee has failed or refused to comply with any lawful order or request of the local administrator.

If, after compliance with the suspension procedures above, the local administrator determines that revocation or modification of the permit is warranted, written notice of the revocation or modification shall be given to the permittee.

Terrebonne Parish shall seek appropriate civil and criminal relief if the permittee fails to comply with the provisions of the local coastal program, fails to comply with a cease and desist order, fails to comply with the suspension or revocation of a permit, or attempts to bribe or intimidate a public officials or civil servants. Such actions shall constitute a violation of the local coastal program. Each violation of an individually named condition of a permit or order and each day a violation continues constitute a separate violation. The Terrebonne Parish Local Administrator, subject to Coastal Advisory Committee approval,

may assess a fine of $500(L.R.S. 33:1243), plus attorney collection fees, per offense per day. Such fines will be in addition to fines imposed by other government agencies. The Terrebonne Parish Consolidated of Governments, Coastal Zone Management Office, will utilize monetary proceeds from such violations. All fines collected will go to the Terrebonne Parish Coastal Monitoring Enforcement Fund (XI. Terrebonne Parish Local Coastal Program Ordinance). The Terrebonne Parish Council passed a resolution concerning the parish's local coastal zone management program (XI. Appendix).

The Terrebonne Parish Coastal Zone Management Advisory Committee met 25 times in open forum between December 1997 and April 2000. Most meetings were held at 6:30 p.m. in the Terrebonne Parish Council Meeting Room, Terrebonne Parish Courthouse, Houma, LA. Agendas and minutes of the regular meetings are available from the Terrebonne Parish Council.

II. INTRODUCTION

A. Terrebonne Parish

Terrebonne Parish is located in south central Louisiana (Figure 1). It has the largest total area (land and water) and the second largest land area of all the parishes in the state. In 1960, field surveys identified the Parish's land area to be approximately 890,240 acres (US Soil Conservation Service 1960). A recent analysis of aerial photographs found the land area to be approximately 815,475 acres in 1955 and 698,766 acres in 1978 (Coastal Environments, Inc. 1980).

The Parish is bordered on the south by the Gulf of Mexico, on the north and east by Lafourche Parish, and on the west by Assumption and St. Mary Parishes. From the Isles Dernieres in the south to the Lafourche Parish line north of Schriever is a distance of 51 miles. From Bayou Pointe-aux-Chenes on the eastern boundary to Point-au-Fer on the west is 58 miles. Terrebonne Parish is located between the parallels of 29° 3' and 29° 47' north latitude and the meridians 90° 23' and 91° 22' west longitude.

Situated on the abandoned deltaic lobes of the Teche (3500 to 2800 Before Present) and Lafourche (1000 to 30 Before Present) Mississippi River diversions (Kolb and van Lopik 1958; Morgan 1974), the major physiographic features of the Parish consist of:

the narrow ridges which radiate from the northern portion of the parish;
the interdistributary basins of extensive swamps and marshes between the ridges;
the shallow, protected coastal bays, and,
the barrier islands at the southern perimeter (Figure 2).

Much of the land is at sea level, and areas near the coast are inundated by normal tides of 1.5 feet. The coastal marshes and swamps range from sea level to about three feet in elevation. During tropical storms, large areas of the parish may be flooded to depths of several feet. High water levels frequently inundate some low-lying areas. The maximum elevations within the parish range between 10 and 15 feet and are situated along the crests of the ridges in the northern portion of the parish.

LOUISIANA

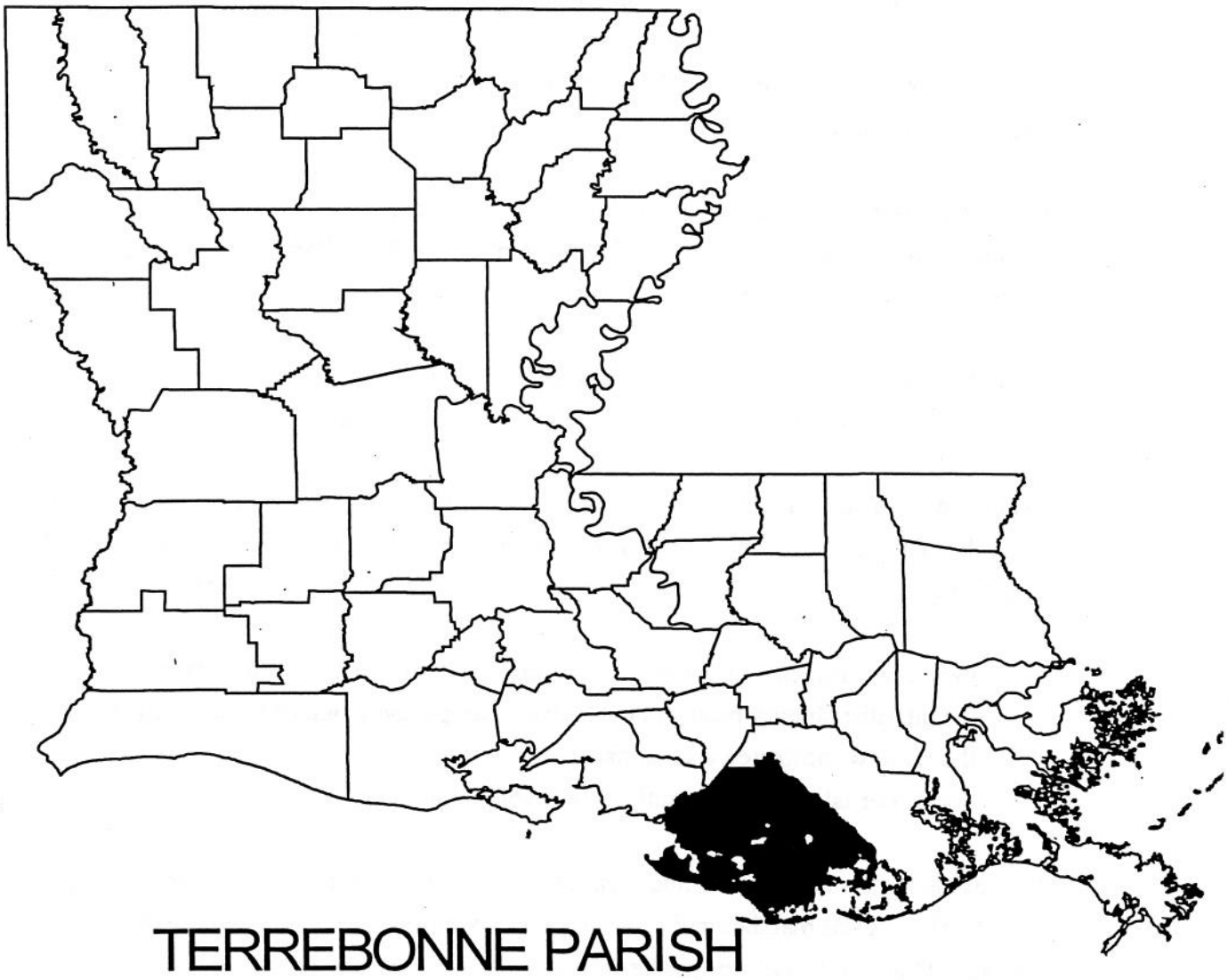


FIGURE # 1

Terrebonne Parish is generally poorly drained. The channels of many of the streams, bayous and canals are at or near sea level and gradients are too low to remove water effectively. The lower Atchafalaya River, the largest input of freshwater, flows along the western border of the parish. It brings sediment and freshwater from the Mississippi and Red River into the western part of the Parish and farther east via the Gulf Intracoastal Waterway (GIWW).

Fertile alluvial soils occur along the natural ridges in the northern part of the parish. Because these ridges decrease in height and width as they extend to the southeast, the areas suitable for agriculture are restricted to the broad ridges in the northern and eastern part of the parish. The soil along the crests of the ridges consist of the Mhoon-Commerce Association (Baldwin, Commerce, Cypremont, Mhoon series) and those along the backslope of the levees consist of the Sharkey-Swamp Association (Sharkey clay, Swamp clay, Mucky clays, Swampy clays, Swamp peat) (US Soil Conservation Service 1960).

Besides agriculture, the ridges also serve as the only suitable sites for urban development. For this reason virtually all of the levee hardwood forests originally covering the area have been cleared for development and farming. Most of the bottomland hardwood forests along the levee backslopes have also been removed, and the area has been drained where necessary to permit habitation and agriculture.

The southern three-quarters of the parish are primarily tidal wetlands and open water. The wetlands consist of four major zones: cypress tupelo swamps in the upper reaches; fresh and intermediate marshes in lower areas remote from the Gulf of Mexico; brackish marshes, and salt marshes. Natural bayous and ponds, trenasses, and numerous larger dredged channels influence the hydrology of these wetlands.

The barrier island complex, which defines the southern limit of the Parish (excluding the nearshore out to the three-mile State-Federal demarcation), consists of a long, broken chain of narrow, low-lying islands separated from the remainder of the Parish by a series of wide, shallow lakes and bays. Timbalier Island and the Isles Dernieres chain, consisting primarily of well-sorted sand and shell material, have resulted from the reworking of the abandoned deltaic sediments during the last 3,000 to 4,000 years. The landward side of the islands includes some extensive areas of salt marsh and the only major areas of black mangroves (*Avicennia germinas)* in Terrebonne Parish.

This section includes a detailed examination of the Parish's environmental setting covering geologic aspects such as framework, subsidence, and barrier islands as well as contemporary environmental factors such as climate, hydrology, soils, and wetland habitats.

B. The Environmental Setting

Geology

During the past 10,000 years, the Mississippi River built the present southeastern coast of Louisiana as a series of overlapping delta lobes. This process is described in many excellent reports (Fisk 1944; Fisk and McFarlan 1955; Frazier 1967; Coleman 1988; Wells and Coleman 1987, Penland et al. 1994) and will be summarized only briefly here. When the Mississippi River changes its course and its flow spreads out onto a new location on the shallow shelf of the Gulf of Mexico, the reduced velocity causes the river to deposit its sediment load and a delta lobe is built. Plants, forming freshwater intertidal marshes rapidly invade this land because the river is the dominant hydrologic force. As the new delta lobe grows, the pathways of water flow become longer and less efficient. Finally, the river breaks through its banks upstream and gradually diverts to another location to build a new delta lobe, a process known as avulsion. During the transition from one delta lobe to another, river flow may occur down two distributaries simultaneously. Eventually, the abandoned lobe, deprived of its fluvial freshwater and sediment supply, becomes increasingly saline, starting from the seaward edges and moving inland. Marshes change from freshwater species to salt-tolerant species. As the transition occurs, the marsh sediments compact and sink under their own weight, gradually losing surface elevation. Marsh vegetation becomes more and more deeply flooded and gradually loses vigor and dies. The marsh soils slowly break up, until finally the emergent delta lobe is replaced by the open waters of the estuary, and the stage is set for a repetition of the cycle. Terrebonne Parish was formed as this cycle was repeated over the last 6,000 years.

Since the last period of glaciation ended about 10,000 years ago, there have been a number of episodes of delta lobe growth (Kolb and van Lopik 1958). The Parish is underlain by parts of a number of delta lobes: the Maringouin and Teche delta complexes, 4,000-7,000 years old; the Lafourche delta complex, beginning about 3,500 years ago and extending to the present; and the modern, active Atchafalaya delta.

Geologically Terrebonne Parish is extremely diverse. Those areas strongly influenced by river flow from the Atchafalaya function much differently than the older delta lobes to the east.

Terrebonne Parish is fronted by a series of barrier islands, which have also resulted from the delta lobe cycle. Penland et al. (1988) described the formation of an erosional headland with flanking barrier islands from an active distributary mouth after the distributary is abandoned. Sand deposits contained within the abandoned headland are reworked and dispersed longshore into flanking barriers enclosing interdistributary bays. Timbalier Island represents a flanking barrier formed in this fashion by sediment reworked from the vicinity of Belle Pass in Lafourche Parish. Submergence of the delta plain separates the headland from the shoreline, creating a lagoon behind a barrier island arc. The Isles Dernieres represent this stage in the barrier island cycle. Ultimately, this model predicts that the landward-migrating island arc is unable to keep pace with relative sea-level rise and the retreating mainland shoreline, resulting in submergence of the island and the formation of an inner shelf shoal (Penland et al. 1988).

Subsidence

One of the most important implications of the delta lobe cycle for coastal management in Terrebonne Parish is the associated subsidence. Subsidence in the Mississippi River delta plain is complex and variable. Consolidation, settlement, geochemical processes, and faulting all affect and contribute to subsidence (Penland et al. 1994).

The age and thickness of Holocene deposits have been identified on a regional basis as important factors contributing to subsidence. The thickest Holocene sediments are within the incised valley of the Mississippi River. Fisk (1944) identified the western boundary of the incised valley as trending from the Atchafalya Basin near Morgan City through Point au Fer and offshore west of Ship Shoal. The eastern boundary of the incised valley trends offshore east of New Orleans. Consequently, Terrebonne Parish lies directly over the incised valley and almost 330 feet of Holocene fluvial and deltaic sediments (Penland et al. 1994). Because the fill within the incised valley is composed of individual backstepping delta plains, the age of the deposits varies with location. Penland et al. (1994) present radiocarbon data from the Terrebonne basin showing younger delta surfaces subside faster than older deltaic surfaces. The trend of diminishing subsidence with age reflects progressive consolidation of the delta deposits.

Keucher et al. (1993) used geotechnical testing of the facies that compose a typical delta cycle to show that peats, organic rich sediments, prodelta clays, and bay clays have the greatest consolidation potential. The distribution of such facies crosses the eastern part of the Parish. Wherever the subsidence prone facies are thickest, subsidence due to consolidation is greatest. In addition, position relative to active faults can locally control the rate of subsidence. Keucher (1994) documented that the down throw sides of growth faults in the Mississippi River delta plain have a greater potential for subsidence. Higher rates of subsidence on the down throw side provide opportunity for preferential accumulation of subsidence prone facies. A strong correlation is noted by Penland et al. (1994) between the downthrown side of the Lake Hatch fault and land loss in the Lake DeCade area of Terrebonne Parish.

The highest rates of subsidence noted by Penland et al. (1994) using geodetic, tide gauge and radiocarbon data sets were 0.20 - 0.39 inches/year directly over the incised valley of the Mississippi River in eastern Terrebonne Parish.

Barrier Islands

The coastal barrier islands of the Barataria-Terrebonne system represent the seaward limit of the estuarine system with exchange between the estuaries proper and the Gulf of Mexico taking place through tidal inlets between the islands. The Isles Dernieres and Timbalier Island (part of the Timbalier island chain) are all presently undergoing rapid erosion. Long-term (greater than 100 years) rates of gulfside erosion range between 75.1 feet/year and 4.8 and 15.8 feet/year for the islands of the Isles Dernieres chain (McBride et al. 1992). This dramatic shoreline retreat appears to be mainly the result of erosion during the passage of cold fronts (Dingler and Reiss 1991).

Almost all Louisiana barrier islands are experiencing landward migration to a greater or lesser extent. While migration is common in barrier island systems, it has been accompanied in Terrebonne Parish by losses in land area as a consequence more of island narrowing rather than of a reduction in length (Williams et al. 1992). The narrow islands are vulnerable, as they are more easily overwashed and do not develop significant dune systems (Ritchie and Penland 1988). Shallow passes open up with storms that do not reseal following return of fair weather conditions (Levin 1993), although during fair weather conditions there may be some short-term recovery from shoreline erosion. The

Isles Dernieres and Timbalier chains decreased in area by 70 % from 12,864 acres in the 1890s to 3,834 acres in 1988 (Williams et al. 1992).

Shoreline change analysis has also revealed that the bay shorelines of many barrier islands in Terrebonne Parish are also undergoing erosion. McBride et al. (1989) showed that between 1853 and 1988 shoreline change rates along the Whiskey Island section of the Isles Dernieres bayside shoreline reached 18.4 feet/year in a seaward direction. Such rates were confirmed by field studies conducted by Reed (1989) who measured erosion of almost 13.1 feet between March 1987 and March 1988 on the bayside shoreline of the Isles Dernieres. These detailed studies of the Isles Dernieres erosion have allowed predictions to be made of how long the islands will continue as discrete sub-aerial units. Estimates shown in Table 1 were originally made based upon long-term erosion rates (1880s - 1980s) and short-term rates (1978 - 1988) (McBride et al. 1992). However, Penland et al. (1998) were able to examine the particular influence of Hurricane Andrew on short-term erosion rates for the islands and found the life expectancy of the islands has decreased dramatically. The examination of short-term loss rates is an important component of predicting barrier island disappearance and individual storm impacts may decrease island width to below a viable threshold for island recovery. These projections do not include the effect of recently constructed restoration projects on the islands and do not always incorporate the potential for short-term recovery from storm impacts that may occur as shoreface equilibrium profiles are reestablished. Although some immediate recovery may occur, Dingler and Reiss (1991) found that such recovery was rarely enough for the beach face to regain profiles and forms present before the impact of cold fronts.

Climate

The coastal regions within the northern Gulf of Mexico are part of the humid, subtropic climate region that includes the Southeastern United States (Muller and Fielding 1988). This climate region is characterized by hot summers, relatively mild winters, and average precipitation, which exceeds average evapotranspiration (Muller and Fielding 1988). The lower atmospheric circulation determines the general climate throughout the year, which produces the local weather. Muller (1977b) used data from New Orleans to classify the weather into eight synoptic weather types.

Table 1. Predicted data of Barrier Island disappearance in feet/year for Louisiana updated for the impact of Hurricane Andrew in 1992.

BARRIER ISLAND	LONG-TERM RATE (LT)	SHORT-TERM RATE (ST)
Isles Dernieres	2015[1]/2011[2]	2004[1]/2002[2]
Timbalier Island	2046[1]/2028[2]	2000[1]/1999[2]
East Timbalier Island	NA/2002[2]	1997[1]/1996[2]
Grand Isle	>2100[1]/>2100[2]	>2100[1]/>2100[2]
Grand Terre	2033[1]/2008[2]	2008[1]/2002[2]

[1]McBride et al. 1992
[2]Penland et al. 1998

Table 2 indicates those two weather types; the Frontal Overrunning and the Frontal Gulf Return explain the majority of the precipitation, on a regional scale. If the precipitation from tropical disturbances is included, one can conclude that 80% of the precipitation is associated with "stormy" weather types. The weather types have distinctive seasonal patterns. The occurrence of the Pacific High and the Coastal Return tend to be fairly evenly distributed throughout the year. The Gulf Return and the Frontal Gulf Return have a generalized peak in the spring. The Continental High and the Frontal overrunning types tend to have peak occurrences during the fall and winter. Both the Gulf High and the Gulf Tropical Disturbance have distinct peaks occurring from early summer through the fall. The seasonal rainfall among the types is also different, and when combined with the seasonal pattern of the synoptic types produces a distinct rainfall regime. During the winter, the Frontal Gulf Return and the Frontal Overrunning account for all of the rainfall. These same two types also account for 90% of the rainfall during the spring (Muller and Willis 1983). During the summer, all of the types are capable of producing light afternoon showers, however the Continental High showers are usually insignificant and the types associated with maritime tropical air produce significant amounts of

rainfall. The Frontal Gulf Return however is the most significant rainfall producer during the summer months of June through August (Muller and Willis 1983). The fall is a transitional period during which the frontal weather types again become dominant. This is also the time during which Gulf Tropical Disturbance rainfall becomes important.

Tropical storms and hurricanes are considered to be the most significant storm events along the Gulf Coast. Hurricanes generally occur between May and November with the peak frequencies occurring in September. A hurricane affects coastal areas such as Terrebonne Parish both by the addition of fresh water through exceptionally heavy rainfall and through storm surges. These storm surges, which are associated with the long fetch of hurricane induced onshore winds, can cause massive flooding of the

Table 2. General conditions associated with each of the eight synoptic weather types. Based upon data from New Orleans. The numbers represent annual means.

Type	Occurrence	precipitation		winds > 17 knots	
	% of hours	mm	%	hours	%
Pacific High	3	1	0	117	4
Continental High	23	3	0	465	14
Frontal Overrunning	18	460	30	837	25
Coastal Return	12	84	5	48	1
Gulf Return	17	138	9	576	17
Frontal Gulf Return	13	637	41	975	29
Gulf High	11	81	5	51	2
Tropical Disturbance	3	150	10	282	8

Muller and Fielding 1988

coastal wetlands. For example, the storm surge associated with Hurricane Andrew produced a maximum increase in water level of 9.5 feet just south of Cocodrie (Halford 1995). Although hurricanes occur on a regular basis on the Gulf Coast, hurricane induced winds and surges are actually quite uncommon at any given point along the Coast (Muller and Fielding 1988).

Hydrology

Terrebonne Parish today is flanked on the west by the second largest river in the United States, the Atchafalaya River. The Atchafalaya River is not leveed below the Avoca Island Cutoff (less than 10 miles below Morgan City), so some of its water flows out through, and enriches with nutrients and sediments, the flanking marshes. During high river stages, Atchafalaya River water may also flow northward up the Avoca Island Cutoff Channel to the GIWW, and then eastward through the GIWW across the northern portion of the Parish. Under these conditions, flows through the Avoca Island Cutoff may exceed 12,000 cubic feet/second (cfs). Measurements indicate that a substantial amount of this water reaches Houma, where up to 5,000 cfs or more may flow down the Houma Navigation Channel (HNC) and up to 3,000 cfs or more may flow eastward towards Bayou Lafourche (R. Paille, pers. comm.).

Freshwater draining from the Verret Basin into GIWW through Bayou Boeuf appears to dominate flows in the GIWW during moderate to low Atchafalaya River stages. Verret discharge may range up to 7,000 cfs. However, under certain conditions, water may flow northward from the GIWW into the Verret Basin. Depending on winds and tides, freshwater draining from the Verret Basin may flow both to the east and west via the GIWW. Winds, tides, and Atchafalaya River stage determine how much of the water flows west to the Atchafalya River and how much flows east to Houma. During moderate Atchafalya River discharge, 180,000 cfs, approximately 70 to 72% of the GIWW freshwater flows entering Houma, flow southward down the HNC. This percentage may vary depending upon winds, tides, and the volume of freshwater reaching Houma. Strong winds from the south overcome this and cause flow to the north in HNC. This is unlikely to occur during periods of high Atchafalaya River flow when the volume of freshwater entering HNC is larger.

Other inputs of fresh water occur through smaller streams and a complex system of drainage canals that drain the lands north of the Parish and the fastlands along the distributary ridges. These flows are small in comparison to the Atchafalaya, but they empty directly into the wetland and open water areas of the Parish and, in combination with local rainfall, keep the upper portion of the estuary fresh. These freshwater sources are enriched in nutrients and carry high loads of pesticides, other organic chemicals, and heavy metals, the consequences of which are poorly documented.

The magnitude of freshwater flows and the maintenance of salinity gradients in the estuarine parts of the Parish are controlled by a seasonal rainfall pattern. The average annual rainfall is about 59.1 inches with about 50% evaporation each year. There is a surplus of about 29.5 inches, which infiltrates the soil or runs off the land. Rainfall is fairly evenly distributed throughout the year, but evaporation is maximum during the hot summer months. The net result is a large rain surplus during the winter and spring and very little surplus during the summer. In fact, a slight water deficit is likely even during summer rains but the pattern can vary considerably from year to year. Since this pattern of precipitation is typical for most of the Mississippi River Valley, the river typically floods during the winter and spring and has low stages during the summer, magnifying the seasonal cycle of fresh water. As a consequence of the surplus rainfall, salinities in the open waters of the Parish are almost always less than oceanic, a gradient of decreasing salinity is maintained from the coast inland and impoundments in the coastal zone typically become increasingly fresh, even in the saline marsh area. Despite the freshwater surplus there may be short periods in the summer when evaporation exceeds precipitation. During these times, the saline water in marsh sediments can be concentrated enough to burn and sometimes kill local vegetation.

Tides

Marine tides and tidal flows are strongest in the Parish where and when river influence is weak. Tides enter and drain the estuary through passes between the barrier islands and natural channels like Bayou Grand Caillou and Bayou Terrebonne. Human-made navigation channels also enhance tidal flows, both flood and ebb. These include the north-south trending Houma Navigation Canal and the Gulf Intracoastal Waterway which traverses east-west in the northern part of the Parish.

Tides along the coast are primarily diurnal and tide range is only about 1 foot, thus tidal energy is low. Nevertheless, tidal currents in the passes can be strong, and, because of the flat slope of the landmass, the tidal influence on water levels is felt as far north as Houma. Water levels, and tidal currents, in the estuary can be greatly influenced by winds. Strong winds from the south tend to "pile" up water along the coast forcing water into the marshes and bays, raising water levels on the order of 1.0-1.5 feet above normal. Conversely, winds from the north force water out of the system, depressing the water levels 1.0-1.5 feet below normal.

Soils

Terrebonne Parish soils were derived from slightly acidic to moderate alkaline alluvium parent material deposited by the Mississippi River and Red River. The alluvium was derived from widely separated and different geologic sources and transported by the rivers. The sediment came from the phosphatic soils of the Tennessee Valley, from the limestone soils and limestone of the upper Mississippi River Valley, and from the Permian "Red Beds" of Texas and Oklahoma.

Silt loam and silty clay loam soils were deposited on the natural levee ridges that parallel the streams; clay and silty clay sediments were left on the back-swamp borders of the ridges in areas of marsh and swamp. The following describe the major soil associations in Terrebonne Parish.

Mhoon-Commerce Association -- These soils are nearly level loamy soils occurring at the higher elevations of the natural levees of the Mississippi River distributaries. The poorly drained Mhoon soils have a dark, grayish-brown silt loam or silty clay loam surface and a gray silty clay loam subsoil. The somewhat poorly drained Commerce soils have a dark, grayish-brown silt loam or silty clay loam surface and a grayish-brown silty clay loam subsoil. Cypremont, Baldwin, and Sharkey soils make up most of the remaining part of the association (US Soil Conservation Service 1960).

Sharkey-Swamp Association -- These soils are level to depressed, frequently flooded, clayey soils occurring at the elevation of the natural levees and bordering the backswamp areas. The sharkey soils are poorly drained and have a very dark gray clay surface and a gray clay subsoil. The swamp soils occur at slightly lower elevations than the Sharkey soils. The swamp soils have black clay, mucky clay or muck surface layers, and dark gray subsurface layers. The subsoil is gray clay (US Soil Conservation Service 1960).

Swamp Association – These nearly continuously flooded soils formed from clayey sediments and woody plant remains. This association occupies mainly the back-swamp areas between the natural levees and the coastal marshes. Most soils in the association have mucky clay, muck, or woody peat surface layers of varying thickness. The subsoils are mostly dark gray semifluid clay (US Soil Conservation Service 1960).

Marsh Association -- These soils are nearly continuously flooded that have formed from herbaceous plant remains and clayey sediments. This association occupies the areas between the back swamps and the Gulf of Mexico. Many of the soils in the association have pea and muck surface and subsoil layers two to five feet thick underlain mostly by very dark gray and gray semifluid clay. Sand beaches and shell beaches make up the majority of the remaining part of the association (US SCS 1960).

Marshes

Marshes are the dominant wetland habitat types in Terrebonne Parish. Two primary environmental factors control species distribution throughout the marshes of Terrebonne Parish - salinity and elevation. The broad vegetation bands reflect primarily salinity differences. Elevation is an important species determinant adjacent to the larger coastal streams where slightly elevated natural levees allow less flood-tolerant species to grow. The major elevated areas in Terrebonne Parish are adjacent to the Atchafalaya River in the west and the remaining distributary ridges (e.g., along Bayou Terrebonne).

Relatively few plants dominate the coastal marshes. Species richness is extremely low in the salt marshes, increasing in an inland direction to the diverse fresh marshes and wetland forests. Major species, listed by salinity zone, are shown in Table 3. The only salt tolerant tree species on the coast is the black mangrove *(Avicennia germinans)*, which exists at the northern extreme of its range and is kept as a shrub or small tree by periodic killing frosts. It is part of the saline marsh flora.

Floating marshes occur predominantly in the freshwater zone of the coast, although some intermediate and even a few brackish marshes do float (Sasser et al. 1994). They apparently develop in quiet freshwater environments where organic matter production in the absence of mineral sediment inputs makes the marsh mat buoyant. As the underlying mineral substrate subsides, the buoyancy of the mat eventually leads to its separation from the substrate, and it subsequently floats on the water surface. Sasser et al. (1994) estimated that about 70% of the freshwater marshes in the Barataria-Terrebonne estuary are floating, a total of about 286,528 acres.

Floating marsh are frequently dominated by *Panicum hemitomon* associations and *Eleocharis*-dominated association. The former dominates widespread floating marshes characterized by a thick, organic mat held together with live intertwined roots that float

Table 3. Percent cover of the dominant plant species in major marsh zones of the Louisiana coast (Chabreck 1972).

Marsh Species	Salt	Brackish	Intermediate	Fresh
Batis maritima	4.41	0	0	0
Distichlis spicata	14.27	13.32	0.36	0.13
Juncus roemerianus	10.10	3.93	0.72	0.60
Spartina alterniflora	62.14	4.77	0.86	0
Eleocharis parvula	0	2.46	0.49	0.54
Ruppia maritima	0	3.83	0.64	0
Scirpus olneyi	0	4.97	3.26	0.45
Scirpus robustus	0.66	1.78	0.68	0
Spartina patens	5.99	55.22	34.01	3.74
Bacopa monnieri	0	0.92	4.75	1.44
Cyperus odoratus	0	0.84	2.18	1.56
Echinochloa walteri	0	0.36	2.72	0.77
Paspalum vaginatum	0	1.38	4.46	0.35
Phragmites australis	0	0.31	6.63	2.54
Alternanthera philoxeroides	0	0	2.47	5.34
***Eleocharis* sp.**	0	0.82	3.28	10.74
Hydrocotyl umbellata	0	0	0	1.93
Panicum hemitomon	0	0	0.76	25.62
Sagittaria falcata	0	0	6.47	15.15
Other species	2.43	5.09	25.06	29.10
Total	100.00	100.00	100.00	100.00
Total number of species	17	40	54	93

year-round over a layer of clear water. The latter association is also widespread, forming a thin mat that will not usually support an individual's weight and is periodically submerged for months at a time. Sasser et al. (1994) identified additional floating marsh types that are less frequently found. Most of them appear to be developmentally related to the two described above.

Swamps

Inland of the freshwater marshes are swamps, the areas of forested wetland in the upper reaches of the Parish. The highest ridges support small areas of upland forest, although most of the area suitable for these terrestrial species have long since been cleared for agricultural production and industrial and urban use. Wetland forests have an extremely diverse flora of tree, shrub, and herbs (Conner et al. 1986). They can be roughly divided into deep-water swamps, dominated by bald cypress (*Taxodium distichum)* and tupelo gum (*Nyssa aquatic*) with a red maple (*Acer rubrum*) and buttonbush (*Cephalanthus occidentalis*) understory and seasonally flooded bottomland hardwood forests dominated by several oak species (*Quercus* spp.), green ash (*Fraxinus pennsylvanica* var. *lanceolata*), and other hardwood species (Table 4). The two types of forest occur about equally. In addition, there is considerable area characterized as scrub/shrub, which increasingly refers to the plant associations developing on elevated dredge deposits.

Barrier Islands

Barrier islands create the interface with the Gulf of Mexico. The vegetation of the beaches fronting the Isles Dernieres and Timbalier Island is characterized by several "invaders" on the incipient dunes along the beach forefront, including: beach purslane (*Sesuvium portulacastrum*), a recumbent succulent that grows and spreads as a dense mat; sea rocket (*Cakile geniculata*); and beach morning glory (*Ipomoea stolonifera*) Wiregrass (*Spartina patens*) is ubiquitous along the beach crest and in more protected environments between and behind the dunes, often accompanied by salt grass (*Distichlis spicata*) and sandrush (*Fimbristylis castanea*). In sandy areas behind the dunes, where salt often concentrates, a variety of succulents such as saltwort (*Batis maritima*) and glasswort (*Salicornia bigelovii*) are found. The marshes on the landward edge of the islands have typical salt and brackish vegetation, including oyster grass (*Spartina alterniflora*) and black mangrove *(Avicennia germinans).*

Table 4. Dominant or abundant vegetation of deepwater swamps of southeastern United States.

	Bottomland Forest [a]	Alluvial River Swamp [b]
Dominant Canopy Trees	*Quercus* spp. (oaks)	*Taxodium distichum* (bald cypress)
	Liquidambar styraciflua (sweet gum)	*Nyssa aquatica* (water tupelo)
	Carya aquaticas (water hickory)	
	Celtis laevigata (sugarberry)	
Sub-dominant Trees	*Ulmus* spp. (elms)	*Acer rubrum* var. *drummondii* (Drummond red maple)
	Acer rubrum (red maple)	*Fraxinus tomentosa* (pumpkin ash)
Shrubs	*Cornus drummondii* (rough-leaf dogwood)	*Cephalanthus occidentalis* (buttonbush)
	Planera aquatica (water elm)	*Salix nigra* (black willow)
	Crataegus spp. (hawthorn)	
	Salix nigra (black willow)	
Herbs and Aquatic Vegetation		*Lemna minor* (duckweed)
		Spirodella polyrhiza (duckweed)
		Riccia sp.
		Limnobium Spongia (common frog's bit)

[a] after Clark and Benforado 1981

[b] after Conner and Day 1988

C. The Terrebonne Parish Coastal Zone Boundary

History of Coastal Zone Management

The Coastal Zone Management (CZM) Act of 1972 (P. L. 92-583) was passed by Congress in recognition of the national importance of the coastal areas and the need to protect sensitive marine environments. The CZM Act recognizes the varieties of natural, commercial, recreational, ecological, industrial, and aesthetic resources of immediate and potential value to the present and future well being of the nation as a whole. Further, competing uses in the coastal zone were and are causing irretrievable loses to important ecological, cultural, historic, and ecologically sensitive living marine resources. The CZM Act declares that effective management, beneficial use and protection, and development of the coastal zone was of national interest and designates policies to implement these goals. The National Oceanographic and Atmospheric Administration's (NOAA) Office of Coastal Zone Management under the U. S. Department of Commerce was designated as the Federal Agency in charge of establishing coastal zone management programs in the coastal states.

Louisiana responded by passing Act 705, which officially established the Louisiana Coastal Resource Program. This evolved into Act 361, also known as the State and Local Coastal Resources Management Act of 1978 (SLCRMA), as amended through Louisiana Revised Statutes 49.214.21-214.41. This Act charged the Coastal Management Division of the La. Department of Natural Resources with implementing the Louisiana Coastal Resources Program and provided the mechanism by which competing and conflicting coastal uses can be coordinated, managed, and balanced by state and local governments.

The Terrebonne Parish Coastal Zone Boundary (Figure 3)

The Louisiana Coastal Zone Boundary is defined in L.R.S. 49:214.24 A-D. The Terrebonne Parish Coastal Zone Boundaries are as follows. The western boundary is the St. Mary Parish Line, the eastern boundary is the Lafourche Parish Line, and the southern boundary is the federal offshore waters. The northern boundary of the Terrebonne Parish Coastal Zone begins at the St. Mary/Assumption Parish line and the northern bank of the Gulf Intracoastal Waterway, thence along the northern bank of the Gulf Intracoastal Waterway to the vicinity of the Bayou Du Large Ridge, thence proceeding southerly along the western edge of the Bayou Du Large Ridge to the intersection of the Falgout Canal, thence proceeding easterly

along the north bank of Falgout Canal to the eastern edge of the Bayou Du Large Ridge, thence proceeding northerly along the eastern edge of the Bayou Du Large Ridge to the vicinity of Crozier, thence proceeding easterly to the western edge of the Grand Caillou Ridge, thence proceeding southerly along the western edge of the Grand Caillou Ridge to the vicinity of Dulac, thence proceeding easterly to the eastern edge of the Grand Caillou Ridge, thence proceeding northerly along the eastern edge of the Grand Caillou Ridge to the northern bank of the St.Louis Canal, thence proceeding easterly along the northern bank of the St.Louis Canal to the western edge of the Petit Caillou Ridge, thence proceeding southerly along the western edge of the Petit Caillou Ridge to the vicinity of Chauvin, thence proceeding easterly along Highway 55, thence proceeding northerly along Highway 55 to its intersection with Highway 665, thence easterly along Highway 665 to Bayou Pointe au Chien, thence northerly along Bayou Pointe au Chien to Highway 55, thence northerly along Highway 55 to Highway 24, thence easterly along Highway 24 to the Lafourche Parish Line.

III. TERREBONNE PARISH MANAGEMENT UNITS

Terrebonne Parish is divided into 13 Environmental Management Units (EMU)(figure 4). These EMU correspond to those depicted in, *Coast 2050: Toward a Sustainable Coastal Louisiana*, the state's strategic plan for sustaining the coastal ecosystem. The Terrebonne Parish Consolidated Government adopts the Coastal 2050 strategies and objectives into the Terrebonne Parish's local coastal program. An EMU is an area that is distinguished by certain common physical and cultural characteristics, such as geology, vegetation, drainage patterns, and uses. Each of these EMU can be considered individually when setting goals, objectives, and policies for planning, management, and regulatory functions. These differences imply that the consequences of permitted coastal activities will have unique effects in individual EMU because the environments are different especially in the ability to withstand stress. What is perfectly acceptable and harmless in one EMU may be devastating if attempted elsewhere. Therefore, these differences must be recognized when evaluating or proposing activities that will occur in Terrebonne Parish.

EMU serve the following functions:

1. They describe and delineate the component environments, thus recognizing differences that exist in the coastal landscape.

2. Descriptions of the EMU serve as a source of information that can be used by both the local administrator and permit applicant in judging the advisability of activities due to the differences in stress tolerance. Thus, the local administrator and the applicant are able to make more informed decisions.

3. By monitoring the EMU, the local administrator can become aware of problems caused by one or more activities. Regulations, restrictions, and projects can be targeted rather than applied to the entire coastal zone (for which they may have little relevance).

4. Knowing the environments and having a record of permit activities can aid the local administrator in forecasting and/or ameliorating the effects of cumulative impacts of numerous small activities.

5. Knowing the location of particular problem helps state and local programs funnel resources to solve the most severe problems in a timely manner.

6. Certain environments are unique and fragile. Delineating and describing these areas can aid the local administrator in preventing their degradation or destruction by developing special management tools and programs to deal with them.

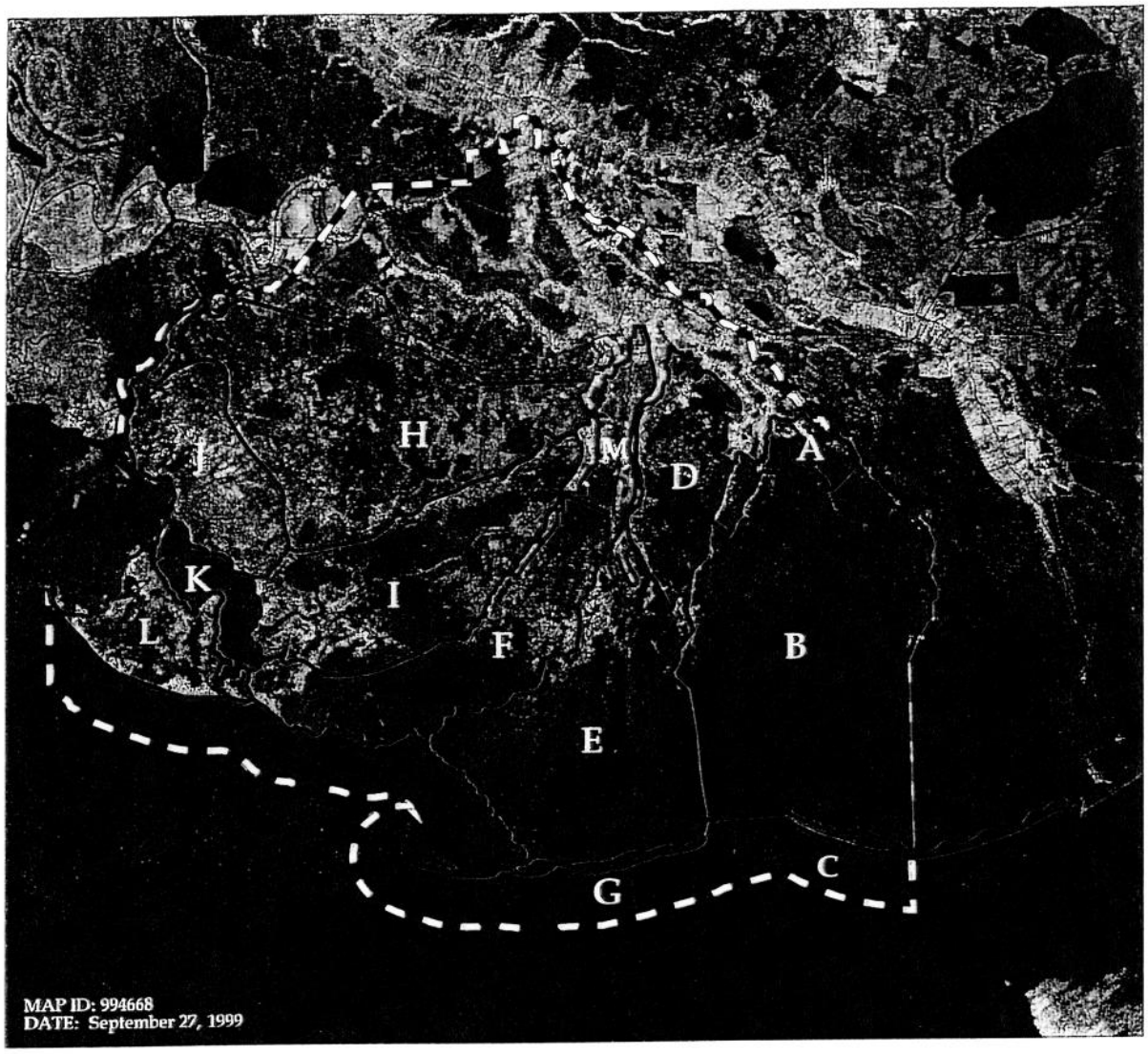
The concept of EMU is intended to be open-ended. The boundaries and/or management concepts applicable to the EMU can change as information is gained or conditions evolve. New requirements can be written after notice to and approval by the Secretary of DNR. Thus, EMU are a flexible tool capable of meeting current as well as future program needs.

EMU policies are recognized as guides, not as procedural mandates. Local policy statements are conceived as open-ended and flexible, to be used by both permit applicants and Terrebonne Parish.

A. Montegut Unit (Figure 5)

Location - This 17,326-acre unit is located southeast of Houma in Terrebonne Parish. It is comprised of two independent marsh management subunits and an unmanaged area. The Upper Bayou LaCache subunit lies between Bayou Petit Caillou and Bayou Terrebonne, north of Bush Canal. This area is enclosed within the local hurricane protection levee system and water exchange is regulated primarily through a large water control structure on Bayou LaCache at its junction with Bush Canal. The second subunit is the Montegut marsh management area, part of the Louisiana Department of Wildlife and Fisheries Pointe-au-Chien Wildlife Management Area. This area lies at the upper end of the interdistributary basin between Bayou Terrebonne to the west and Bayou Jean Charles to the east. Two large flap-gated water control structures along the southern levee regulate water exchange between this area and adjacent areas.

The unmanaged Viguerie Canal area consists of the upper portion of the interdistributary basin between Bayou Pointe-au-Chien to the east and Bayou Jean LaCroix to the west.



TERREBONNE PARISH
ENVIRONMENTAL MANAGEMENT UNITS (EMU's)

A Montegut Unit
B Terrebonne Marshes Unit
C Timbalier Island Shorelines Unit
D Boudreaux Unit
E Pelto Marshes Unit
F Caillou Marshes Unit
G Isles Dernieres Shorelines Unit
H Penchant Unit
I Mechant/DeCade Unit
J Atchafalaya Marshes Unit
K Fourleague Bay Unit
L Point-au-Fer Unit
M Houma Navigatgion Canal Wetlands Unit

N
W E
S

Terrebonne Parish Boundary

Environmental Management Unit Boundaries

5 0 5 10 *Miles*

Figure 4

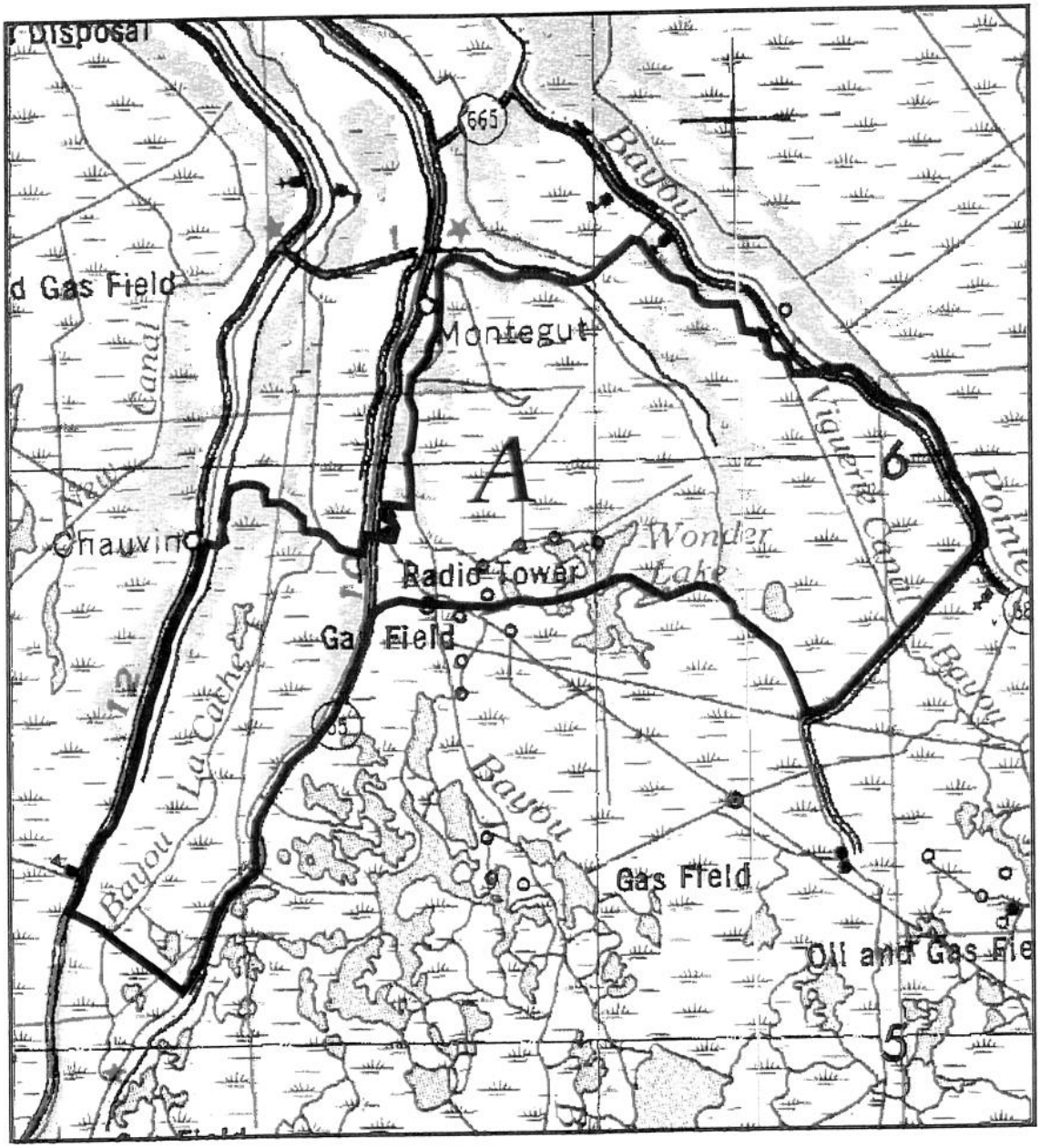

Disposal
665
Bayou
d Gas Field
Montegut
Canal
A
Viguerie Canal
Pointe
Chauvin
Wonder
Lake
Radio Tower
Gas Field
Bayou La Cache
Bayou
Gas Field
Oil and Gas Fie
5
N
A - Montegut Unit
Montegut Unit Boundary
Miles
1 0 1 2 3 4 5
Date: March 22, 2000
Map ID: 20004224

Figure 5

The southern boundary of this area is Island Road, which allows vehicular access between Isle Jean Charles and Louisiana Highway 665 along Bayou Pointe-au-Chien. Communities adjacent to this unit include Montegut, Chauvin, Isle Jean Charles, and Bayou Pointe-au-Chien.

Habitat Description and Landscape Change - The Upper Bayou LaCache subunit consisted of fresh/intermediate marsh and brackish marsh in 1949. Scattered cypress trees existed throughout the central and northern portions of the area. By 1978, nearly the entire subunit had been converted to brackish marsh, and the cypress were dead. The Upper Bayou LaCache management project was initially completed in 1990. To help improve water level management, the main drainage structure on Bayou LaCache was modified in 1997 and a pumping station was added.

The Montegut subunit consisted entirely of a solid fresh marsh in 1949 with some living cypress trees present along the northern and western perimeters of the subunit. Concurrent with conversion to more brackish conditions, the area experienced substantial marsh loss during the 1950s, 1960s, and 1970s. By the mid-1980s, the area consisted primarily of brackish open water and most of the cypress had long been killed. However, a few living cypress still remain on higher elevation sites in the northern portion of the subunit. After being acquired by the Louisiana Department of Wildlife and Fisheries in 1968, the Montegut marsh management area was initially leveed and managed passively with two fixed-crest weirs. In 1995, both weirs were modified into variable-crest, flap-gated structures and the area managed actively as an intermediate marsh.

In 1949 and 1968, the Viguerie Canal area was dominated by fresh marsh with brackish marsh occupying the southern quarter of the area. By 1978, brackish marsh occupied the majority of the area. By 1988, the entire area consisted of brackish marsh. Extensive loss of wetlands occurred concurrently with these habitat changes.

Historic Land Loss - The elimination of riverine inflow in the early 1900s, in combination with continued subsidence, resulted in accretion of interior marshes primarily through buildup of organic material. These organic soil areas were, therefore, very susceptible to loss due to hydrologic alterations and saltwater intrusion. All subunits suffered significant marsh loss beginning in the mid-1950s and continuing through the 1980s. Dredging of numerous access canals north of Lake Barre prior to the mid 1950s allowed saline Lake Barre water to readily flow northward up Bayou Barre and into

sensitive freshwater marshes. Additionally, the dredging of several canals through the east bank of Bayou Terrebonne, such as Humble Canal, Madison Canal, plus several other unnamed canals further south, have increased tidal exchange in Bayou Terrebonne, thus facilitating saltwater intrusion into connecting waterways such as Bush Canal and Bayou LaCache. Causes of marsh loss within the Viguerie Canal area are not clear; however, construction of the Island Road and entrapment of saline storm tides may have occurred. Additionally, development of cuts through the Bayou Jean Charles ridge and extending the Island Road borrow canal through the west bank of the Bayou Pointe-au-Chien ridge may have altered water exchange and contributed to rapid breakup of the area's fragile organic marshes. Between 1932 and 1990, approximately 8,300 acres of marsh were lost within this unit. Subsidence rates are 1.1 - 2.0 feet/century.

Future Land Loss Projection - Assuming that future land loss will occur at the 1974 to 1990 rate, by the year 2050, over 35% of the unit's marsh would be lost. Water level and salinity control within managed marshes may reduce future marsh loss rates in those areas. However, within 50 years, mechanical erosion will likely soon claim the remaining marshes within the Viguerie Canal subarea.

Fish and Wildlife Resources - Marsh management activities in the Upper Bayou LaCache and the Montegut subunits have increased production of submerged aquatic vegetation, making these marshes high quality wintering areas for migratory waterfowl. These subunits also provide habitat for wading birds, rails, nutria, mink, raccoon, river otter, swamp rabbit, and the American alligator. Water control structures are operated to provide ingress and egress of estuarine-dependent fish and shellfish so that they may use the managed areas as nursery habitat. Commercially and recreationally important species using the subunits likely include Atlantic croaker, Gulf menhaden, spotted sea trout, red drum, black drum, sand seatrout, spot, striped mullet, southern flounder, blue crab, white shrimp, brown shrimp, and many others. Because fresher conditions are maintained in the Montegut subunit compared to the Upper Bayou LaCache subunit, species preferring more saline conditions, such as spotted sea trout, black drum, and brown shrimp, may not be very abundant there. Remaining marshes within the Viguerie Canal area provide low quality wildlife habitat, leaving only moderate-value habitat for estuarine-dependent fish and shellfish. Production of submerged aquatic vegetation in open water areas may provide some of the functions lost through the disappearance of area marshes.

This unit has shown increasing population trends for red and black drum, Gulf menhaden, American oyster, blue crab, and brown shrimp over the last 12 years. White shrimp have remained steady, whereas spotted seatrout, southern flounder, largemouth bass, and channel catfish have declined.

The brown pelican has shown an increasing trend during the last 12 years. Seabirds have remained steady, whereas nutria, muskrats, other furbearers, and alligators have shown a declining trend. By 2050, brown pelicans are expected to increase, avifauna are expected to remain steady, and furbearers and alligators are expected to decline.

Infrastructure - Infrastructure in the area consists primarily of Louisiana Highways 56, 55, and 665, and the structures associated with the communities of Chauvin, Montegut, and upper Bayou Pointe-au-Chien respectively. Hurricane protection features such as the Bayou Petit Caillou Floodgate, the Bayou Terrebonne Floodgate, the Humble Canal Floodgate, and the protection levee along Bush Canal and Bayou Terrebonne provide hurricane protection to the Upper Bayou LaCache subunit. Other infrastructure includes the Bayou LaCache water control structure/pump that is operated to regulate water levels and salinities within the Upper Bayou LaCache subunit. Similarly, the two flap-gated, variable-crest weirs located along the southern levee of the Montegut marsh management area are operated to provide water level and salinity management for that area. Oil and gas exploration within the subunits is presently inactive. The Corps of Engineers maintains portions of Bayou Petit Caillou and Bayou Terrebonne adjacent to the subunits. This unit has 7 pumps (six at 36 inches and one at 16 inches). There are no primary roads or railroads, but there are 6.7 miles of secondary and 21.6 miles of tertiary roads. There are 112 wells and a total of 21.7 miles of mostly natural gas pipelines.

Previously Proposed Strategies and Authorized Restoration Projects - Hydrologic restoration/management and barrier island restoration are the short-term critical strategies proposed in the Louisiana Coastal Wetlands Restoration Plan for this area. The long-term critical strategy is freshwater and sediment introduction. Projects authorized through the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) consist primarily of barrier island projects. One such project, designed to protect Raccoon Island through the construction of segmented breakwaters, has been completed. Other CWPPRA projects have been authorized to rebuild portions of Whiskey Island, Trinity Island, East Island, and East Timbalier Island. The existing Upper Bayou

LaCache and Montegut marsh management unit projects are restoration projects funded through the Louisiana Department of Natural Resources.

Coastal Use/Resource Objectives - Habitat objectives for the Montegut Unit are intermediate marshes and their associated aquatic habitats. Resource objectives include shrimp, blue crabs, saltwater finfish, freshwater finfish, furbearers, waterfowl, storm buffer, flood water retention, navigation, and oil/gas.

Region 2050 Strategies - Strategies for this unit include: establishment and protection of ridge functions; hydrological management in navigation channels; hydrological management in fresh-intermediate marshes; increase Atchafalaya flow; beneficial use of dredged material; beneficial use of pump outfall; completion, maintenance, and operation of existing state and federal projects; improvement of water quality; forced drainage; and sediment delivery.

All of these strategies are projected to enhance fresh and intermediate marshes and forested wetlands, especially sediment delivery, beneficial use of dredged material, and use of pump outfall. Most of these strategies also enhance the fastlands.

All of theses strategies are generally projected to enhance blue crabs, finfish, alligators, crawfish, furbearers, waterfowl, and non-game fish and wildlife. The storm buffering capacity, agriculture, grazing, recreation and tourism, infrastructure such as roads, levees, and bridges, communities, and utilities are projected to be enhanced by all of the strategies, especially sediment delivery. The oil and gas infrastructure is projected to be greatly enhanced by sediment delivery as well. Floodwater retention is projected to be enhanced by ridge restoration, hydrological management of the swamps and marshes, improved water quality, forced drainage, completion of existing projects, and especially sediment delivery.

Local, Common and Programmatic Strategies - Common area strategies recommended for this unit include establish/protect ridge function, beneficial use of dredged material, and beneficial use of pump outfall. Programmatic strategies are complete, maintain and operate existing federal and state projects.

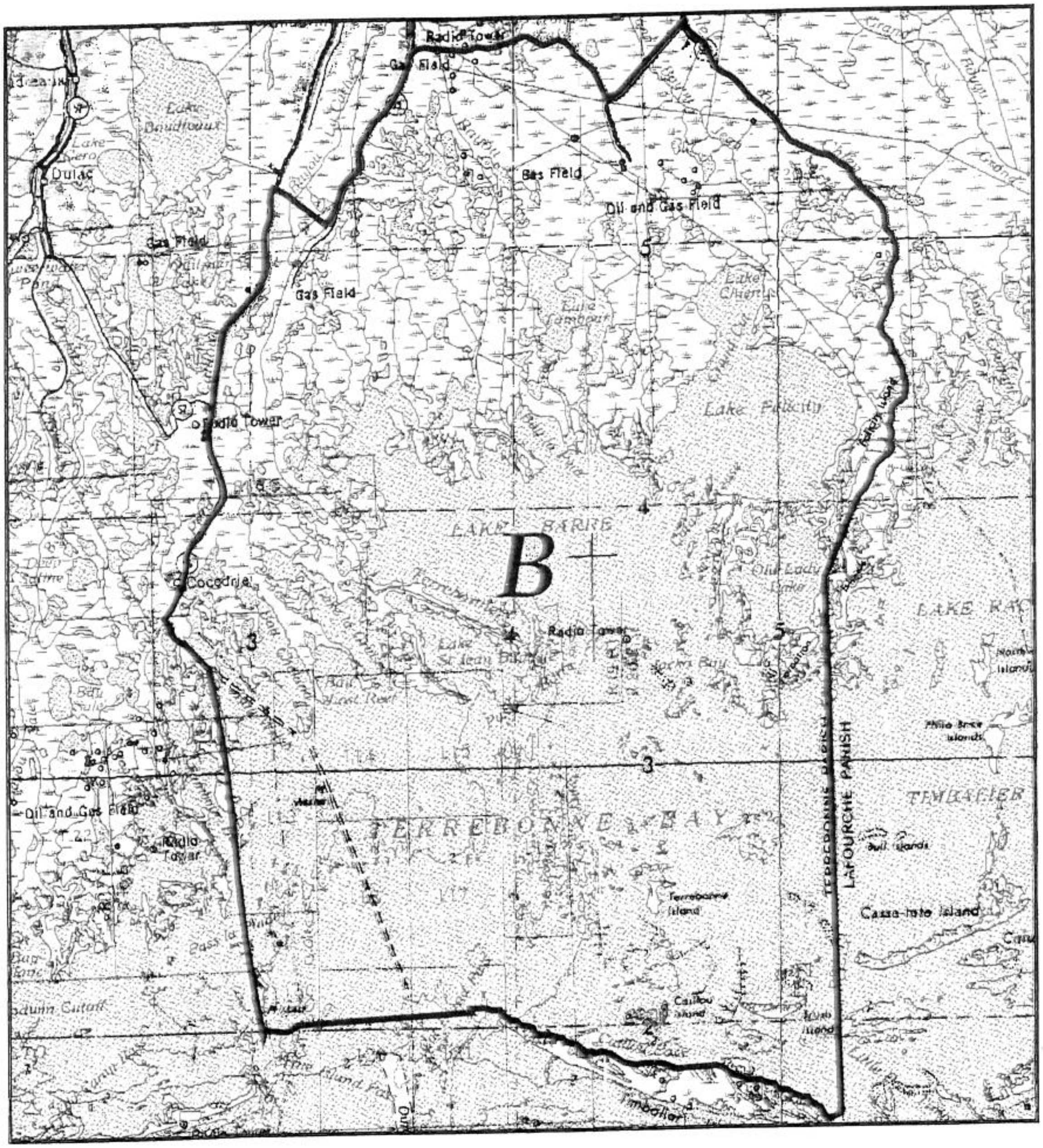
B. Terrebonne Marshes Unit (Figure 6)

Location - This 211,992-acre unit is located in Terrebonne Parish. The northern boundary of this unit follows the north shore of Wonder Lake and then follows Bayou St. Jean. The southern boundary is formed by Timbalier Island and includes Wine Island. The western boundary goes north from Wine Island Pass and follows the Houma Navigation Channel inland up to Bayou Petit Caillou, then follows the Bush Canal to Bayou Terrebonne. This unit is bordered on the east by the Bully Camp management units and delineated by the boundary formed by the Point aux Chien ridge. Within Terrebonne Bay, the eastern boundary follows the parish line separating Terrebonne and Lafourche parishes.

Habitat Description and Landscape Change - In 1949, this mapping unit was approximately one-half salt marsh habitat with the other half comprised of equal amounts of brackish and intermediate marsh. By 1968, all of the previously classified intermediate marsh habitat was lost and had become either brackish or salt marsh habitat. By 1968 the amount of salt marsh habitat in this mapping unit was approximately four times that of the brackish marsh habitat.

Historic Land Loss - Subsidence has been and continues to be a major problem plaguing this mapping unit. This unit has had some of the highest rates of wetland loss in the state. Between 1932 and 1990, total land loss in this unit was estimated to be 24,270 acres, representing the loss of more than one-third of 1932 land area. In addition to subsidence, a significant amount of the land loss in this area may be attributed to storm-related events (including several hurricanes) and wind/wave erosion of shorelines. Altered hydrology from canal dredging has also impacted this area, which has been largely deprived of sediment and freshwater input. Between 1974 and 1990, 11,530 acres of marsh were lost due to natural and indirect causes. Land in the Terrebonne Marshes unit is subsiding at a high rate (2.1 - 3.5 feet/century).

Future Land Loss Projections - During the next 60 years, it is expected that approximately 55% of the 1990 marsh area will be lost if no actions are taken.



N

B - Terrebonne Marshes Unit

Terrebonne Marshes Unit Boundary

Miles
1 0 1 2 3 4 5

Date: March 22, 2000
Map ID: 20004225

Figure 6

Fish and Wildlife Resources - This mapping unit is host to a large variety of fish and invertebrate species. Recent monitoring has shown increases in red drum, black drum, blue crabs, and Spanish mackerel, but decreases in speckled trout, Gulf menhaden, flounder, oysters, and brown and white shrimp.

The brown pelican has shown an increasing trend over the last 12 years. Avifauna has remained steady in open water habitats, but decreased in salt marsh habitats. Furbearers and alligators have decreased in the salt marsh habitats. By 2050, the brown pelican is expected to increase. Avifauna is expected to remain steady in open water habitats but decrease in salt marshes. Furbearers and alligators are expected to decrease in salt marshes.

Infrastructure - The hydrology of this mapping unit has been significantly affected by the creation and maintenance of commercial navigation channels. The Houma Navigation Channel (HNC) is part of the western boundary of this unit. The HNC is approximately 15 feet deep x 150 feet wide from Houma to the Gulf of Mexico. Little Caillou Bayou is 5 feet deep x 40 feet wide and extends from Bayou Terrebonne to Robinson Canal. Bayou Terrebonne has a six foot deep channel and is fairly wide from Houma to Bush Canal. There is substantial oil and gas activity in the area, especially in Terrebonne/Timbalier Bays to the south. In the Terrebonne marshes there is one 36-inch pump and approximately 1.5 miles of levees. There are no primary roads or railroads in this unit, but there are 13.2 miles of secondary and 6.1 miles of tertiary roads. This unit has 2,647 wells and 88.6 miles of pipelines.

Previously Proposed Strategies and Authorized Restoration Projects - Proposed defensive measures in this unit include protection of natural ridges, stabilizing the banks of navigation channels, managing hydrology to enhance and restore the brackish and saline marsh vegetation in the area, protecting lake shorelines, creating reef zones, and restoring the fragile barrier islands to the south, which form the first line of storm defense. Offensive measures for the unit include sediment diversions and the dedicated use of dredged material to help offset the high subsidence rates of the area.

Coastal Use/Resource Objectives - The habitat objective for this management unit is a brackish to salt marsh. Resource priorities for this area include shrimp, blue crabs, oysters, saltwater finfish, and waterfowl. The area also serves as a storm buffer and contains oil and gas infrastructure, roads, levees, and bridges.

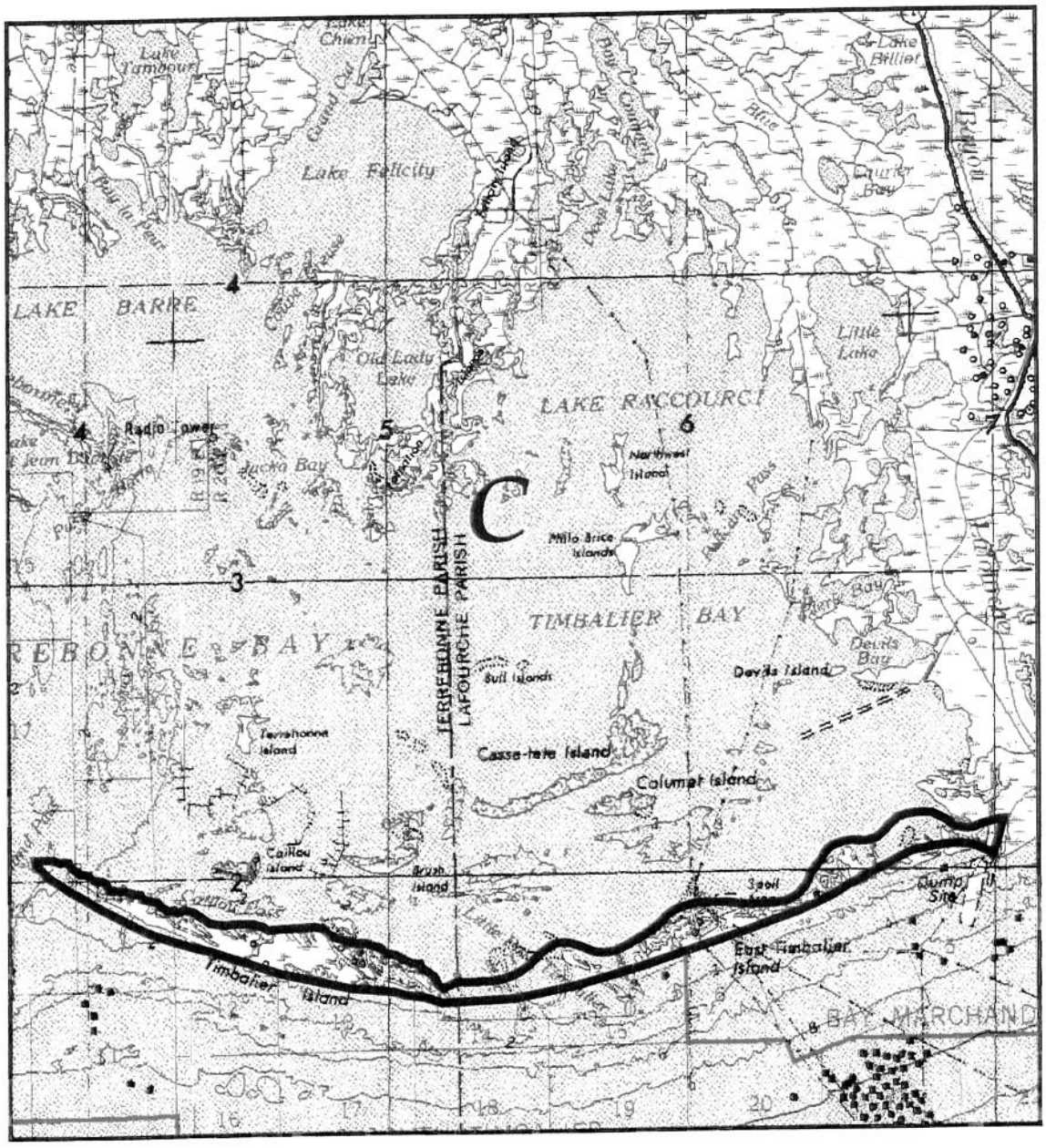
Region 2050 Strategies - Strategies for the Terrebonne Marshes include restoration of barrier islands, establishment and protection of ridge functions, bank stabilization (along Bayou Terrebonne), hydrological management of navigation channels (Bayou Terrebonne and the HNC), hydrological management of intermediate and brackish-saline marshes, establishment of a reef zone, protection of bay/lake shoreline, sediment diversions, beneficial use of dredged material, stabilization and restoration of small marsh and bay islands, initiation of regulatory and institutional measures (e.g., restriction of cutting of ridges and establishment of a large mitigation bank), reduction of tidal prism, freshwater diversion using the Bayou Terrebonne flood gate, and sediment delivery. These strategies are projected to reduce future loss by more than 50%. All of these strategies are projected to strongly enhance intermediate, brackish, and salt marshes, especially sediment reallocation and hydrological management of the main waterways in the unit.

Shrimp, blue crabs, oysters, finfish, alligators, furbearers, waterfowl, non-game fish and wildlife, and endangered species are all generally projected to be enhanced by these strategies, except for sediment diversions, which are projected to detrimentally impact oyster production. All of the strategies are projected to enhance recreation and tourism, scientific study, storm buffering capacity, and infrastructures, such as roads, levees, bridges, communities, and utilities. The oil and gas industry is projected to be enhanced by barrier island restoration, ridge restoration, bank stabilization, navigation channel management, establishment of a large mitigation bank, and especially by sediment delivery.

Local, Common, and Programmatic Strategies - Common strategies for Terrebonne Marshes are to establish/protect ridge function, stabilize banks (Bayou Terrebonne), protect bay/lake shoreline, and beneficial use of dredged material. A large mitigation bank is proposed as a programmatic strategy for this area.

C. Timbalier Island Shorelines Unit (Figure 7)

Location - This 8,615-acre unit is located at the southern extent of Lafourche and eastern Terrebonne parishes. This mapping unit is bordered on the east by the Lafourche erosional headland. The shoreline extends to the west from the Belle Pass jetties and



C - Timbalier Island Shorelines Unit

N

Timbalier Island Shorelines Unit Boundary

1 0 1 2 3 4 5 *Miles*

Date: March 22, 2000
Map ID: 20004226

Figure 7

includes the western shoreline of the Lafourche erosional headland, East Timbalier Island, and Timbalier Island. East Timbalier Island lies between the Lafourche erosional headland and the main island, Timbalier Island. East Timbalier Island is in Lafourche Parish, whereas Timbalier Island is in Terrebonne Parish. Several smaller islands are landward of the Timbalier Islands. These smaller islands are Caillou Island, Brush Island, and Casse Tete Islands.

Habitat Description and Landscape Change - Following the abandonment of Bayou Lafourche as an active distributor of the Mississippi River (about 300 - 400 years ago), this barrier island chain formed as the result of downright spit accretion from the Lafourche erosional headland (Caminada-Moreau Coast). Through time, as the spit grew in length, it separated from the headland and East Timbalier Island separated from Timbalier Island. These breaks or breaches occurred to allow more efficient tidal exchange with the enlarging bay system that was forming behind the island chain. The 1935 construction of jetties at Belle Pass (and subsequent expansion) has cut off much of the westward sediment transport from the Lafourche erosional headland to East Timbalier and Timbalier Islands (Mossa et al. 1985). Further impediments to sediment transport to Timbalier Island were the construction of a rip-rap revetment along East Timbalier Island in the 1960's and a subsequent seawall (Mossa et al. 1985). In addition to further starving Timbalier Island of sediment, these expansive hard structures on East Timbalier have proven ineffective in reducing erosion of East Timbalier Island (Penland and Boyd 1985). The East Timbalier Island seawall, originally established landward of the beach crest, is currently in the surf in front of the island. A further cause of land loss on both islands has been extensive dredging of pipeline and well access canals, which have weakened the islands and produced several areas of potential breaching (Penland and Boyd 1985).

The smaller islands behind Timbalier Island (Caillou Island, Brush Island, and Casse Tete Islands) represent systems associated with the distributaries of Bayou Pointe-au-Chiene. These small barriers were formed prior to the formation of Timbalier Island (Penland and Boyd 1985).

In 1949, O'Neil classified this barrier island chain as being composed of nearly equal amounts of salt marsh and beach habitat. The 1968 Chabreck classification reported salt marsh habitat as the dominant marsh type. Indeed, salt marshes are found on the bayward sides of all of Louisiana's barrier islands and are commonly referred to as back barrier salt marshes. A transect across a typical Louisiana barrier island (from Gulf to

Bay) begins with the beach habitat followed by a relatively low elevation primary dune. Behind the dune is the swale habitat, which slowly grades down to a high marsh region where black mangrove is typically found. Finally, the high marsh grades into the tidally influenced back-barrier marsh. Historically, these islands have been slowly migrating to the northwest as storms and overwash events erode the beach and deposit dune sands back across the swale and into the back barrier marshes. As the islands migrate, or rollover, they have decreased in width, height, and area.

Historic Land Loss - Much of the land loss and erosion of the islands is attributable to storm events. Tropical storms and hurricanes have resulted in substantial beach erosion and overwash of these islands over the years. Winter storms and cold front passages also erode the islands, particularly the back barrier salt marsh shorelines. The erosional forces acting on Timbalier Island, combined with western longshore transport, cause updrift erosion and downdrift accretion, resulting in the southeast to northwest lateral migration of the island. During the past 100 years, the eastern half of Timbalier Island has been eroding at a rate of 61 feet/year, whereas the western end has accreted at a rate of 57.7 feet/year. Over the past century, Timbalier Island has decreased 58% in size (Penland and Boyd 1981). During this time, dune height has decreased and the width of the island has diminished considerably. Approximately 631 acres of land were lost in this unit from 1978 -1988/90. The subsidence rate is currently 2.1 - 3.5 feet/century.

Future Land Loss Projections - Future land loss data are not available for this unit. However, land loss is expected to be high.

Fish and Wildlife Resources - This mapping unit is host to a large variety of fish and invertebrate species. Of all the species reported, only numbers of Spanish mackerel are believed to be increasing. Speckled trout, red drum, black drum, flounder, Gulf menhaden, blue crabs, oysters, and brown and white shrimp are all displaying a trend of decreasing abundance.

The brown pelican, seabirds, and other avifauna have remained steady over the last 12 years, whereas furbearers have been declining. By 2050, numbers of brown pelican, seabirds, and most other avifauna are expected to remain steady, whereas furbearers are expected to continue to decline.

Infrastructure - There is substantial oil and gas activity in the area, especially in Terrebonne and Timbalier bays behind the islands, but also on the islands themselves. Oil and gas access canals that were dredged on the islands have negatively impacted both East Timbalier and Timbalier Islands. These canals serve as potential weak spots, or focal points, for breaches to form during severe storm and overwash events. There are no roads or railroads in this unit. It does contain 258 oil wells and 11.6 miles of pipelines.

Previously Proposed Strategies and Authorized Restoration Projects - There have been six different proposed plans that address the restoration of these fragile and dynamic barrier islands that serve as a first line of defense against storm damage to the interior bays and marshes. The proposed plans cover a variety of techniques and include the use of sand fencing and/or pumped sand additions to nourish the beach and maintain island elevation. Vegetative plantings have been recommended to help stabilize and bind the sand and to further trap and accrete wind-blown sand. Dedicated dredging may also be utilized as a means to fill and restore canals. Various hard structures, such as rip-rap shorelines or breakwaters, have also been proposed. However, the use of hard structures on barrier islands has come under increased scrutiny based on the poor performance of such structures in restoration/stabilization projects in Louisiana and elsewhere. East Timbalier Island is a prime example of the error that a dynamic system can be constrained within a static rip-rap shoreline.

Coastal Use/Resource Objectives - This mapping unit is classified as a barrier island/chenier shoreline habitat objective. However, the back barrier salt marshes must be included as a critical component of the overall barrier island environment. Resource priorities include shrimp, blue crabs, oysters, saltwater finfish, non-game fish and wildlife, endangered species, and recreation and tourism. The area also serves as a storm buffer and contains oil and gas infrastructure.

Region 2050 Strategies - Strategies for the Timbalier Island Unit include establishing a reef zone (narrow gaps), initiating regulatory and institutional measures (e.g., the recommendation of the elimination of new dredging of canals on the island, directional drilling to prevent new impacts to island, help from oil and gas companies in island restoration, development of a mitigation bank and development and subsequent support of a Barrier Island Commission), protecting bay/lake shoreline, sediment delivery, and beneficial use of dredged material (fill abandoned canals). These strategies are projected

~~to enhance salt marsh and barrier island habitats, especially reef zone creation, barrier~~ island restoration, and sediment delivery.

Shrimp, blue crabs, oysters, saltwater finfish, non-game fish and wildlife, and endangered species are projected to be enhanced by all of these strategies. The strategies are also projected to greatly enhance recreation and tourism and storm buffering capacity. The oil and gas industry is projected to be enhanced by only barrier island restoration and sediment delivery, and detrimentally impacted by the regulatory measures and the use of dredged material.

Local, Common, and Programmatic Strategies - Protecting the bay/lake/gulf shoreline, and beneficial use of dredged material are the common strategies for this area. The programmatic strategies for Timbalier Island Shorelines are to eliminate any new dredging of canals on the islands, use directional drilling to prevent new development footprints on the land, recruit oilfield companies to help restore the island, and develop a mitigation bank.

D. Boudreaux Unit (Figure 8)

Location - This 48,053-acre unit is located south of Houma in Terrebonne Parish. It consists of the interdistributary subbasin bordered by Bayou Grand Caillou to the west, Bayou Petit Caillou to the east, and Louisiana Highway 57 to the south. Communities bordering the unit include Chauvin, Cocodrie, Dulac, and Ashland. Lakes Boudreaux and Quitman are located within the area.

Habitat Description and Landscape Change - In 1949, wetlands within the unit were classified primarily as fresh and intermediate marsh. However, by 1968, the southern half of the unit had become brackish. By 1988, most of the area consisted of brackish marsh and open water with only a small area of fresh marsh remaining in the northeast corner of the unit. Formerly fresh marshes north of Lake Boudreaux have experienced substantial conversion to shallow open water. Wax myrtle thickets, once abundant throughout the northern area, have deteriorated to the point where few healthy thickets remain. Cypress swamps in the vicinity of Bayou Chauvin have also experienced substantial mortality. Some living cypress and bottomland hardwood areas still exist around the extreme northwestern and northern fringes of the unit. Extensive conversion

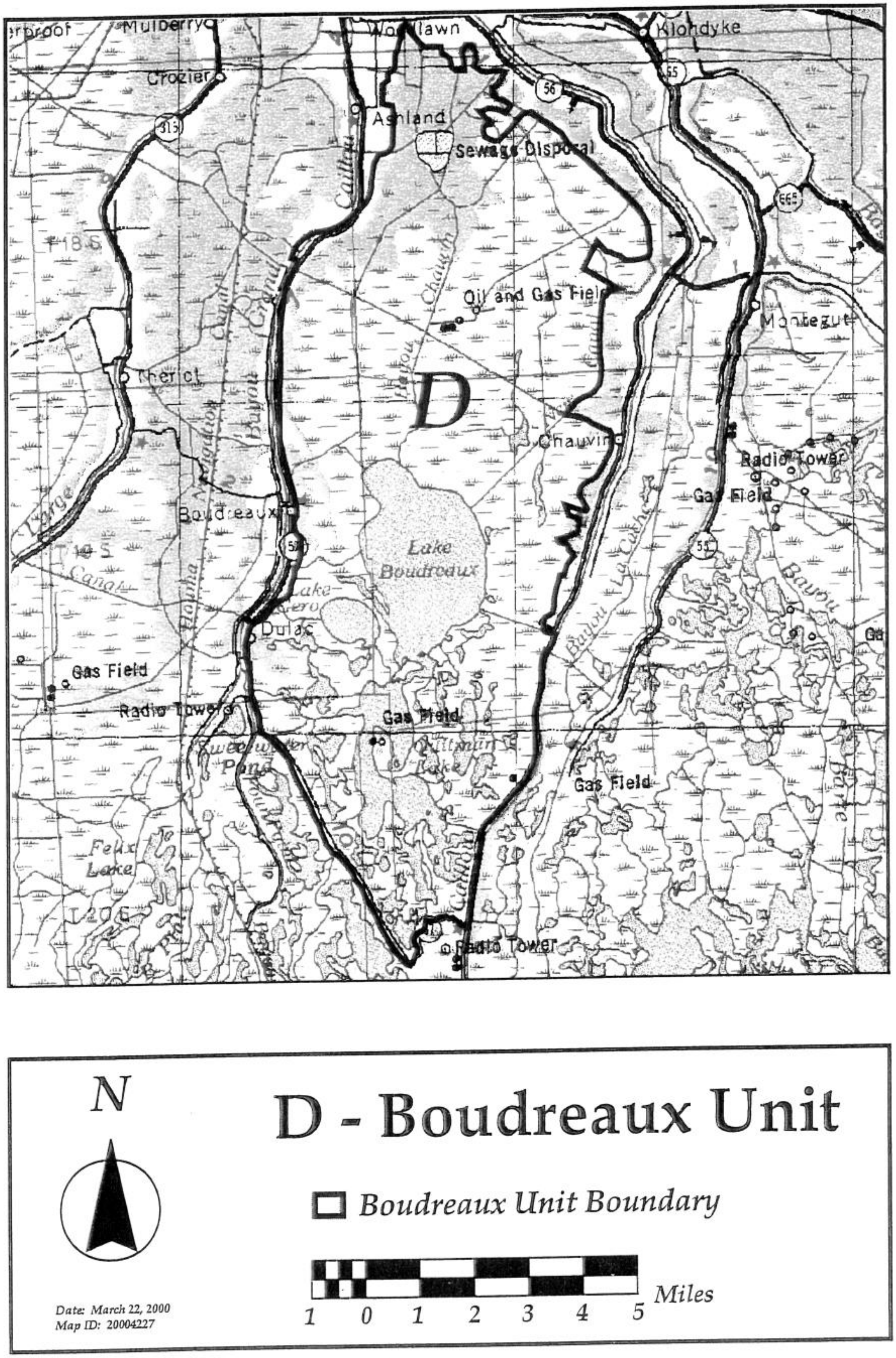

Mulberry
Crozier
Woodlawn
Klondyke
Ashland
Sewage Disposal
313
56
55
665
Oil and Gas Field
D
Montegut
Chauvin
Radio Tower
Gas Field
Boudreaux
57
Lake Boudreaux
Dulac
Gas Field
Radio Tower
Gas Field
Gas Field
Felix Lake
Radio Tower
N
D - Boudreaux Unit
Boudreaux Unit Boundary
1 0 1 2 3 4 5 Miles
Date: March 22, 2000
Map ID: 20004227

Figure 8

of marsh to open water has occurred within the unit beginning in the 1960s and continuing to the present.

Historic Land Loss - The dredging of Boudreaux and Robinson Canals in the early 1900s caused a profound basin-wide hydrologic change. During the same period, basin hydrology was also affected by the elimination of riverine processes throughout the region. These changes, however, did not result in immediate deterioration and loss of marsh but greatly reduced long-term marsh viability in a rapidly subsiding environment. Prior to the 1950s, marsh loss consisted primarily of physical erosion along larger water bodies within the southern portion of the unit. Dredging of numerous access canals within the unit, in the marshes north of Lake Barre and through the natural banks of bayous Petit Caillou and Terrebonne, not only allowed high salinity Lake Barre water to enter the Lake Boudreaux unit through Robinson and Boudreaux Canals, but also helped introduce saline water into interior portions of the unit. Having been deprived of riverine sediment and freshwater for decades, the interior fresh and low-salinity marshes comprised largely of organic sediments, were very vulnerable to local hydrology changes and increased salinities. Over time, canal spoil banks deteriorated, allowing the introduction of increasingly salty water throughout sensitive interior areas, causing rapid loss of the interior marshes during the 1960s, 1970s, 1980s, and 1990s. Hurricanes Juan and Andrew also caused extensive loss of marshes in the central and southern portion of the unit through shoreline erosion and lifting/displacement of interior marshes. Such losses are to be expected where stressed organic marshes are exposed to high wave energy or storm surges. Between 1932 and 1990, approximately 10,300 acres of marsh were lost within this unit. Land in Boudreaux is subsiding at a rate of 1.1 - 2.0 feet/century.

One project designed to reduce marsh loss is the Lashbrook Outfall Management Project. This project, completed in the mid 1990s, is designed to route freshwater discharge from the Lashbrook Pump Station through deteriorated marshes rather than direct it via canals to Lake Boudreaux. During the mid 1990s, the South Terrebonne Tidewater District also constructed a steel sheet pile structure in Boudreaux Canal to restrict that channel and reduce excessive water exchange and saltwater intrusion into the basin. Since the 1970s, Fina Laterre Inc. has helped to reduce shoreline erosion along the northern and northeast portions of Lake Boudreaux by building and maintaining an earthen dike along portions of those shores. In 1985, Terrebonne Parish reconstructed a portion of East Island and later, with the US Army Corps of Engineers, rebuilt a portion of Wine Island.

Future Land Loss Projection - Assuming that future marsh loss occurs at the 1974 to 1990 loss rate, then by the year 2050, over 37% of the unit's marshes will be lost. Future loss rates may be even greater if storm surge impacts are becoming a more significant factor in marsh loss as it appeared with Hurricane Andrew.

Fish and Wildlife Resources - Fresh and low-salinity marshes in the northern portion of the unit provide high quality habitat for migratory waterfowl, bitterns, herons, ibises, egrets, rails, nutria, mink, raccoon, river otter, swamp rabbit, white-tailed deer, American alligator, bullfrog, and other species of reptiles and amphibians. In addition to the species previously mentioned, swamp forest and bottomland hardwood habitats support numerous songbirds, woodpeckers, raptors, and other bird species. Forested and/or shrubby areas also provide habitat for one or two nesting colonies of wading birds. Additionally, two active eagle nests are located within the unit. Fresh and low-salinity areas support largemouth bass, bluegill, crappie, blue catfish, and other recreationally and commercially important fish. These areas also provide nursery habitat for commercially and recreationally important estuarine-dependent fish and shellfish such as Atlantic croaker, Gulf menhaden, red drum, spot, striped mullet, southern flounder, blue crab, white shrimp, and others.

Brackish marsh portions of the unit provide habitat for migratory waterfowl, wading birds, rails, nutria, mink, raccoon, river otter, swamp rabbit, and American alligator. These areas also provide nursery habitat for commercially and recreationally important estuarine-dependent fish and shellfish such as Atlantic croaker, Gulf menhaden, spotted sea trout, red drum, black drum, sand seatrout, spot, striped mullet, southern flounder, blue crab, white shrimp, brown shrimp, and many others. Salinities within the unit are generally too low for reliable oyster production except for the extreme southeastern area, which receives salty water from Robinson Canal.

This unit has shown population increases over the last 12 years for red and black drum, Gulf menhaden, American oyster, blue crab, and brown shrimp. The population of white shrimp has remained steady, whereas populations of spotted seatrout, southern flounder, largemouth bass, and channel catfish have decreased.

Over the past 12 years, brown pelican populations have increased, whereas populations of other avifauna have remained steady. Furbearers and alligators have been decreasing.

By 2050, populations of brown pelican are expected to increase, bald eagles will remain steady, and most other avifauna will decrease. In open water, furbearers and alligators are expected to decrease, and in the marshes, they will remain steady, except for a decline in nutria numbers.

Infrastructure - Louisiana highways 57 and 56 and their associated infrastructure nearly surround the unit. Additionally, many of the communities along the east and west boundaries have constructed, or are planning to construct, forced drainage systems to provide flood protection and adequate drainage for developed areas. Bayou Grand Caillou and Bayou Petit Caillou, which form the west and east unit boundaries, respectively, are channels maintained by the US Army Corps of Engineers. Excluding the developed areas along the distributary channels, the only significant infrastructure within the unit consists of access canals, pipeline canals, and oil and gas drilling and production facilities. There are 26 drainage pumps (5 @ 48 inches, 17 @ 36 inches, 1 @ 18 inches, 1 @ 16 inches, and 2 @ 12 inches) and 27 miles of levee. There are no railroads or primary roads, but there are 13.6 miles of secondary and 14.1 miles of tertiary roads. There are 253 oil wells, 44.3 miles of pipeline, and one industrial groundwater uptake.

Previously Proposed Strategies and Authorized Restoration Projects - The short-term critical strategies proposed in the Louisiana Coastal Wetlands Restoration Plan for reducing marsh loss within the Boudreaux Unit include barrier island protection/restoration and hydrologic restoration. The long-term critical strategy is freshwater and sediment introduction. Projects authorized through the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) consist primarily of barrier island projects. One such project was designed to protect Raccoon Island through the construction of segmented breakwaters. Other CWPPRA projects have been authorized to rebuild portions of Whiskey Island, Trinity Island, East Island, and East Timbalier Island. The only CWPPRA project authorized within the unit is the Lake Boudreaux Basin Freshwater Introduction Project.

Coastal Use/Resource Objectives - Habitat objectives for the Boudreaux unit are freshwater and brackish marshes and their associated aquatic habitats, and fastlands and other development lands. Resource objectives include shrimp; blue crabs; oysters; saltwater finfish; freshwater finfish; alligators; furbearers; waterfowl; agriculture/grazing;

storm buffer; floodwater retention; navigation; oil and gas; and roads, levees, and bridges.

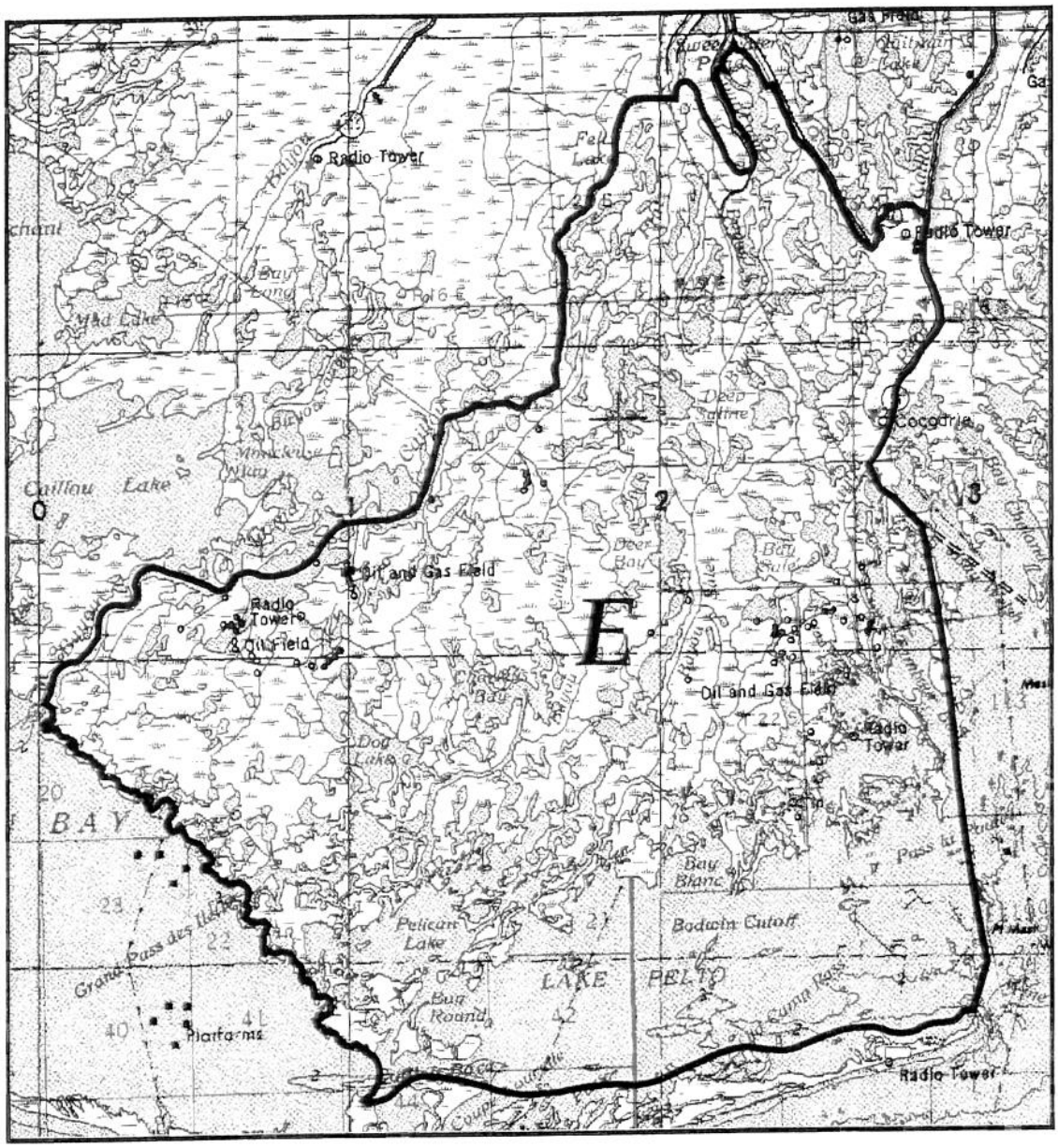
Region 2050 Strategies - Strategies for this unit include establishment and protection of the ridge functions, hydrologic management in the Houma navigation channel (HNC lock location), freshwater diversion (re-route the Gulf Intracoastal Waterway (GIWW)), hydrologic management in fresh-intermediate and brackish-saline marshes, support and maintain culverts under Highway 57, placement of a structure in Robinson Canal, beneficial use of dredged material, protection of bay/lake shoreline, implement Natural Resources Conservation Service (NRCS) Boudreaux Basin Watershed Plan, and sediment delivery. These strategies are projected to reduce future wetland loss by nearly 50%. All of these strategies are projected to greatly enhance fresh, intermediate, and brackish marshes, forested wetlands, and fastlands.

Shrimp, blue crab, finfish, alligators, furbearers, crawfish, waterfowl, non-game fish and wildlife, and endangered species are generally projected to be enhanced by all of the strategies in this unit, especially sediment delivery. Oysters are projected to be enhanced by dredge material use, shoreline stabilization, implementation of the Watershed Plan, and especially by sediment delivery, but are projected to be detrimentally impacted by the other strategies. All of the strategies, especially sediment delivery, are projected to enhance agriculture and grazing, forestry, recreation and tourism, water quality, storm buffering capacity, floodwater retention, and infrastructures such as roads, levees, bridges, and utilities. Sediment delivery is projected to greatly enhance the oil and gas industry and navigation, whereas shoreline protection is projected to detrimentally impact the oil and gas industry.

Local, Common, and Programmatic Strategies - Common strategies for the area are to establish/protect ridge function, beneficial use of dredged material, and protect bay/lake shoreline. There are no programmatic strategies.

E. Pelto Marshes Unit (Figure 9)

Location - This 143,834-acre unit is located in Terrebonne Parish. The southern boundary is the bay shoreline of Isles Dernieres from Wine Island to Pass Wilson. To the east, the boundary heads due north until it reaches the HNC, which it follows to LA



N

E - Pelto Marshes Unit

Pelto Marshes Unit Boundary

Miles

1 0 1 2 3 4 5

Date: March 15, 2000
Map ID: 20004228

Figure 9

Highway 357. It follows Bayou Caillou through Felix Lake to the mouth of the Bayou and along the Caillou shoreline to Pass Wilson.

Habitat Description, and Landscape Change - In 1949, the Pelto marshes were mostly saline (70%) in the southern end of the unit with about 20% brackish and 10% intermediate in the northernmost section of the unit. By 1968, the marshes became more saline (88%) and brackish (12%). Today this unit is primarily saline.

Historic Land Loss - Of the original 84,529 acres of land in 1932, 14,800 acres (18%) have been lost. Over half of the loss occurred by 1974. Primary causes of loss within this unit, both historical and current, are wind and wave erosion, subsidence, and altered hydrology. The Houma Navigation Channel is central to changes in hydrology in this unit. Historical and current causes of land loss include wind/wave erosion, subsidence, and altered hydrology. Other causes of loss include storm-related loss and lack of sediment and fresh water. Subsidence rates are high (2.1 - 3.5 ft/century).

Future Land Loss Projection - Although land loss rates have recently decreased in this unit, altered hydrology, subsidence, and wind and wave erosion continue to stress this habitat. Lack of fresh water and sediment are underlying causes of stress in this unit. If no action is taken, an additional 16,530 acres (24%) will be lost in the next 60 years. Since there are no CWPPRA projects in this unit, there are no areas targeted for preservation at this time.

Fish and Wildlife Resources - According to the fisheries work group, populations of red and black drum, blue crab, and Spanish mackerel have shown increasing trends. Species with decreasing trends include spotted seatrout, Gulf menhaden, southern flounder, American oyster, white and brown shrimp, largemouth bass, and channel catfish.

The brown pelican has shown an increasing trend over the last 12 years. In open water, populations of other avifauna have remained steady. In the salt marshes, avifauna, furbearers, and alligators have declined during that period. All wildlife in the salt marshes (avifauna, furbearers, and alligators) are expected to decline by 2050. In the open water, brown pelican populations are expected to increase, seabirds are expected to remain steady, and migratory waterfowl are expected to decline. In salt marshes, avifauna, furbearers, and alligators are expected to decline.

Infrastructure - The Houma Navigation Canal is the major navigational highway in this part of the coast. This 15-foot deep, 150-foot wide channel cuts through 41 miles of marshes from Houma to the Gulf of Mexico. Average annual shipping traffic on this channel reaches 1.2 million tons.

Oil and gas exploration and production has been active in this unit since the late 1920s and early 1930s. Subsequently, numerous oil and gas canals have been constructed in the unit. The largest community in this unit is Cocodrie. This unit has no primary roads or railroads, but has 11.3 miles of secondary and 6.5 miles of tertiary roads. There are 1,761 oil wells in this unit, but only 1.8 miles of natural gas pipeline.

Previously Proposed Strategies and Authorized Restoration Projects - Five previous documents, including the 'Blueprint' and CWPPRA plan, target management of the Houma Navigation Channel as a major strategy for this unit. Other strategies include manage hydrology in brackish and saline marshes, establish reef zone, protect bay and lake shoreline, and use dredge material beneficially.

Coastal Use/Resource Objectives - Habitat objectives for Pelto Marshes are brackish marshes and associated aquatic habitat and salt marshes and their associated aquatic habitats.

Resource objectives include shrimp, blue crab, oysters, saltwater finfish, waterfowl, scientific study and education, storm buffer, oil and gas infrastructure, roads/levees/bridges, and communities.

Region 2050 Strategies - Strategies for the unit include bank stabilization, hydrologic management of navigation channels (establish one route to HNC), hydrologic management of brackish-saline marshes, establish a reef zone, protect bay/lake shoreline, beneficial use of dredged material, reduce tidal prism, restore barrier islands, and stabilize and restore existing small marsh and bay islands. These strategies are projected to reduce future wetland loss. All of these strategies are projected to greatly enhance fresh, intermediate, brackish, and salt marshes; forested wetlands; and fastlands, except for reef zone creation and shoreline stabilization, which are projected to greatly enhance salt marsh habitats.

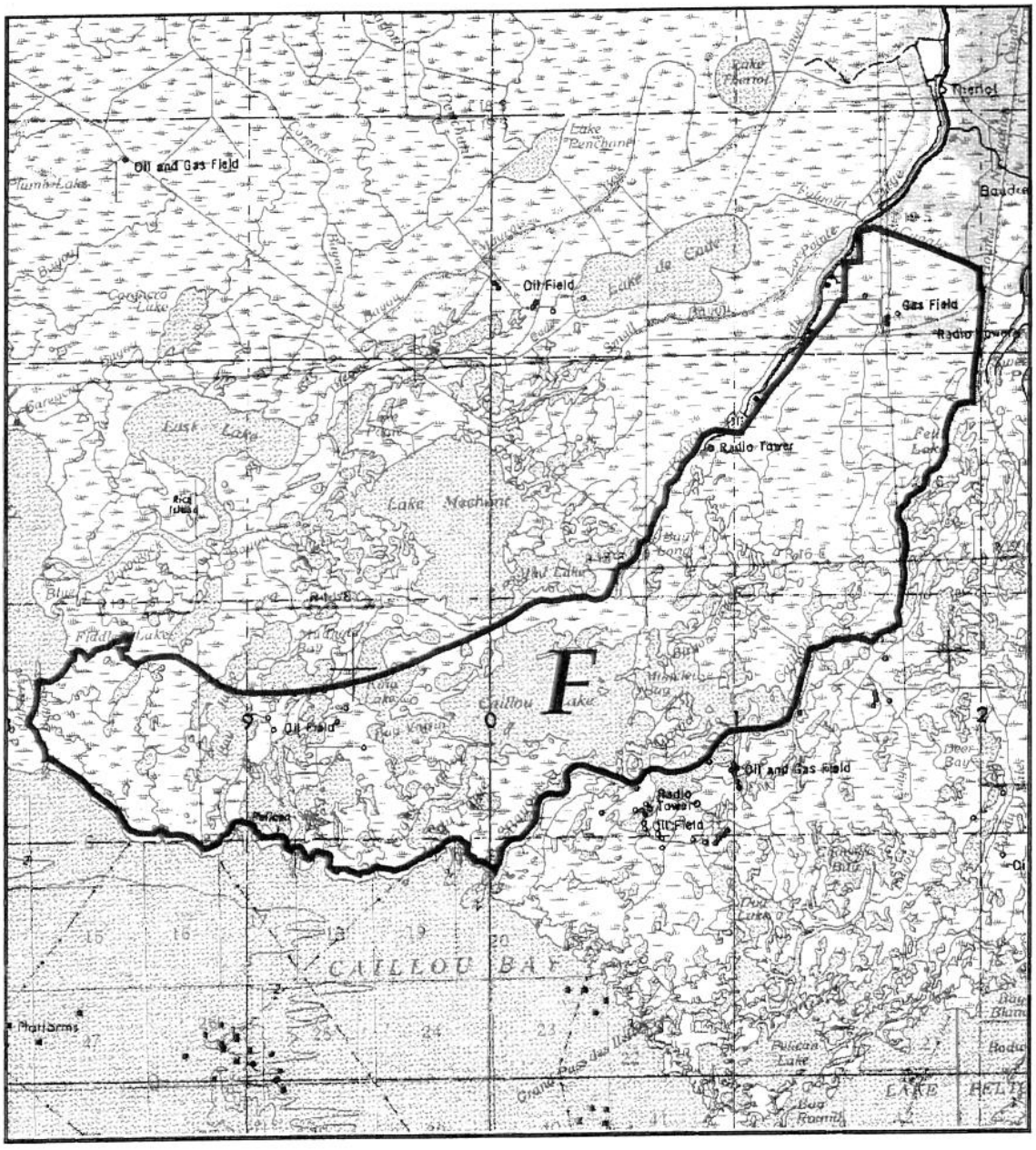
Shrimp, blue crabs, oysters, finfish, alligators, furbearers, waterfowl, crawfish, non-game fish and wildlife, and endangered species are generally projected to be enhanced by these strategies, especially sediment delivery and barrier shore restoration. These strategies are also projected to enhance agriculture and grazing, forestry, recreation and tourism, scientific study, water quality, storm buffering capacity, and infrastructure, such as roads, levees, and bridges, communities, and utilities. Navigation and the oil and gas industry are projected to be greatly enhanced by sediment delivery and barrier island restoration, and the oil and gas industry is also projected to be enhanced by bank stabilization, navigation channel management, and shoreline protection.

Local, Common, and Programmatic Strategies - Stabilize banks (HNC), protect bay/lake shoreline, and beneficial use of dredged material are the common strategies adopted for this area.

F. Caillou Marshes Unit (Figure 10)

Location - This 87,079-acre unit is located south of Houma in Terrebonne Parish. It is bordered to the east by the Houma Navigation Canal and Bayou Grand Caillou, to the west by Bayou DuLarge, to the north by Falgout Canal, and to the south by the Gulf of Mexico. Communities bordering the unit include those along the west bank of Bayou DuLarge south of Falgout Canal.

Habitat Description and Landscape Change - According to 1949 habitat maps, the northern 40% of the area was dominated by solid fresh and intermediate marshes. Residents claim the area immediately south of Falgout Canal was a fresh, floating, maidencane marsh. Within this freshwater area, there were wax myrtle thickets and a stand of cypress trees. These freshwater northern areas were separated from the saline marshes along the Gulf shore and around Caillou Lake by a band of brackish marsh. After completion of the Houma Navigation Canal in 1962, saltwater intrusion caused dramatic losses in the sensitive fresher habitats. By the mid-1970s, fresh marshes and cypress in the northern portion of the area had been converted to open water. By 1988, 75% of the area was saline marsh and the remainder brackish. The marshes north of Caillou Lake, Moncleuse Bay, and adjacent to Bayou Sauveur, are presently composed to a large degree of black needlerush.



F - Caillou Marshes Unit

N

Caillou Marshes Unit Boundary

Miles

1 0 1 2 3 4 5

Date: March 15, 2000
Map ID: 20004229

Figure 10

Fohs Canal and many connecting access canals in the northern area were dredged prior to the mid 1950s. Prior to the mid 1960s, marshes between Fohs Canal and the upper end of Bayou Sauveur were partitioned by a grid-like series of east-west and north-south trenasses. Between the mid 1950s and the mid 1970s, a series of access canals were dredged north of Moncleuse Bay.

Historic Land Loss - With the exception of continued erosion along the Gulf of Mexico shoreline, most historical and current loss has occurred within the northern and central portions of the unit, areas that were formerly fresh or low salinity areas. Following the construction of the Houma Navigation Canal (HNC) in 1962, fresh marshes south of Falgout Canal experienced catastrophic loss. Loss in this area continued through the mid-1980s. During this same time period, the grid of trenasses in the marshes between the upper end of Bayou Sauveur and Fohs Canal allowed the effects of the HNC to impact that area, resulting in some breakup and loss of marsh. The needlerush marshes further to the south have experienced minimal losses with the exception of shoreline erosion along the bay shores and the Gulf of Mexico. Currently the land is subsiding at 2.1 - 3.5 feet/century.

The long-term effects of eliminating riverine inflow in the early 1900s, in combination with continued subsidence, has made area marshes more vulnerable to the effects of local and regional hydrologic alterations. Land in Caillou is subsiding at a rate of 2.1 - 3.5 feet/century. With growth of the Atchafalaya River Delta, the HNC and the Gulf Intracoastal Waterway are carrying increasingly greater quantities of riverine water to area marshes and may be serving to reduce marsh loss rates. Between 1932 and 1990, approximately 13,380 acres of marsh were lost within this unit.

Future Land Loss Projection - If future marsh loss occurs at the 1974 to 1990 loss rate, by the year 2050, more than 17% of the unit's remaining marshes will be lost. However, increasing flow of Atchafalaya River freshwater down the HNC and the lower end of Bayou Grand Caillou may tend to curtail marsh deterioration and loss within the unit. Future losses will likely occur primarily within the trenasse grid area located in the north central portion of the unit.

Fish and Wildlife Resources - Area marshes provide habitat for migratory waterfowl, wading birds, rails, nutria, mink, raccoon, river otter, swamp rabbit, and American alligator. These areas also provide nursery habitat for commercially and recreationally

important estuarine-dependent fish and shellfish such as Atlantic croaker, Gulf menhaden, spotted sea trout, red drum, black drum, sand seatrout, spot, striped mullet, southern flounder, blue crab, white shrimp, brown shrimp, and many others. The Caillou Lake area is a state oyster seed ground area. Because of its seasonal supply of riverine input, it is often very productive. Consistent oyster production is hampered because areas to the north tend to be too fresh and areas to the south tend to be too salty.

This unit has shown increasing population trends for red and black drum, brown shrimp, blue crab, and Spanish mackerel. White shrimp have remained stable over the last 12 years. Largemouth bass, spotted seatrout, Gulf menhaden, southern flounder, and American oysters have declined in this same period.

The brown pelicans and wading birds have shown an increasing trend over the last 12 years. Other avifauna, such as seabirds, shorebirds, raptors, and marsh residents and migrants have remained stable, whereas furbearers and alligators have been declining. By 2050, most avifauna is projected to decrease, except for brown pelicans, which are expected to increase. Alligators are expected to decrease, but furbearers are expected to remain stable.

Infrastructure - Infrastructure within this unit consists primarily of Louisiana Highway 314 and the adjacent community located along the east bank of Bayou DuLarge south of Falgout Canal. This community is surrounded by a hurricane protection levee and includes a swing-barge floodgate in the southern end of Bayou DuLarge. Drainage for this developed area is provided by pumps. Other infrastructure includes the Falgout Canal Road along the southern bank of Falgout Canal. This road, and the associated Houma Navigation Canal pontoon bridge, allows travel from the Bayou DuLarge community to those located along Bayou Grand Caillou. The only other significant infrastructure consists of access canals, pipeline canals, and oil and gas drilling and production facilities, and private camps. There are 4 drainage pumps (3 at 3 inches and 1 at 10 inches) and 7 miles of levees. No railroads or primary or secondary roads are in this unit, but there are 5.9 miles of tertiary roads. This unit also has 235 wells and 16.4 miles of pipeline.

Previously Proposed Strategies and Authorized Restoration Projects - The short-term critical strategies proposed in the Louisiana Coastal Wetlands Restoration Plan for reducing marsh loss within the Caillou Marshes Unit include barrier island

protection/restoration and hydrologic restoration. The long-term critical strategy is freshwater and sediment introduction. Projects authorized through the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) consist primarily of barrier island projects. One such project, completed in 1997, protects Raccoon Island through a series of segmented breakwaters. Other CWPPRA projects have been authorized to rebuild portions of Whiskey Island, Trinity Island, East Island, and East Timbalier Island. Adjacent to the unit, a CWPPRA project involving vegetative plantings along the north side of Falgout Canal was authorized and completed.

Coastal Use/Resource Objectives - Habitat objectives for the unit are brackish marshes and their associated aquatic habitats. Resource priorities include shrimp; blue crabs; oysters; saltwater finfish; freshwater finfish; furbearers; waterfowl; storm buffer; and roads, levees, and bridges.

Region 2050 Strategies - Strategies for this unit include establishment and protection of ridge functions, hydrologic management of fresh-intermediate and brackish marshes, management of HNC hydrology to benefit wetlands by/with landowner alignment, construction of HNC locks with plug in Bayou Grand Caillou only, levee alignment associated with the Corps of Engineers' Morganza to the Gulf study, establishment of a reef zone, beneficial use of dredged material, freshwater diversion, and sediment delivery. These strategies are projected to reduce future wetland loss by more than 50%.

These strategies are projected to enhance fresh, intermediate, brackish, and salt marshes; forested wetlands; and fastlands. For example, beneficial use of dredged material will greatly enhance all habitat types through distribution of sediment.

Shrimp, blue crabs, oysters, finfish, alligators, furbearers, crawfish, waterfowl, non-game fish and wildlife, and endangered species are projected to be greatly enhanced by these strategies, except for the HNC lock construction, which is projected to have a detrimental impact on all these resources except for blue crabs. The same pattern holds for agriculture and grazing, forestry, recreation and tourism, water quality improvement, storm buffering capacity, and communities. All the strategies, except the HNC locks, are projected to enhance scientific study, navigation, the oil and gas industry, roads, levees, and bridges, and utilities, especially sediment delivery and dredge material use.

Local, Common and Programmatic Strategies - Common strategies for Caillou are to establish and protect ridge function and beneficial use of dredged material. There are no programmatic strategies for this area.

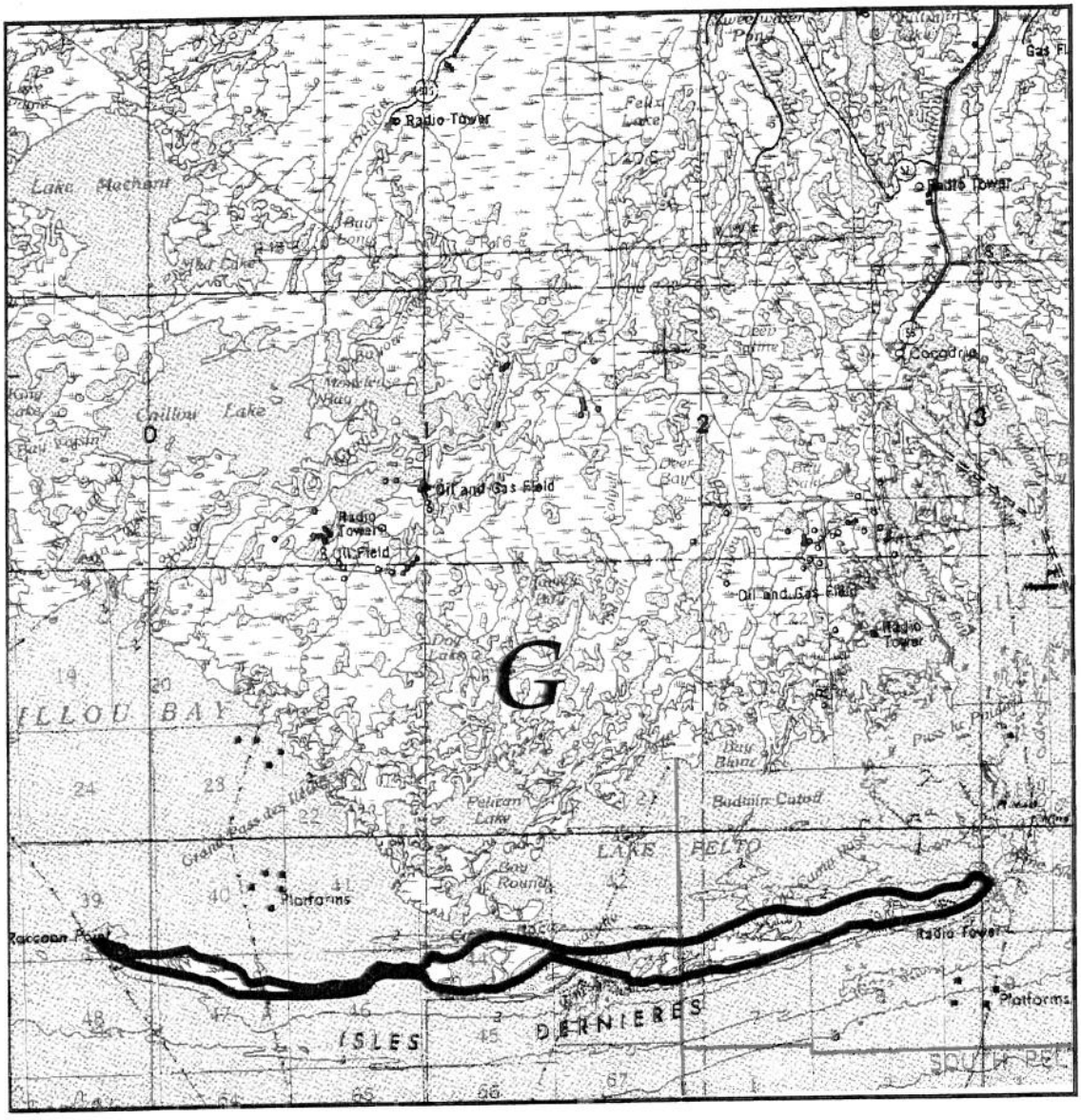
G. Isles Dernieres Shorelines Unit (Figure 11)

Location - This 7,307-acre unit is located at the southern extreme of Terrebonne Parish. This unit is bordered on the north by Lake Pelto and the Pelto Marshes Management Units.

Habitat Description and Landscape Change - The Isles Dernieres barrier island chain is the result of transgressive barrier island arc formation from the Early Lafourche delta, or Caillou headland complex of the Lafourche delta system. The main distributaries of the Early Lafourche delta were Bayous Grand Caillou and Terrebonne, which may have been abandoned 1,200 years ago (Penland and Boyd 1985), or as recently as 600 - 800 years ago (Ritchie et al. 1989). Therefore, the Isles Dernieres islands are older and in a later stage of development and transgression than the Timbalier Islands. The Isles Dernieres barrier island chain currently consists of four islands. From east to west these islands are East Island, Trinity Island (the largest), Whiskey Island, and Racoon Island. These islands contain beach, dune, swale, marsh habitats (including black mangroves), and numerous washover surfaces.

Historic charts show that in 1853, the Isles Dernieres was one long, continuous island. During this time, there was a fashionable resort on the western end of the island. However, a severe hurricane in the mid-1850s destroyed the resort and fragmented the island.

In 1949, O'Neil (1949) classified this barrier island chain as being composed of nearly equal amounts of salt marsh and beach habitat. The 1968 Chabreck classification reported salt marsh habitat as the dominant marsh type. A transect across a typical Louisiana barrier island (from Gulf to Bay) begins with the beach habitat followed by a relatively low elevation primary dune. Behind the dune is the swale habitat, which grades down to a high marsh region where black mangrove is typically found. Finally, the high marsh grades into the tidally influenced back-barrier marsh. Historically, these islands have been slowly migrating to the northwest as storms and overwash events erode



G - Isles Dernieres Shorelines Unit

N

Isles Dernieres Shorelines Unit Boundary

1 0 1 2 3 4 5 *Miles*

Date: March 20, 2000
Map ID: 20004230

Figure 11

the beach and deposit dune sands back across the swale and into the back barrier marshes. As the islands migrate, or rollover, they decrease in width, height, and area.

Historic Land Loss - Much of the land loss and erosion of the islands is attributable to storm events. Tropical storms and hurricanes have resulted in substantial beach erosion and overwash of these islands. Winter storms and cold front passages also erode the islands, particularly the back barrier salt marsh shorelines. Historic rates of shoreline erosion on the Isles Dernieres have averaged 32.8 – 49.2 feet/year. Subsidence is occurring at a rate of 2.1 - 3.5 feet/century. Following the passage of Hurricane Andrew just to the west of the Isles Dernieres in 1992, Racoon Island lost 30 - 40 % of its area and shoreline erosion along stretches of Trinity Island exceeded 13.1 feet (Stone et al. 1993). Approximately 495 acres of land were lost in this unit from 1978 - 1990.

Future Land Loss Projections - Within the next 60 years, it is expected that none of the Isles Dernieres will remain if nothing is done (Penland and Boyd 1985). In fact, it is believed that the Isles Dernieres chain may become sub-aqueous by the year 2007 (McBride et al. 1992).

Fish and Wildlife Resources - This management unit is host to a large variety of fish and invertebrate species. Of all the species reported, only Spanish mackerel is believed to be showing a trend of increasing numbers in this unit. Speckled trout, red drum, black drum, flounder, Gulf menhaden, blue crabs, oysters, and brown and white shrimp all display a trend of decreasing abundance.

The brown pelican has shown an increasing trend over the last 12 years. Other avifauna has remained stable over this time, and furbearers have shown a declining trend. By 2050, the pelican population is expected to increase, the avifauna in open water habitats is projected to remain stable, and the avifauna elsewhere are expected to decline, as are the furbearers.

Infrastructure - There is substantial oil and gas activity in the area, especially in Terrebonne Bay behind the islands, but also on the islands themselves. Trinity Island in particular has been negatively impacted by oil and gas access canals that were dredged on the island. These canals serve as potential weak spots, or focal points, for breaches to form during severe storm and overwash events. This unit has 11 wells and no roads or pipelines.

Previously Proposed Strategies and Authorized Restoration Projects - There have been six different proposed plans that address the restoration of these fragile and dynamic barrier islands that serve as a first line of defense against storm damage to the interior bays and marshes. The proposed plans cover a variety of techniques and include the use of sand fencing and/or pumped sand additions to nourish the beach and maintain island elevation. Vegetative plantings have been recommended to help stabilize and bind the sand, and to further trap and accrete wind-blown sand. Dedicated dredging may also be utilized as a means to fill and restore canals. Various hard structures, such as rip-rap shorelines or breakwaters, have also been proposed. However, the use of hard structures on barrier islands has come under increased scrutiny based on the poor performance of such structures in restoration/stabilization projects in Louisiana and elsewhere.

Coastal Use/Resource Objectives - This management unit is classified as a barrier island/chenier shoreline habitat objective. However, the back barrier salt marshes must be included as a critical component of the overall barrier island environment. Resource priorities include shrimp, blue crabs, oysters, saltwater finfish, non-game fish and wildlife, endangered species, and recreation and tourism. The area also serves as a storm buffer and contains oil and gas infrastructure.

Region 2050 Strategies - Strategies for the Isles Dernieres Shoreline include establishment of a reef zone, initiation of regulatory and institutional measures (e.g., elimination of any new dredging of canals on the islands, directional drilling to prevent new development on the islands, restoration of the islands with the help of oil and gas companies, development of a mitigation bank and development and subsequent support of a Barrier Island Commission), protection of bay/lake/gulf shoreline, maintenance and repair of barrier islands, beneficial use of dredged material, sediment delivery, and narrowing gaps. These strategies are projected to enhance salt marshes and barrier islands, especially the reef zone creation, shoreline protection, barrier island restoration, and sediment delivery.

Shrimp, blue crabs, and oysters are projected to be enhanced by these strategies, and saltwater finfish, non-game fish and wildlife, and endangered species are projected to be greatly enhanced. These strategies are also projected to greatly enhance recreation and tourism and storm buffering capacity. The oil and gas industry is projected to be

enhanced by barrier island restoration and sediment delivery, but slightly detrimentally impacted by institutional measures and dredged material use.

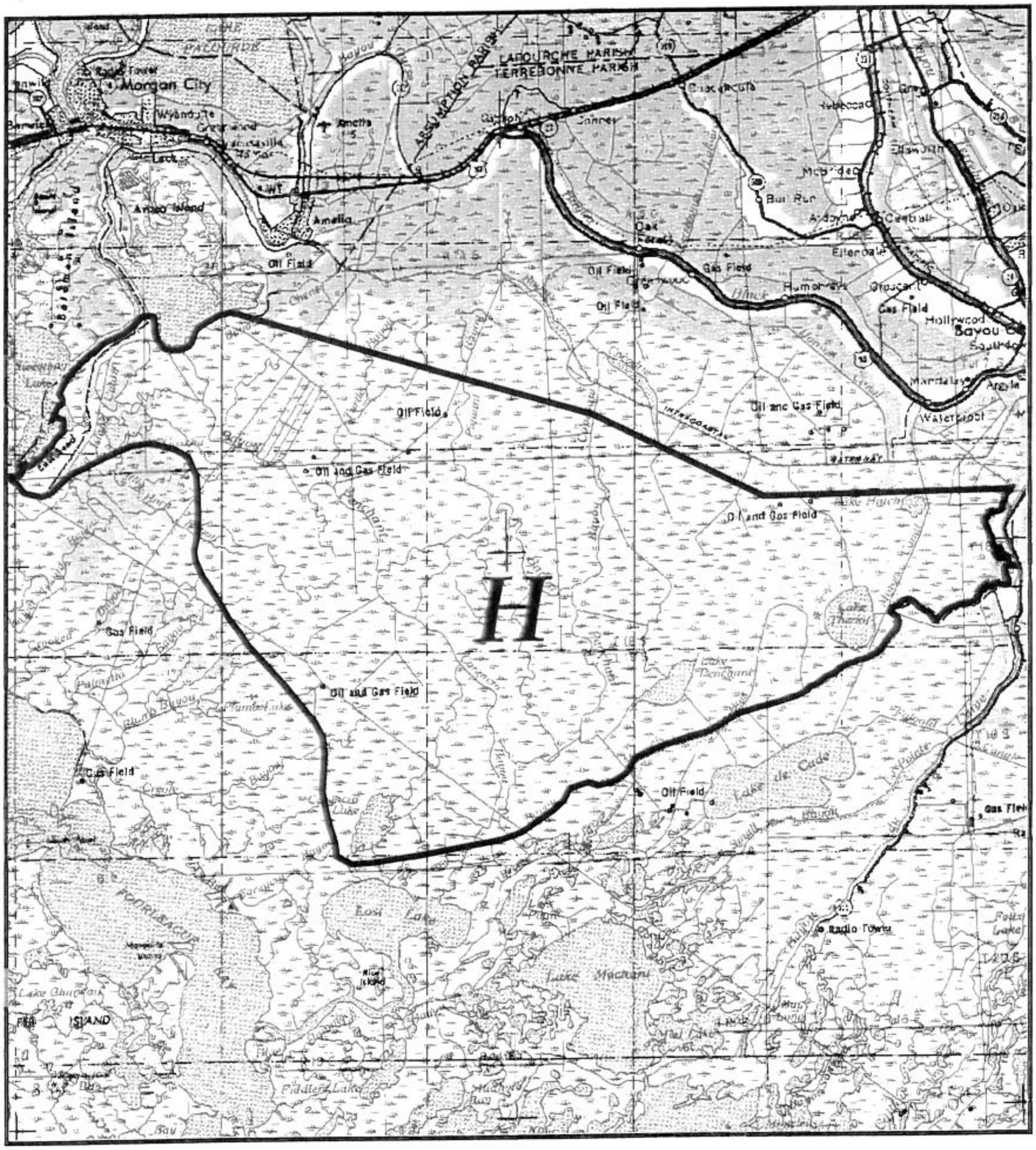
Local, Common, and Programmatic Strategies - Protect bay/lake/gulf shoreline and beneficial use of dredged material (fill abandoned canals) are two common area strategies. Programmatic strategies include directional drilling to prevent new development footprints on the land, eliminate any new dredging of canals on the islands, recruit oilfield companies to help restore islands, and develop a mitigation bank.

H. Penchant Unit (Figure 12)

Location - This 157,126-acre unit is located in Terrebonne Parish and comprises the Bayou Penchant Watershed. The unit's northern border is just south of the wetlands influenced by the GIWW. The eastern extent reaches to the edge of the natural levee of Bayou du Large and Bayou Marmande to the southwest. The southern boundary follows the Mauvois Bois Ridge and crosses to the south of Carencro Lake. The eastern boundary excludes the marshes that drain into Fourleague and Atchafalaya bays and follows the Atchafalaya River north between Avoca Island Cutoff and Avoca Island.

Habitat Description and Landscape Change - The most common habitat in this unit is fresh floating marsh, with a small band of intermediate and brackish marshes in the southern part of the unit. O'Neil's 1949 habitat maps show that large areas in the southeastern part of the unit were dominated by floating three-corner grass marsh. In 1968, Chabreck (1970) showed that many of these areas had changed to fresh marsh. Visser et al. (1994) shows that although the habitat type stayed fresh marsh the vegetation type in large portions of this unit changed from robust maidencane flotant to thin spikerush flotant.

Historic Land Loss - From 1932 to 1990, 39,600 acres (25%) were lost in this unit. Increased flooding due to the reduced hydrologic efficiency of the Atchafalaya River has been identified as the most important factor in current land loss. Altered hydrology and subsidence have been and continue to play a role in land loss. Land is subsiding at a rate of 1.1 - 2.0 feet/century. Herbivory and direct removal of vegetation for oil and gas canals are also contributing to land loss in this unit.



H - Penchant Unit

Penchant Unit Boundary

1 0 1 2 3 4 5 Miles

Date: March 15, 2000
Map ID: 20004231

Figure 12

Future Land Loss Projection - Over the next 60 years 18% of the remaining marsh will be lost if current land loss rates continue and if no action is taken.

Fish and Wildlife Resources - Only a few fisheries species have shown increasing trends in this unit (red drum, black drum, and blue crab). All other fisheries species are decreasing including the largemouth bass, which supports a large recreational fishery in this unit, brown and white shrimp; American oyster; southern flounder; Gulf menhaden; and spotted seatrout. This unit also supports waterfowl, alligators, and a large population of nutria.

Bald eagle, wading bird, and alligator populations have shown increasing trends over the last 12 years. Other species have remained stable, including other waterfowl and furbearers. By 2050, increases are projected for populations of bald eagle and alligator. Other waterfowl and raptors are generally projected to decline, whereas furbearers are projected to remain stable.

Infrastructure - The US Army Corps of Engineers is deepening the channel to the 20 foot contour from the US Highway 90 crossing over Bayou Boeuf to the Gulf of Mexico via the GIWW, Bayou Chene, Avoca Island Cutoff, and the Lower Atchafalaya River for navigation and harbor purposes. The unit also includes 6.4 miles of the East Atchafalaya Basin Protection Levee (400 foot base). Five pumps (4 at 84 inches and 1 at 36 inches) are located in this unit. Borrow pits have been constructed below Morgan City for drainage interception. No primary or secondary roads or railroads are located within the unit, but there are 6.9 miles of tertiary roads. Major water bodies in this unit include Bayou Penchant, Bayou Copesaw, Lake Theriot, Lake Penchant, and Carencro Lake. This unit has 620 wells and 42.6 miles of pipeline, as well as one surface water intake for mining.

Previously Proposed Strategies and Authorized Restoration Projects - Maintain the ridge function of the ridges that form the southeastern boundary of the unit, stabilize the banks of all navigation channels, manage hydrology to reduce water levels and flows in the unit, increase freshwater and sediment inflow from the GIWW and Atchafalaya River, protect shorelines of the major lakes, and use dredge material to create marsh in open water areas have been previously proposed as strategies for restoration of this unit. The CWPPRA Penchant restoration effort will protect 244 acres in the western side of

this unit. Demonstration projects that will test two new strategies (fencing and enhancement) will be started soon.

Coastal Use/Resource Objectives - Habitat objectives for the Penchant Unit are freshwater marshes and forested wetlands and their associated aquatic habitats. Resource priorities include saltwater finfish, freshwater finfish, alligators, furbearers, waterfowl, non-game fish and wildlife, endangered species, scientific study, water quality enhancement, storm buffer, and oil/gas.

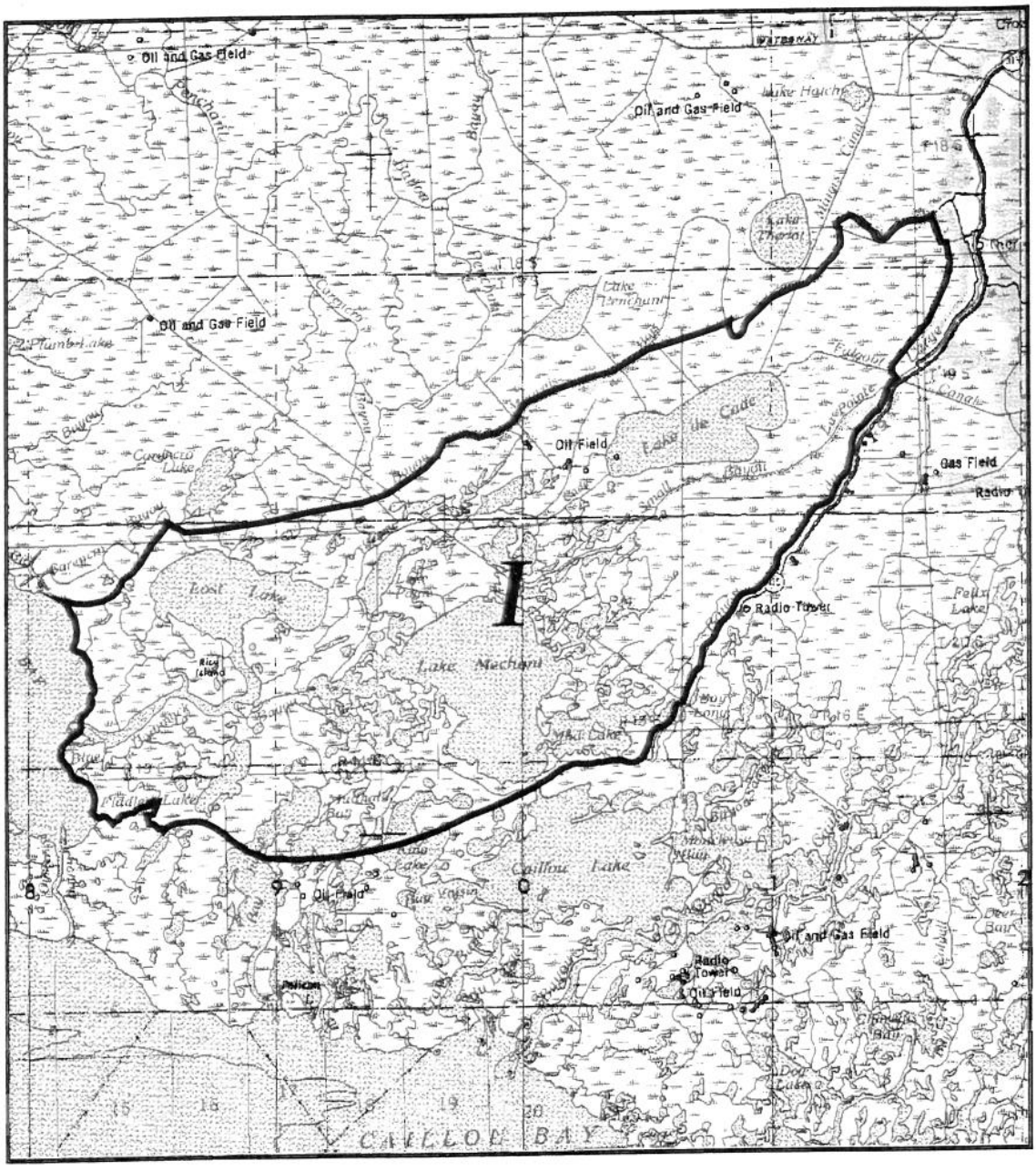
Region 2050 Strategies - The major strategy to restore and sustain wetlands in this unit is to lower water levels in the western part of this unit. This is the area of greatest loss as well as the area where maidencane marshes have been converted to thin-mat spikerush marshes. Other strategies include the establishment and protection of the ridge function, bank stabilization, a reduction of water velocities in channels, shoreline protection, increased flow of the Atchafalaya River, sediment diversions and delivery, the beneficial use of dredged material, and the implementation of the Penchant Basin Plan.

These strategies are projected to reduce future wetland loss by more than 50%. Most are also projected to enhance fresh marshes and forested wetlands. Some strategies (e.g., freshwater diversion, increased river flow, sediment diversions, and shoreline stabilization) are compatible with other strategies, but are not projected to greatly enhance these habitats.

Local, Common, and Programmatic Strategies - Four common strategies: protection of the Marmande and Mauvois Bois ridge function, stabilization of banks, protection of lake shorelines, and beneficial use of dredge material (create marsh in open water areas) have been adopted for this unit.

I. Mechant/DeCade Unit (Figure 13)

Location - This 108,167-acre unit is located west of Dulac in Terrebonne Parish. The unit's northeastern boundary is Marmande Ridge, the eastern boundary is Thibodaux Canal south to Bayou Du Large, and the southern boundary is south of Lake Mechant, through Bay Junop, and King Lake. The southwestern boundary is Old Oyster Bayou, and the western boundary is Fourleague Bay.



N

I - Mechant/DeCade Unit

Mechant/DeCade Unit Boundary

Miles

1 0 1 2 3 4 5

Date March 15, 2000
Map ID: 20004232

Figure 13

Habitat Description and Landscape Change - In 1949, O'Neil listed the predominant habitat as being brackish, three-cornered grass marsh with lesser amounts of intermediate and freshwater marsh, respectively. By 1968, brackish marsh still dominated the habitat but fresh marsh became the second largest habitat type, followed by intermediate marsh. Additionally a small amount of saline marsh area was recorded southeast of Lake Mechant. Major water bodies included in the unit are: Lost Lake, Lake Mechant, Lake De Cade, and Blue Hammock Bayou.

Historic Land Loss - The primary cause for land loss in the Mechant/De Cade unit is high subsidence rates (2.1 - 3.5 feet/century) in the interior marsh. As the marsh subsides, rapid water exchange due to tidal action increases, leaving the interior wetlands most susceptible to soil erosion. The natural hydrology within the unit has been altered by several manmade waterways including: Falgout Canal, Minors Canal, Peoples Canal, Grand Pass, and numerous pipeline and oilfield exploration canals. The result has been severe marsh erosion, especially within the area adjacent to Lake De Cade and Lake Mechant. Although not actually in the unit, the Houma Navigation Canal has allowed saltwater intrusion into the Falgout Canal area. Tidal influences and historic water circulation patterns have been also been modified by the Houma Navigational Canal. This has resulted in a lack of sediment and freshwater replenishing the unit. Hurricanes and herbivory have also contributed adversely to the interior erosion of the unit's marsh. Approximately 14,170 acres within the unit were lost between 1932 and 1990, with approximately 4,958 acres of loss occurring from 1978 to 1990.

Future Land Loss Projection - The Mechant/De Cade unit is projected to have a future loss of 11,460 acres by the year 2050. This is an estimated 18.8% loss of the unit's current acreage in the next 60 years. With the implementation of CWPPRA projects, there will be an estimated 16.4% loss by 2050. Funded CWPPRA projects will help preserve 1,440 acres within the unit during this time.

Fish and Wildlife Resources - Several populations of fish and invertebrate species are projected to increase throughout the years preceding 2050. These include: red drum, black drum, Gulf menhaden, oyster, brown shrimp, blue crab, and Spanish mackerel. Species that are projected to decline in number are: spotted seatrout, southern flounder, largemouth bass, and channel catfish. White shrimp numbers are expected to remain steady. Additionally, this management unit lies within the Mississippi flyway, and offers a critical wintering site for a large number of waterfowl species. The unit's fresh and

intermediate marshes provide habitat for many resident and migratory non-game birds, white-tailed deer, swamp rabbit, American alligator, raccoon, nutria, mink, otter, muskrat, and numerous other furbearers. The unit's saline marsh provides habitat for wading birds, shorebirds, and seabirds. The Mechant/De Cade unit is host to one threatened species, the bald eagle. The brown pelican, an endangered species, also occurs within the unit's boundary.

The brown pelican, wading bird, and alligator populations have shown an increase over the last 12 years. Other waterfowl and bald eagles have remained steady. Muskrat, nutria, and other furbearers have shown a declining trend over this time. They are projected to decline further by 2050, as are alligator populations. In open water, waterfowl are projected to remain stable, whereas in intermediate marsh and brackish marsh, waterfowl and raptors are expected to decline. In freshwater swamps, bald eagle populations are expected to remain stable.

Infrastructure - LA Highway 315 runs parallel to the unit's eastern border. Otherwise the only significant infrastructure within the unit are the numerous oilfield related waterways and pipelines. The US Army Corps of Engineers maintains no known structures within the unit's boundary. A 20-inch pump and approximately 4 miles of levee are located within the unit's boundary. Future considerations may take in account using current pumps as a means of establishing a freshwater source to combat saltwater intrusion. This unit has no primary or secondary roads or railroads, but has 11 miles of tertiary roads. There are 223 wells, but no pipelines.

Previously Proposed Strategies and Authorized Restoration Projects - The Blueprint (van Heerden 1994) and Gagliano and Van Beek (1993) have proposed sediment diversion within the unit. Additionally, Gagliano and Van Beek have proposed to establish a reef zone within the unit. Proposed projects under the Coastal Wetlands Planning, Protection and Restoration Act include freshwater diversions, managed hydrology among all marsh habitats, and protection of bay and lake shorelines. There have been project proposals for both fresh/intermediate and brackish/saline marshes to be managed hydrologically. The Morganza to the Gulf Hurricane Protection Levee has been proposed to manage hydrology in brackish/saline marshes and also reduce the scouring effect of hurricane storms. Various marsh landowners have planned for hydrology management in fresh and intermediate marshes. Since 1964, Fina Laterre has constructed and maintained an earthen shoreline embankment along the shores of Lake DeCade in

hopes of minimizing wave erosion. Ridge protection has been proposed by various constituents: Blueprint (van Heerden 1994), CWPPRA, and Gagliano and Van Beek (1993). Additionally, this management unit is included in the Penchant Basin Natural Resources Plan that calls for shoreline and bay erosion control, managed hydrology, and controlled freshwater input through the south bank of Lake DeCade.

Coastal Use/Resource Objectives - The habitat objectives for Mechant/DeCade are freshwater and brackish marshes and associated aquatic habitats. Resource objectives include: shrimp; blue crabs; oysters; saltwater finfish; freshwater finfish; alligators; furbearers; waterfowl; recreation and tourism; storm buffer; flood water retention; oil and gas; and communities.

Region 2050 Strategies - Strategies for the region include: establishment and protection of ridge function, bank stabilization, freshwater diversion, hydrologic management of fresh-intermediate and brackish-saline marshes, restoration to historic condition of canals, establishment of a reef zone, measures to protect bay/lake shoreline, train a lobe of the Atchafalaya into Fourleague Bay, sediment diversions, the beneficial use of dredged material, increasing the flow of the Atchafalaya River, sediment delivery, and improved water quality through wastewater management.

These strategies are projected to reduce future wetland loss. They are also projected to greatly enhance fresh, intermediate, brackish, and salt marshes, forested wetlands, and fastlands.

Shrimp, blue crabs, oysters, finfish, alligators, furbearers, waterfowl, non-game fish and wildlife, and endangered species are projected to be greatly enhanced by all of these strategies except for water quality improvements, which is projected to only benefit oysters. These strategies, with the exception of wastewater management, are also generally projected to greatly enhance agriculture and grazing, forestry, recreation and tourism, water quality storm buffering capacity, roads, bridges, levees, communities, and utilities. Floodwater retention is projected to be enhanced by marsh management, freshwater diversions, bank stabilization, ridge restoration, and especially sediment delivery.

Local, Common, and Programmatic Strategies - Four common strategies (establish and protect ridge function, stabilization of banks, protect bay/lake shoreline and the beneficial use of dredged material) and three regional strategies (increase Atchafalaya flow, management of water quality and wastewater, and sediment delivery) exist for this area.

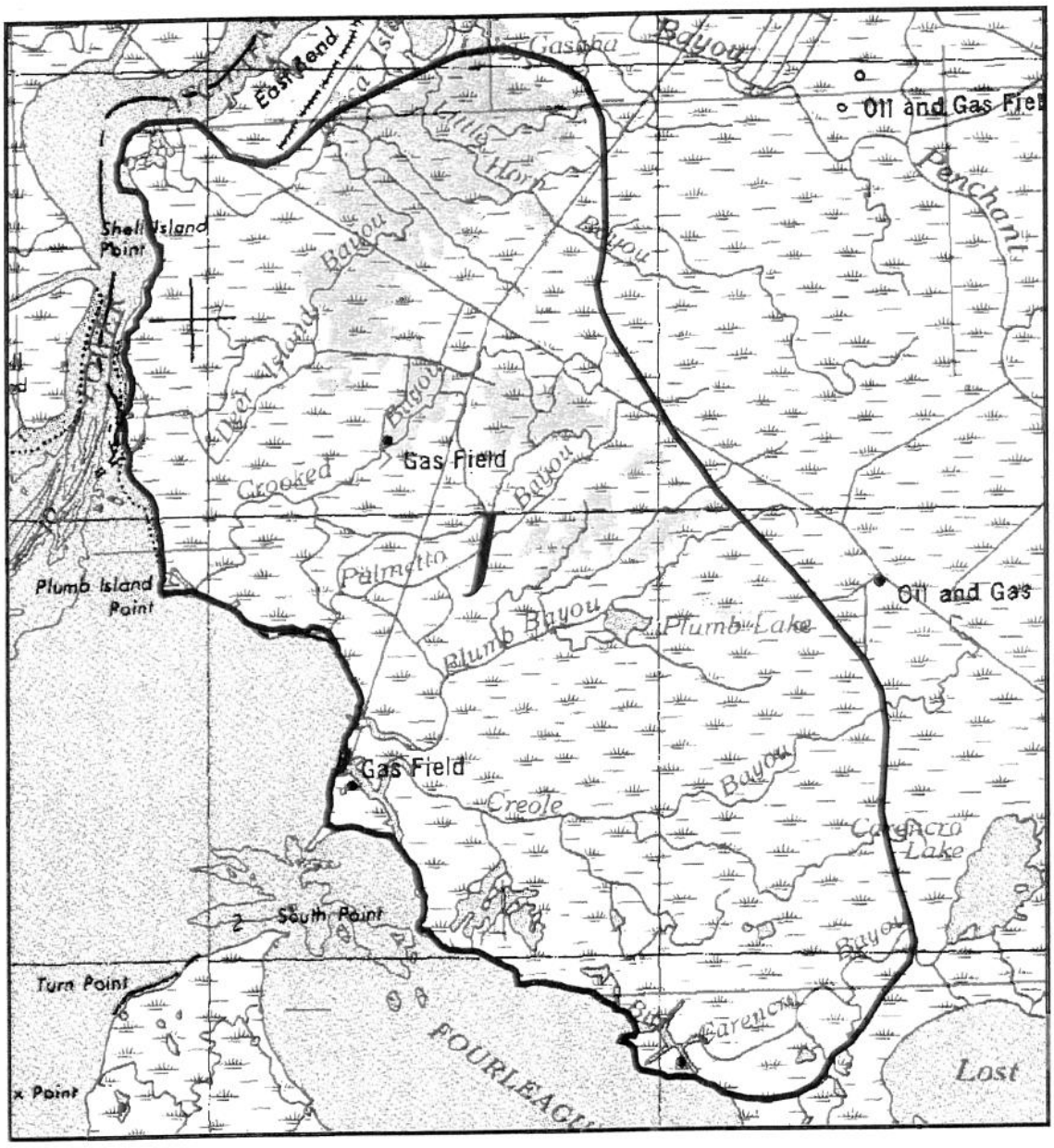
J. Atchafalaya Marshes Unit (Figure 14)

Location - This 58,844-acre unit is located in Terrebonne Parish and includes those marshes indirectly affected by the Atchafalaya River. The unit's northern border starts where the Avoca Cutoff enters the Atchafalaya River and includes the Big Horn and Little Horn Bayou watersheds. The eastern extent is determined by the watersheds that enter the Atchafalaya River and Fourleague Bay. The southern boundary includes the watershed of Big Carencro Bayou, but excludes Carencro Lake. The western boundary follows the Fourleague Bay shoreline.

Habitat Description and Landscape Change - The most common habitat in this unit is fresh marsh, with a small band of intermediate marsh in the southern part of the unit. O'Neil's (1949) habitat maps show that most of this unit was brackish marsh. In 1968, Chabreck's maps showed that many of these areas had changed to fresh marsh. Visser et al. (1994) has shown that the area has continued to freshen especially during high flood years of the Atchafalaya River.

Historic Land Loss - Approximately 5,560 acres (12%) were lost in this unit in the period from 1932 to 1990. Most of the recent historic loss in this unit was due to Hurricane Andrew, which significantly impacted the unit's southern area. Altered hydrology contributed to historic land loss. Wind-wave erosion has been a contributing factor to loss and continues to play a role. Herbivory is also contributing to current land loss in this unit. The land in Atchafalaya Marshes is subsiding at a rate of 1.1 - 2.0 feet/century.

Future Land Loss Projection - During the next 60 years, 9% of the remaining marsh will be lost if current land loss rates continue and if no action is taken.


Bayou
Oil and Gas Fiel
Penchant
Shell Island Point
Gas Field
Crooked Bayou
Palmetto Bayou
Plumb Island Point
Oil and Gas
Plumb Lake
Plumb Bayou
Gas Field
Creole Bayou
Lake
South Point
Turn Point
FOURLEAGUE
Lost
x Point

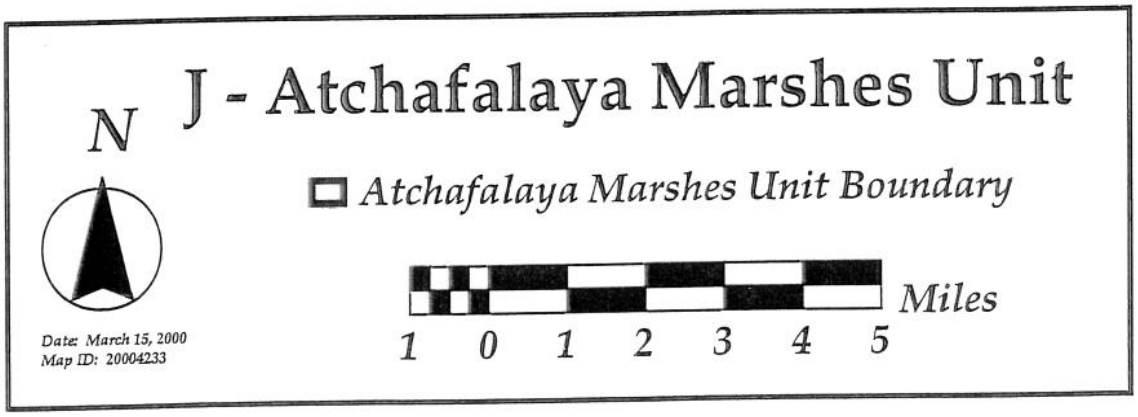

J - Atchafalaya Marshes Unit
N
Atchafalaya Marshes Unit Boundary
Miles
1 0 1 2 3 4 5
Date: March 15, 2000
Map ID: 20004233

Figure 14

Fish and Wildlife Resources - All fisheries species are stable in this unit (red drum, black drum, spotted seatrout, gulf menhaden, southern flounder, white shrimp, blue crab, Spanish mackerel, largemouth bass, and channel catfish). This unit also supports waterfowl, alligators, and a large population of nutria.

Over the past 12 years, brown pelican, bald eagle, and alligator populations have shown an increasing trend, and this is projected to continue through 2050. Other waterfowl and raptor populations, as well as nutria, muskrat, and other furbearers have been stable and are projected to remain stable.

Infrastructure - The US Army Corps of Engineers is deepening the Avoca Cutoff channel to the 20-foot contour. No roads or railroads are located within the unit. Major water-bodies in this unit include Big Horn Bayou, Deer Island Bayou, Palmetto Bayou, Plumb Bayou, Creole Bayou, Big Carencro Bayou, and Plumb Lake. There are 13.4 miles of natural gas pipelines and 251 wells.

Previously Proposed Strategies and Authorized Restoration Projects - Stabilize the banks of all navigation channels, manage hydrology, protect the bay shorelines of the major lakes, and increase freshwater inflow from the Atchafalaya River are all strategies that have been proposed for restoring this unit.

Coastal Use/Resource Objectives - Habitat objectives for the Atchafalaya Marshes Unit are fresh and intermediate marshes and their associated aquatic habitats. Resource priorities include shrimp, blue crabs, saltwater finfish, freshwater finfish, furbearers, recreation and tourism, storm buffer, navigation, and oil and gas.

Region 2050 Strategies - The major strategy to maximize land building in Atchafalaya Bay will indirectly lead to reduced shoreline erosion on the Atchafalaya Bay shore of this unit. Other regional strategies include bank stabilization, hydrological management of navigation channels and fresh and intermediate marshes, increased Atchafalaya River flow, beneficial use of dredged material, and improved sediment delivery. These strategies are projected to halt future wetland loss. They are also projected to greatly enhance fresh and intermediate marshes.

Local, Common, and Programmatic Strategies - Two common strategies, stabilization of banks and beneficial use of dredge material (create marsh in open water areas), have been adopted for this unit.

K. Fourleague Bay Unit (Figure 15)

Location - This 22,685-acre bay is located in Terrebonne Parish. It is flanked by Point-au-Fer Island and the mainland Terrebonne Parish marshes.

Habitat Description and Landscape Change - This bay consists of fresh to brackish water. Salinity is strongly influenced by discharge from the Atchafalaya River.

Historic Land Loss - There has never been land in this unit.

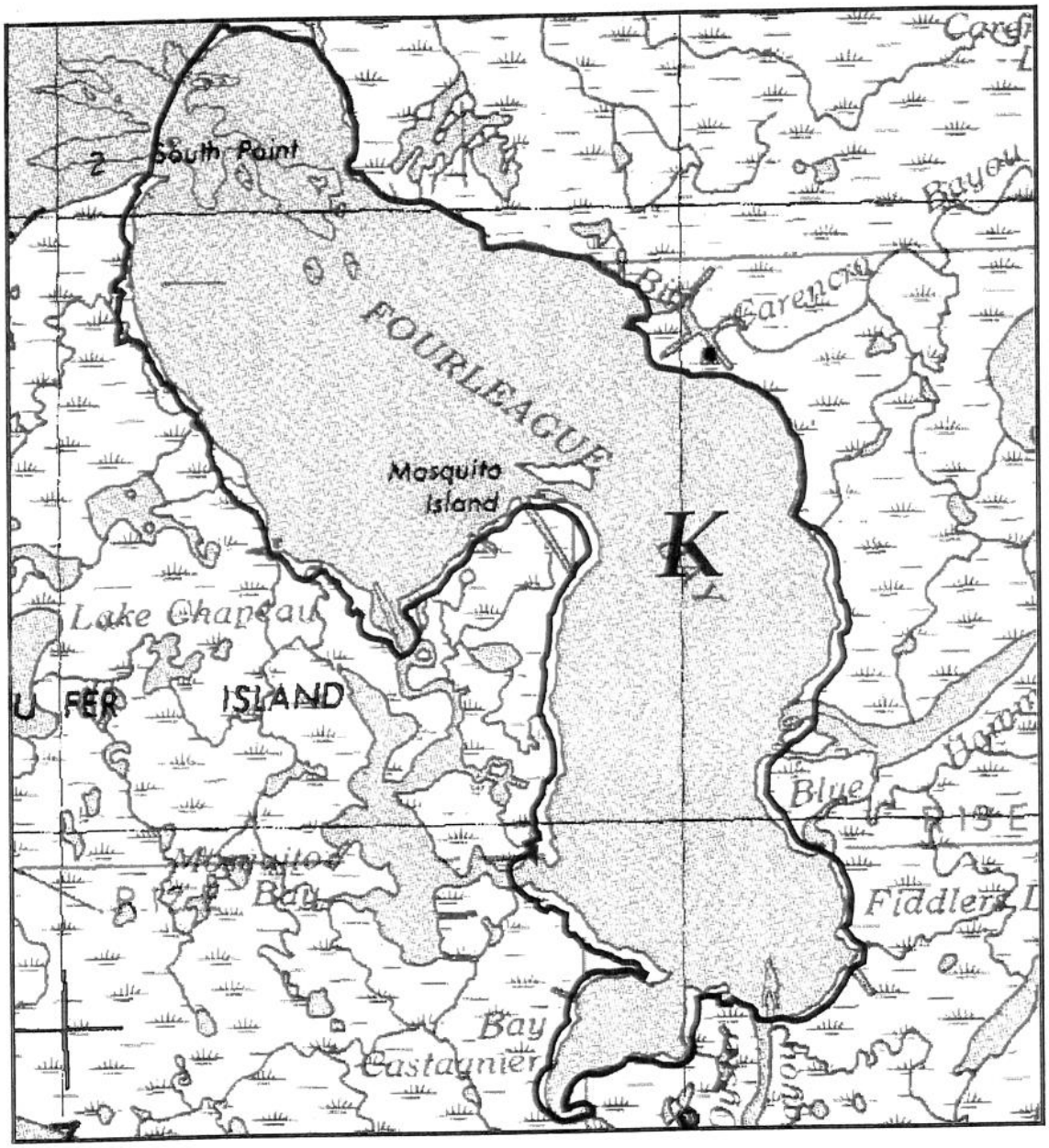
Future Land Loss Projection - There is no land in this unit.

Fish and Wildlife Resources - Several fisheries species are increasing in this bay (red drum, black drum, Gulf menhaden, American oyster, brown shrimp, and blue crab). White shrimp is the only stable fisheries species. Spotted seatrout, southern flounder, and largemouth bass are decreasing. Trends for Spanish mackerel and channel catfish are undetermined.

The brown pelican population has shown an increasing trend over the last 12 years and is projected to continue this trend through 2050. Seabirds and marsh waterfowl have been stable and are projected to remain stable.

Infrastructure - The bay provides navigation to small vessels. It also has 63 wells and 0.1 miles of natural gas pipeline. It has no roads or railroads.

Previously Proposed Strategies and Authorized Restoration Projects - Previous strategies have proposed to create wetlands in this bay through a channel from the Atchafalaya River.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FOURLEAGUE
Mosquito Island
K
Lake Chapeau
ISLAND
Blue
Bay
Fiddlers
Bay
Eastaunier

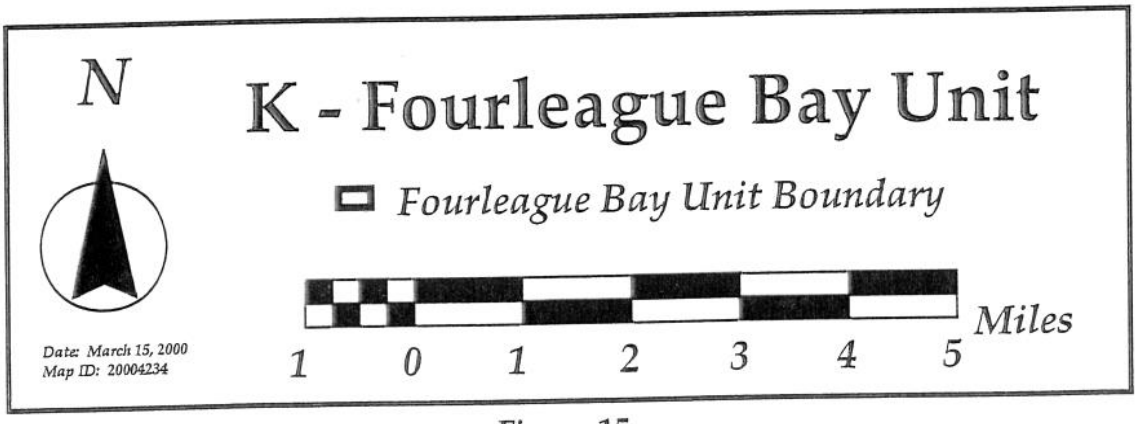

N
K - Fourleague Bay Unit
Fourleague Bay Unit Boundary
Miles
1 0 1 2 3 4 5
Date: March 15, 2000
Map ID: 20004234

Figure 15

Coastal Use/Resource Objectives - Habitat objectives for Fourleague Bay are intermediate and brackish marshes and their associated aquatic habitats. Resource priorities include shrimp, blue crabs, saltwater finfish, and freshwater finfish.

Region 2050 Strategies - The major strategy to maximize land building in Atchafalaya Bay might lead to minimal land building in this unit. Other regional strategies include sediment diversions, shoreline protection, training a lobe of the Atchafalaya Delta towards the bay, and maintaining a navigation channel through Fourleague Bay and Oyster Bayou. All of these strategies are projected to greatly enhance fresh, intermediate, and brackish marshes in and around this unit with the exception of the navigation channel, which will have a slightly detrimental effect on these habitats.

Local, Common, and Programmatic Strategies - No local, common, or programmatic strategies have been adopted for this unit.

L. Point-au-Fer Unit (Figure 16)

Location - This 52,000-acre unit is located in the southwest portion of Terrebonne Parish. The unit encompasses all of Point-au-Fer Island, which is bordered by Fourleague Bay on the north and east, Atchafalaya Bay on the north and west, the Gulf of Mexico on the south, and Oyster Bayou on the east.

Habitat Description and Landscape Change - In 1949, the majority (65%) of the wetlands in this unit were brackish and the remainder were saline. By 1968 more marsh (75%) was brackish. Saline marsh has decreased in this unit from shoreline retreat and conversion to brackish and intermediate marsh from the influx of freshwater from the Atchafalaya River. Intermediate marshes have been rapidly expanding from no intermediate marsh in 1978 to 4,500 acres in 1994.

Historic Land Loss - Causes of land loss in this unit include altered hydrology (from canals), wind/wave erosion, and subsidence (1.1 - 3.5 feet/century). Some storm related loss has occurred and herbivory can be a problem. Of the original 35,290 acres of wetlands in this unit, 5820 acres (16%) were lost from 1932 to 1990. Most (76%) of the loss occurred between 1932 and 1974. Loss rates have decreased since 1974 and marsh

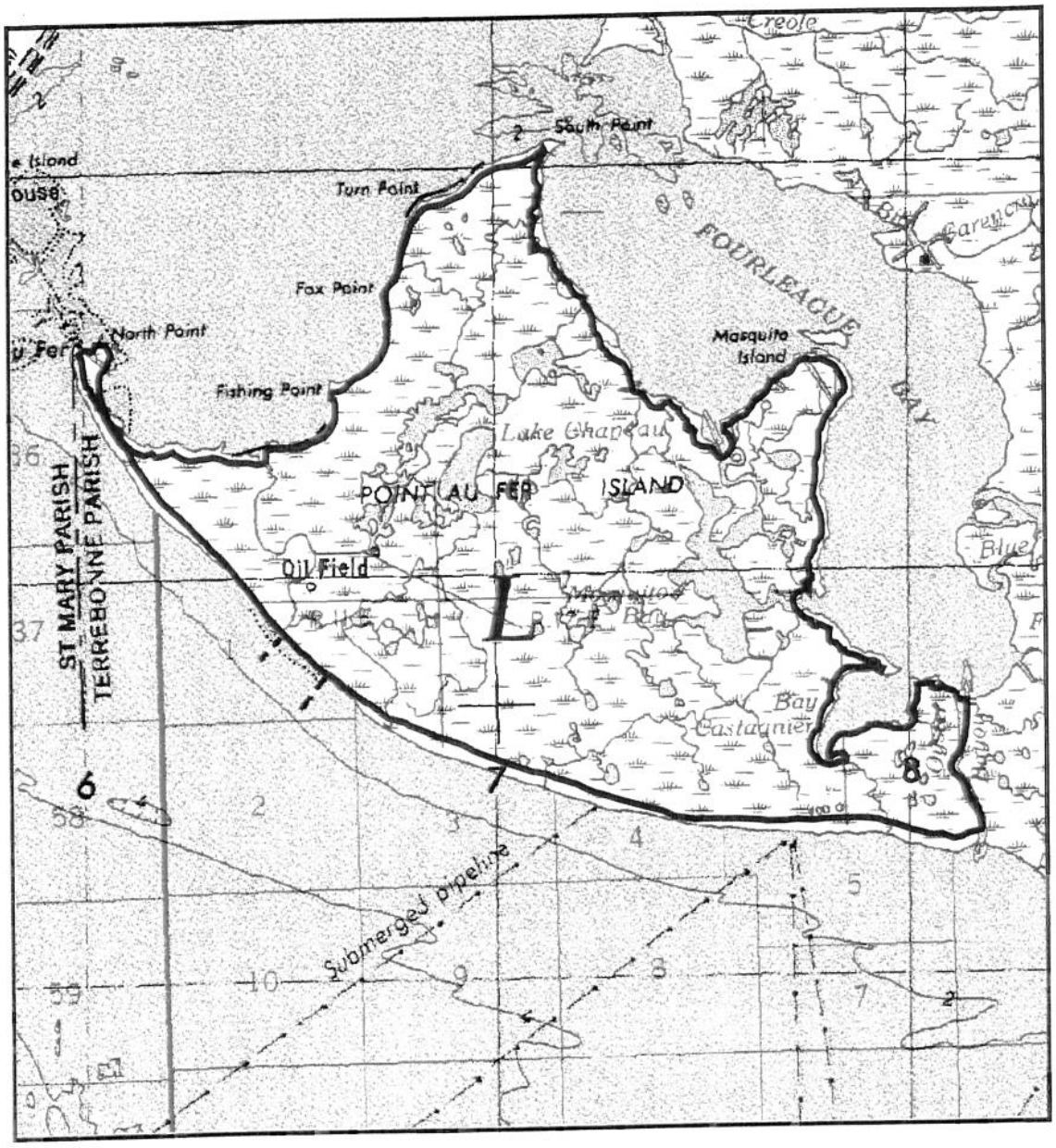

Creole
South Point
Turn Point
Fox Point
North Point
Fishing Point
Masquite Island
FOURLEAGUE BAY
Lake Chapeau
POINT AU FER ISLAND
Oil Field
ST MARY PARISH
TERREBONNE PARISH
Bay Castagnier
Submerged pipeline
N
L - Point-au-Fer Unit
Point-au-Fer Unit Boundary
1 0 1 2 3 4 5
Miles
Date: March 15, 2000
Map ID: 20004235

Figure 16

type has changed primarily due to an influx of freshwater and sediment from the Atchafalaya River. Subsidence rates are 1.1 - 2.0 feet/century.

Future Land Loss Projection - Although land loss rates have decreased in this unit, altered hydrology, subsidence, wind and wave erosion, and herbivory continue to stress the habitat. If no action is taken in this unit an additional 4,155 acres (14%) will be lost in the next 60 years. One CWPPRA project has been implemented on Point-au-Fer Island that is expected to preserve 920 acres. This project will counteract 11% of the expected loss. When implemented, a second project, Lake Chapeau Sediment and Hydrologic Restoration, will create an additional 260 acres of marsh in Lake Chapeau on the eastern interior of the island.

Fish and Wildlife Resources - Point-au-Fer Island provides brackish and intermediate habitat for fish and wildlife. The island serves as a stopover for migratory birds and provides winter habitats for 144,000 waterfowl, including green-winged teal, gadwall, mallards, canvasbacks, coots, and pintails. These marshes also support resident populations of mottled duck. The brackish marshes support a variety of fish and invertebrates as well. These marshes have historically provided habitat for furbearers, particularly nutria and muskrat, and have been managed through marsh burning. American alligator and blue and snow geese are also found on the island. Those remaining saline marshes are feeding and nursery habitat for several fish and invertebrates such as Atlantic croaker, red drum, spot, sand seatrout, southern flounder, spotted seatrout, menhaden, bay anchovy, white shrimp, brown shrimp, and blue crab. Fishery species with increasing trends in the unit are red drum, black drum, menhaden, American oyster, brown shrimp, blue crab, and Spanish mackerel. The white shrimp have remained steady. Species with decreasing trends are spotted sea trout, southern flounder, and largemouth bass. Trends for channel catfish are unknown.

The brown pelican and alligator populations have shown an increasing trend over the last 12 years. Other waterfowl, raptors, nutria, muskrat, and other furbearers have been steady. By 2050, brown pelican populations are projected to increase, whereas nutria, muskrat, other furbearers, and alligators are projected to remain steady. In open water habitats, waterfowl populations are projected to remain steady. In other habitats, waterfowl and raptors are projected to decline.

Infrastructure - The Point-au-Fer unit has had oil and gas activities since the early 1940s. Therefore, several canals have been cut through the marshes primarily in the southern half of the island. There are no roads, railroads, or pipelines in this unit, although there are 140 wells.

Previously Proposed Strategies and Authorized Restoration Projects - Previously proposed strategies have included managing hydrology in all marsh types (CWPPRA), establishing reef zones (CZM), increasing the Atchafalaya flow (CZM), creating sediment diversions (Blueprint), and beneficial use of dredge material (CWPPRA). Two approved CWPPRA projects the Point-au-Fer Hydrologic Restoration Project and the Lake Chapeau Hydrologic Restoration Project are within this unit.

Coastal Use/Resource Objectives - Habitat objectives for the Point-au-Fer unit are brackish marshes and their associated aquatic habitats. Resource objectives include saltwater finfish, furbearers, waterfowl, recreation and tourism, storm buffer, and oil and gas.

Region 2050 Strategies - Strategies for the unit include maximizing land building in Atchafalaya Bay, hydrologic management of navigation channels, hydrologic management of fresh-intermediate and brackish-saline marshes, establishing a reef zone, increasing in Atchafalaya flow, creating sediment diversions, beneficial use of dredged material, promoting sediment delivery, and protecting bay, lake, and gulf shoreline.

These strategies are projected to reduce future wetland loss by more than 50%. They are also projected to greatly enhance fresh, intermediate, brackish, and salt marshes and barrier islands, especially by improving sediment management and increasing the flow of the Atchafalaya River.

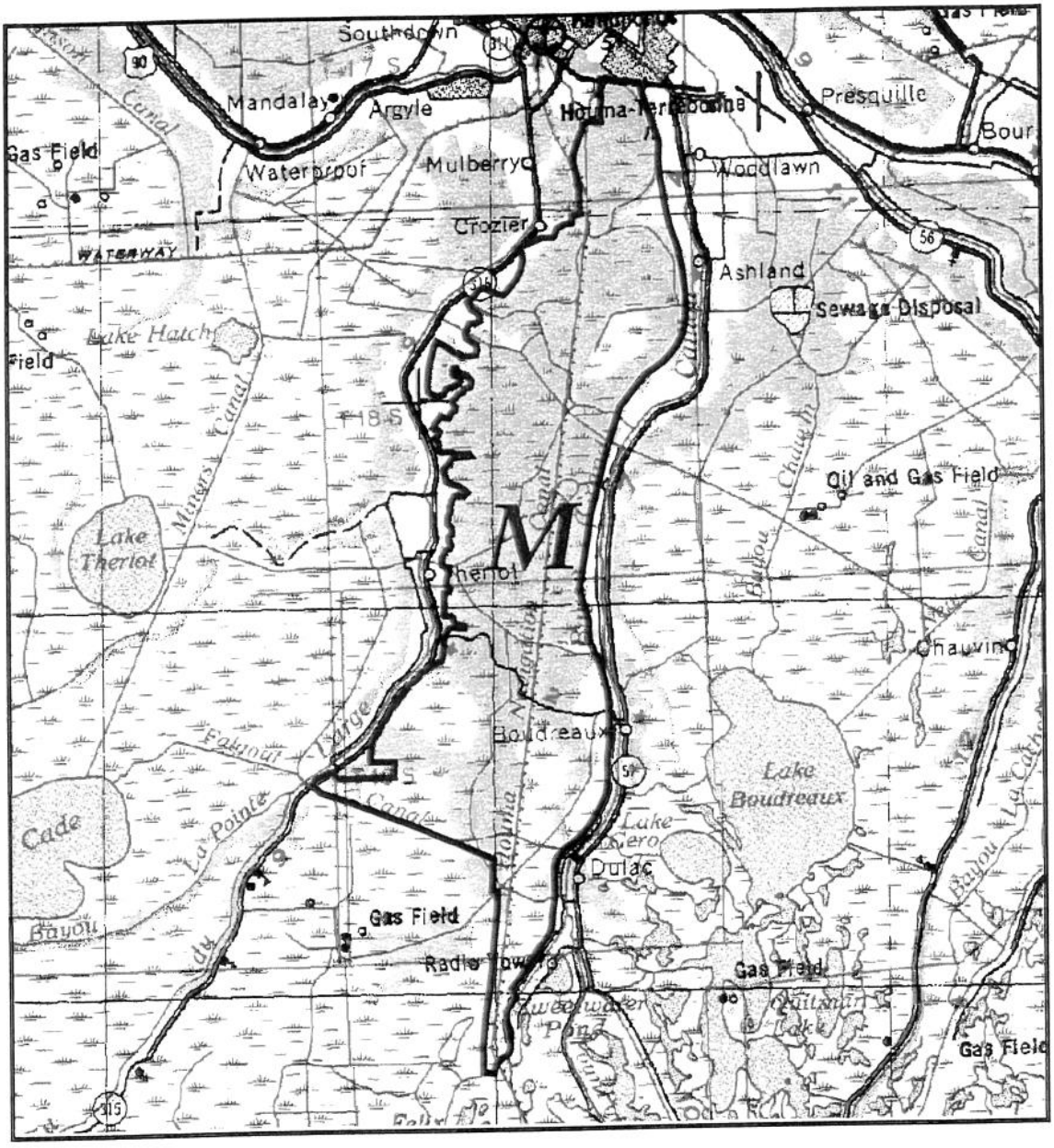
Local, Common and Programmatic Strategies - Beneficial use of dredged material and protecting bay, lake, and gulf shorelines (e.g., train a lobe of the Atchafalaya into Fourleague Bay) are the common strategies adopted for this area. There are no programmatic strategies for the area.

M. Houma Navigation Canal Wetlands Unit (Figure 17)

Location - This 21,134-acre unit is located immediately south of Houma in Terrebonne Parish. It is bordered by Bayou DuLarge on the west, Falgout Canal, the Houma Navigation Canal, and Bayou Grand Caillou on the south, and by Bayou Grand Caillou on the east. Communities bordering the unit include Houma, Theriot, Dulac, and Ashland. The HNC runs in a north-south direction through the middle of the unit.

Habitat Description and Landscape Change - Cypress swamp and fringing bottomland hardwoods presently dominate the northern half of the unit. The southern half of the unit consists of marsh and a few higher elevation ridges supporting cypress trees. In the southern portion of the mapping unit, many of the cypress trees died from saltwater intrusion following completion of the HNC in 1962. Marsh areas, which previously consisted primarily of fresh marsh, were by 1978, primarily intermediate marshes, and by 1988, brackish marsh vegetation was abundant in portions of the extreme southern marshes. Concurrent with the rapid habitat change, substantial marsh loss occurred. To preserve deteriorating marsh and swamp north of the Falgout Canal and west of the HNC, the Falgout Canal marsh management project was completed by the Louisiana Department of Natural Resources (DNR) and the parish in 1992. That project was designed to maintain appropriate water levels, introduce freshwater when available, and to preclude entry of high-salinity water. The DNR had several sections of the west HNC bank rock armored in 1995 to prevent spoil bank breaches and maintain project effectiveness. In 1996, a CWPPRA project to plant vegetation along the north bank of Falgout Canal was completed. Since construction of the HNC, private land owners have plugged several canals and/or openings to the HNC that allowed saltwater intrusion into adjacent cypress swamps.

Historic Land Loss - Between 1932 and 1990, approximately 1,760 acres of marsh have been lost within this unit. Following the construction of the Houma Navigation Canal (HNC) in 1962, fresh marshes north of Falgout Canal and west of the HNC experienced catastrophic loss. Loss in this area continued through the mid 1980s. During this period, most cypress in the southern portion of the unit died. Cypress in areas farther north also experienced loss, resulting in areas of dead standing trees, with living cypress often nearby on higher elevation sites. The dead trees appeared to have been located in depressions where saline storm tides were trapped. Some of these areas presently support



M - Houma Navigation Canal Wetlands Unit

N

Houma Navigation Canal Wetlands Unit Boundary

Miles

1 0 1 2 3

Date: March 15, 2000
Map ID: 20004236

Figure 17

an intermediate marsh understory. Regrowth of marshes within the northern portion of the Falgout Canal marsh management area has occurred since that project became operational. Currently, land is subsiding at a rate of 1.1 - 2.0 feet/century.

Future Land Loss Projection - Assuming that future land loss occurs at the 1974 to 1990 rate, by the year 2050, over 17% of the unit's marsh would be lost. Since a portion of the unit's marshes have been placed under water level and salinity management, future marsh loss rates might not be as high as those in the past. Additionally, the HNC and the GIWW are carrying increasingly greater quantities of riverine water to area marshes and may help to reduce adverse impacts of canal-induced saltwater intrusion during periods of low Atchafalaya River flow.

Fish and Wildlife Resources - Swamp and fresh marshes in the northern portion of the unit provide high quality habitat for migratory waterfowl, bitterns, herons, ibises, egrets, rails, nutria, mink, raccoon, river otter, swamp rabbit, white-tailed deer, American alligator, bullfrog, and other species of reptiles and amphibians. In addition to the species previously mentioned, swamp forest and bottomland hardwood habitats support numerous songbirds, woodpeckers, raptors, and other bird species. Fresh and low-salinity areas support largemouth bass, bluegill, crappie, blue catfish, and other recreationally and commercially important fish. These areas may also provide nursery habitat for commercially and recreationally important estuarine-dependent fish and shellfish that are tolerant of fresh water or low salinities, such as Atlantic croaker, Gulf menhaden, red drum, striped mullet, southern flounder, blue crab, white shrimp, and others.

Brackish marsh portions of the unit provide habitat for migratory waterfowl, wading birds, rails, nutria, mink, raccoon, river otter, swamp rabbit, and American alligator. These areas also provide nursery habitat for commercially and recreationally important estuarine-dependent fish and shellfish such as Atlantic croaker, Gulf menhaden, spotted sea trout, red drum, black drum, sand seatrout, spot, striped mullet, southern flounder, blue crab, white shrimp, brown shrimp, and many others.

This unit has shown increasing population trends for red and black drum, spotted seatrout, Gulf menhaden, southern flounder, white and brown shrimp, blue crab, and Spanish mackerel, and decreasing populations for largemouth bass and channel catfish.

Wading birds and raptors have shown an increasing trend over the past 12 years, whereas seabirds, shorebirds, marsh residents and migrants, and woodland residents and migrants have remained steady. Furbearers have been declining, and alligator populations have remained steady. By 2050, avifauna is projected to remain steady in all habitats, with the exception of hardwood forests, in which avifauna numbers are projected to decline. Furbearers and alligators are expected to remain steady.

Infrastructure - Infrastructure in the area consists primarily of Louisiana highways 315 and 57 and the associated communities of Theriot and Ashland/Dulac, respectively. Other transportation routes include a portion of the Falgout Canal Road east of the HNC, the Falgout Canal Road pontoon bridge, the HNC, and Bayou Pelton. Other infrastructure includes four water control structures along the north bank of Falgout Canal and one structure in Forty Arpent Bayou near the HNC. These structures are part of the Falgout Canal Marsh Management Project. The HNC, Bayou Pelton, and a portion of Bayou Grand Caillou are maintained by the Corps of Engineers. Oil and gas access canals and production facilities also exist within the unit. There are 28 wells, 2.2 miles of oil pipeline, and 10 miles of natural gas pipelines. There are no primary or secondary roads, but there are 18.5 miles of tertiary roads and 1.2 miles of railroad.. This unit has 27 miles of levees and 17 pumps (4 at 48 inches, 7 at 36 inches, 4 at 24 inches, and 2 at 16 inches). There is one industrial surface water intake.

Previously Proposed Strategies and Authorized Restoration Projects - Hydrologic restoration/management and barrier island restoration are the short-term critical strategies proposed in the Louisiana Coastal Wetlands Restoration Plan for this area. The long-term critical strategy is freshwater and sediment introduction. Projects authorized through the Coastal Wetlands Planning, Protection and Restoration Act consist primarily of barrier island projects. One such project, designed to protect Raccoon Island through the construction of segmented breakwaters, is completed. Other CWPPRA projects have been authorized to rebuild portions of Whiskey Island, Trinity Island, East Island, and East Timbalier Island. Within the unit, a CWPPRA project, involving vegetative plantings along the north side of Falgout Canal, was completed in 1996.

Coastal Use/Resource Objectives - Habitat objectives include freshwater marshes and their associated aquatic habitats. Resource priorities are freshwater finfish; alligators; furbearers; crawfish; waterfowl; non-game fish and wildlife; endangered species;

agriculture and grazing; forestry; recreation and tourism; scientific study; storm buffer; navigation; and roads, levees, and bridges.

Region 2050 Strategies - Strategies for the HNC Wetlands Unit include bank stabilization, hydrologic management of navigation channels (install HNC locks/weir), hydrologic management of fresh marshes and swamps, beneficial use of dredged material, flood protection for both sides of the channel, restoration of Falgout Canal to historic conditions, freshwater diversion (HNC), initiation of regulatory and institutional measures (e.g., amend Falgout Canal project Water Management Plan and speed limits), and sediment delivery. These strategies are projected to reduce future wetland loss by more than 50%.

All of these strategies are projected to greatly enhance fresh marshes, forested wetlands, and fastlands, except for beneficial use of dredged material, which is projected to be compatible with the other strategies.

Blue crabs, finfish, alligators, furbearers, crawfish, waterfowl, non-game fish and wildlife, and endangered species are projected to be enhanced by all of these strategies except flood protection and Falgout Canal restoration. Institutional measures and sediment delivery are projected to greatly enhance these resources. Agriculture and grazing, forestry, recreation and tourism, scientific study, storm buffering capacity, and community infrastructure are all generally projected to be enhanced by all of these strategies, especially institutional measures and sediment delivery. The oil and gas industry, navigation, roads, levees, bridges, and utilities are projected to be detrimentally impacted by the Falgout Canal restoration, but are projected to be enhanced by bank stabilization, dredged material use, and especially the institutional measures and sediment delivery. Flood protection is also projected to enhance roads, levees, bridges, and utilities.

Local, Common, and Programmatic Strategies - Common strategies for the HNC Wetlands include stabilize banks and beneficial use of dredged material. Several programmatic strategies are: amend Falgout Canal project water management plan, enhance flood protection for both sides of the channel, and increase wake control.

IV. SOCIO-ECONOMIC CHARACTERISTICS AND PROJECTED GROWTH

A. Employment and Industry

During the past 10 years, employment levels in Terrebonne Parish have fluctuated with changes in the oil and gas industry. A dramatic decrease in activity in the mid-1980s affected the entire South Central region of Louisiana creating business closures and outward migration. The lack of jobs forced many workers to relocate themselves and their families to other regions of the United States. Changes in the economy during the 1980s can be illustrated by examining the number of establishments and employed persons. In 1984, there were 2,554 establishments in Terrebonne Parish. By 1989 this number had decreased to 2,245. Total number of employed persons in 1981 was 37,703. In 1987, the number of employed declined to 24,916.

Terrebonne Parish was successful in creating some diversity in its economy by the mid-1990s that resulted in modest growth. While there was never a decrease in population, the amount of growth was extremely low. Changes in technology and the price of oil in the middle 1990s resulted in renewed employment in the petroleum industry returning the unemployment rates to record lows in the range of 2% to 3%.

In the meantime, the State and communities such as Terrebonne Parish continued to fortify other areas of the economy in order to create more diversity and self-reliance in the business community. This has proved to be a fortuitous move as oil production again dropped suddenly in 1998. The recent turn of events in the oil industry had to do with a decrease in the cost of a barrel of oil. Economists suspect that the Louisiana South Central Region, including Terrebonne Parish, has to prepare for the cyclical nature of that natural resource industry.

In November 1998, the Department of Labor reported that Terrebonne Parish had 42,400 employed and 1,800 unemployed civilians. The unemployment rate was 3.6%. The rate was 3.5% with 48,500 workers in May 1999 (La. Dept. of Labor, July 1999).

Private employers identified as having more than 250 employees during the first quarter of 1999 included the following (infoUSA, Inc. 1999):

GULF ISLAND FABRICATION, INC.
SERVICE MARINE INDUSTRIES, INC.
WAL-MART SUPERCENTER, INC.
TRICO MARINE SERVICE, INC.
CENAC TOWING CO.
OFFSHORE SPECIALTY FABRICATORS
CATERING
DOLPHIN SERVICES, INC.
MOTIVATIT SEAFOODS, INC.
CARO FOODS
EVI WEATHERFORD, INC
ENERGY CATERING SERVICE, INC.
SAIA MOTOR FREIGHT LINE
FISTER ENTERPRISES
C. E. MARINE PRODUCTS
SONTHEIMER OFFSHORE
LEBLANC SERVICES, INC.
GLOBAL INDUSTRIES, LTD.
HALLIBURTON ENERGY SERVICE

Standard Industrial Classification (SIC) codes and lines of business reported for these establishments indicated that 14 provide oil field and marine services or equipment. Two of the largest employers in the Parish are not included in this list because of their public nature, Terrebonne General Hospital and Leonard Chabert Memorial Hospital. The presence of these two major health care facilities has in turn led to numerous ancillary services and specialty clinics. Terrebonne General employs over 1,000 people and Chabert Memorial employs between 500 and 999 people (infoUSA, Inc., 1999).

During 1997 there were 2,635 establishments in Terrebonne covered by the Louisiana employment security law, more than the peak year 1984. The total number of employees was 45,835. Following breakdowns the 1997 annual average data for Terrebonne Parish and industry division within Terrebonne Parish in establishments covered by Louisiana employment security law.

INDUSTRY	UNITS	EMPLOYMENT	WEEKLY WAGE average	TOTAL WAGES
Parish Total	2,635	45,835	$517.06	$1,232,378
Agriculture, Forestry & Fishing	50	261	$290.41	$3,941
Mining	117	6450	$795.94	$266,958
Construction	205	2592	$533.29	$71,878
Manufacturing	137	3827	$650.95	$129,541
Transportation, Communications & Utilities	207	4183	$624.84	$135,912
Wholesale Trade	223	2629	$527.23	$72,075
Retail Trade	603	8757	$281.29	$128,090
Finance, Insurance, & Real Estate	230	1357	$509.41	$35,946
Services	789	14392	$475.00	$355,485
Public Administration	70	1387	$451.28	$32,543

(Source: Louisiana Department of Labor, December, 1998)

Following is the number of firms by number of employees in Terrebonne Parish in the first quarter of 1999 including both public and private employers:

1 - 4 employees: 2,127; 5 - 9 employees: 738; 10 - 19 employees: 377; 20 - 49 employees: 252; 50-99 employees: 107; 100 - 249 employees: 44; 250 – 499: 11; 500 – 999 employees: 4; Over 1,000 employees: 1.

(Source: Louisiana Department of Labor, 1999)

While Terrebonne continues to be an important logistic center for oil field services, the health industry is becoming a larger player in the local economy as witnessed by the size of the two hospitals located in the Parish. Many smaller businesses and clinics have evolved around these major health care facilities. The retail sector of the economy has continued to

grow, too. With its central location and easy access, Houma and Bayou Cane are the major retail and service centers for many smaller surrounding municipalities and unincorporated communities.

Another area of the economy that is ready for growth is tourism. The completion of the four-lane U.S. Highway 90 from I-310 in St. Charles Parish to Lafayette will place Terrebonne on a major new east-west transportation corridor. It is expected that the improved highway will draw more travelers and thus generate new interest among those tourists whose final destination points are elsewhere.

The Parish's two historic industries were agriculture and fisheries. While these two industries are no longer the dominate employment sectors, they still play important roles in the local economy. The Louisiana Department of Economic Development (1999) estimated there were 2,200 full-time fishermen and 540 part-time fishermen in Terrebonne during 1998. These are self-employed persons not reported by employers and not accounted for in other statistical information readily available. The Dulac-Chauvin port was the fifth largest in Louisiana and 29th in the nation during 1998 in terms of millions of pounds of commercial landings. That same year, it was the first in Louisiana and the ninth in the nation in the value of these commercial landings (National Marine Fisheries Service, July 1999). One of the 18 largest employers reported in Terrebonne is a seafood processing plant.

The sugarcane industry once dominated parish industry. It still plays a major role, but with the loss of the last remaining parish sugarcane refinery in 1978 and the lack of any mills, the local industry is now primarily confined to raw sugarcane production. In 1997, there were 137 farms reported in Terrebonne consisting of 52,873 acres. Of that total number of farms, 20 produced sugarcane on 14,592 acres. It is interesting to note that while the number of farms decreased from 26 in 1992, total acreage harvested increased from 10,759. Tons of sugarcane produced increased from 286,683 to 442,055 (U. S. Dept. of Agriculture, 1999). Terrebonne is the home of a major U. S. Dept. of Agriculture sugarcane experimental and research station and some farmers have devoted acreage to experimental plantings in coordination with the U. S. Department of Agriculture.

Average farm size of all farms was 386 acres. Total cropland was 30,956 acres. Average market value of agricultural products sold was $14.2 million of which $12.1 million was in crops, including greenhouses and nurseries, and $2 million was in livestock, poultry and their products. In addition to sugarcane, farm products included hay and livestock. Sugarcane generated the highest value. The number of sole proprietorship and family held corporation farms was 114.

Fisheries and agriculture are renewable resources that the parish and State of Louisiana have devoted much effort to sustaining. Seven Terrebonne farms devoted a combined 856 acres to conservation or wetland reserve programs (U. S. Department of Agriculture, 1999).

B. Wages

While Terrebonne Parish enjoys a healthy economy and low unemployment, average wages earned by the labor force are lower than that of the State and nation. In 1997, the highest paid average weekly wage in Terrebonne was found in the mining industry at $795.94 but total wages paid was greatest in the service sector at over $355 million. Of that total $132.6 million was generated in Health Services. Average weekly wages in Terrebonne for all establishments during the year 1997 was $517.07, an increase over the 1996 amount of $484.14. Total wages paid in 1998 is estimated to be $1,249,500,000.

Average wages show which sectors of the economy are paying the highest wages. Another way to compare earnings is to look at the total personal income. Total personal income is the earnings, dividends, interest, rent and transfer payments received by the residents of Terrebonne. The total personal income for the year 1997 was $1,963,055,000. Of that total farm income was $3,196,000, earnings from fishing industries totaled $7,170,000. Oil and gas extraction accounted for 15% of the total income earned. The 1998 estimated personal income is $1,957,640,000, of which farm income was $80,586,000 and fisheries income was $65,500,000.

Earnings by persons employed in Terrebonne increased. The amount includes workers employed in Terrebonne and does not account for residence. The 1996 total of earnings by persons employed in Terrebonne was $1,270,273,000 and in 1997 it was $1,475,728,000. The largest percent of earnings in 1997 was in services (22.9%). Services increased by 7.9% and had the slowest growing between these two years. Of the total 1997 earnings mining represented 20.2% and transportation and public utilities, 10.2%. The fastest growing sector of the economy between these two years was durable goods manufacturing (9.4% of earnings) which increased by 40.2 percent (Northeast Louisiana University, 1999).

The 1997 per capita personal income for Terrebonne Parish was $19,043. Terrebonne ranked 19th to the State average of $20,458 and was lower than the national average of $25,288. The 1997 per capita income increased 9.7% over the 1996 average of $17,361. The State amount increase by 4.3% and the national change was 4.7 % (Northeast Louisiana University, 1999). Meanwhile personal income grew in Terrebonne at a rate of 11% while the State and nation grew at 4.7% and 5.7 %, respectively. These growth rates indicate local factors at work in the economy beyond what may be occurring at the state and national level. The estimated 1998 per capita income for Terrebonne is $19,137, compared to $21,346 for Louisiana, and $26,412 for the nation (Northeast Louisiana University, 1999, the Louisiana Department of Economic Development, 1999, and Hale, August 12, 1999).

There were 2,635 reporting establishments in 1997, with 789 (30%) being service industry businesses. Of the 45,835 employed persons in 1997, 14,392 (31%) were found in service industries, 8,757 (19%) in retail trade and 6,450 (14%) in mining.

Information on wages, numbers of employed and per capita income helps to identify what the primary sources of income and industry are in a location. Unemployment is low in Terrebonne but the per capita income is also low compared to the averages for the State and the nation. Service and retail sectors employ 50% of the workers. Retail offers the lowest average weekly wages and average weekly wages for services is 7th from last. Manufacturing of durable goods is increasing and average weekly wages in this sector of the

economy are much higher. Average weekly wages in mining are the highest and that forms a large portion of workers earnings.

C. Projected Population Growth

The 1990 population for Terrebonne Parish was 96,982. This number represented 2.3% of the State's total population of 4,219,973. The 1998 estimated population for Terrebonne is 103,964. The absolute change between 1990 and 1998 is estimated to be 6,982, a 7.2% increase. Terrebonne Parish ranked as the 10th most populated parish in the State in 1980, 1990 and 1998. Population projections prepared by the Louisiana Population Data Center in 1994 projected a Parish population of 102,060 by the year 1995 and 105,140 by the year 2000. Revised projections prepared in 1997 by the Louisiana Population Data Center forecast 103,510 for the year 2000 and 115,400 for the year 2020 (La. Population Data Center)

The rate of population growth in Terrebonne slowed after the decline of oil and gas production in the mid-1980s. Outward migration of workers and their families no doubt contributed to a large part of the slow down. Two events occurred in the middle to late 1990s which spurred renewed growth in Terrebonne Parish, new activity in the mineral industry and the completion of a new four-lane U. S. Highway 90 connecting through from I-310 in Luling to Lafayette.

Following is the population of Terrebonne Parish and the State for the years 1950 to 1998. Cumulative change for Terrebonne Parish between the years 1990 and 1998 is about 7%.

YEAR	PARISH POPULATION	STATE POPULATION
1950	43,328	2,683,516
1960	60,771	3,257,022
1970	76,049	3,641,305
1980	94,393	4,205,900
1990	96,982	4,219,973
1991	97,824	4,251,560
1992	99,581	4,287,195
1993	99,833	4,295,477
1994	99,948	4,315,085
1995	100,485	4,339,352
1996	101,760	4,350,579
1997	102,197	4,351,769
1998	103,964	4,368,967

NOTE: Years 1991 to 1998 are estimates prepared by the Research Division, College of Administration and Business, Louisiana Tech University.
All other figures are from the U. S. Census Bureau.

The land area of Terrebonne was reported as 1,255 square miles in 1990. There were 77.3 persons per square mile. The Barataria Terrebonne National Estuary Program calculated land area for the entire area identified as Terrebonne Basin as part of a 1995 study of land loss. All of Terrebonne Parish and parts of Assumption and Lafourche Parish are contained in the Basin. The Basin contains 2,949 square miles of which 1,360 sq. miles is water. Following are the categories and square miles of land identified for each.

LAND AREA IN THE TERREBONNE BASIN

(Includes all of Terrebonne, and parts of Assumption and Lafourche Parishes)

CATEGORY	SQUARE MILES
Water	1,360
Marsh	777
Fresh marsh	322
Nonfresh marsh	455
Forested wetlands1	505
Agriculture/pasture	225
Other2	82
Total	2,949

1 Includes forest, swamp, shrub/scrub

2 Includes shore, inert, beach, upland, barren, developed, other

SOURCE: Reed, 1995

Most of Terrebonne Parish is considered uninhabitable. Of the 1,255 square miles identified as land, a large area is marsh or forested wetlands. The population is centered in the former municipality of Houma. The 1998 estimated population of Houma was 34,038, 33% of the Parish total. Another large portion of the Parish population lives in the unincorporated area of Bayou Cane, just outside the old municipal boundary of Houma. The population of this area was 15,876 in 1990. The remaining populous live along the higher natural ridges of the bayous radiating outward from Houma, including Bayous Grand Caillou, Black, Petit Caillou, Terrebonne, Blue, Dularge and Point aux Chenes.

Unlike many other coastal metropolitan areas, the Houma-Terrebonne community still has abundant land that is suitable for development. Changes in farming practices have changed the amount of acreage necessary to maintain an acceptable level of crop production. Thus vast tracts of land formerly under cultivation have been converted to urban uses. The primary constraints to further development in Terrebonne have been inadequate

transportation, a lack of parishwide municipal sewerage and the absence of adequate drainage facilities in some portions of the Parish.

Transportation within the Parish has improved with the soon to be completed four-lane U. S. Highway 90. This will improve east to west transportation through the Parish. The new road has decreased travel time between smaller towns and rural communities to the west and east of Terrebonne Parish making it the likely target for continued retail and service industry growth. The creation of a Parish transit system in 1997 has improved access to services within Houma and Bayou Cane. Plans call for extension of transit routes to serve neighboring Thibodaux and Nicholls State University. Completion of infrastructure improvements at the Terrebonne Port and the Houma-Terrebonne Regional Airport will provide increased water and air transportation opportunities. Historically, development, in particular commercial and industrial growth has occurred in the vicinity of primary means of transportation in order to ensure the successful movement of goods and services. Improvements in the local transportation network will play important roles in future growth patterns in the Parish.

While their proximity to the Gulf of Mexico and access to shallow draft waterways make outlying bayou communities attractive for waterborne commerce, development is limited due to the availability of suitable land. The natural bayou ridges along Bayous Little Caillou, Black, Dularge, and Point aux Chenes and the southern reaches of Bayou Terrebonne are narrow. Land slopes gently away from the bayous to wetland areas not appropriate for most commercial activities, housing and associated development. Lack of sewerage facilities and frequency of inundation are further deterrents to many who might otherwise seek to live in the more rural fishing communities of the Parish. New residential and commercial growth continues to occur in the areas immediately adjacent to Houma and to its north and in the Grand Caillou/Ashland and Bourg/Presque Isle areas. Parish planners have noted that the potential source of many new residents in these areas seems to be migration from more southern communities within Terrebonne Parish. This new group of residents may include children of those residing in the more rural area, families seeking to be closer to services and jobs within Houma or those relocating due to environmental factors.

In-filling and new development along the northern stretch of Bayou Terrebonne between Houma and Thibodaux is expected to continue. However, Parish planners anticipate that the bulk of new growth will occur along the Louisiana Highway 311 (Little Bayou Black) corridor. More than 500 new single-family residential subdivision lots are proposed for that area. In fact, so much growth is anticipated as a result of new residential development along Louisiana Highway 311 that the Parish School Board Strategic Planning Committee is considering the potential need for construction of a new school somewhere in that area of the Parish.

D. Land Use Projections.

No projections for future land use needs in Terrebonne Parish have been made since the 1972 figures published by the Louisiana State Planning Office. It is felt that the events occurring in the Parish over the past 27 years has nullified the validity of those projections. Currently, Terrebonne Parish is considering updating its Comprehensive Plan. As a part of that plan, land use projections may be made.

The demand for more residential land is apparent as evidenced by the more than 500 new single-family lots being created north of Houma on Louisiana Highway 311. It is anticipated that this kind of growth will generate a need for more commercial land in that area.

E. Federal and State Projects Affecting the Coastal Area of Terrebonne

Restoration of Terrebonne's barrier islands, including the Isle Dernieres chain and Timbalier Island, will have the greatest impact on the Parish coastline. The stabilization of these islands will provide storm surge protection for the inland marshlands and help to prevent further erosion of Terrebonne's vast wetlands. Vegetative plantings on Timbalier Island are proposed under federal law: Coastal Wetlands Planning, Protection and Restoration Act

(CWPPRA). The proposal for Isles Dernieres included construction of perimeter containment dikes on East and Trinity Islands. Sand has been placed within the containment area and seeded and planted.

CWPPRA funds are also allocated for testing six types of wave damping devices along Falgout Canal. The plan includes vegetative plantings.

The placement of a lock on the Houma Navigation Channel will help to prevent tidal surge from eroding banks and creating siltation problems inland. This project will also help alleviate saltwater intrusion into the GIWW.

Other important factors in future growth within the Parish are the completion of numerous drainage projects and the hurricane protection levee systems. The lack of adequate drainage facilities exacerbated flooding in many parts of Terrebonne. Without these improved drainage facilities many areas of the parish no doubt would have reached the limit of their development far sooner than now. However, the completed and proposed drainage facilities will enhance the ability to continue development in many areas of the parish. The Terrebonne Hurricane Protection Levee System will link existing and new levee segments into one continuous levee system extending from the Lafourche Parish levee system westward toward Morgan City in St. Mary Parish. Existing levees will be improved to hurricane protection standards. The entire project will take a minimum of 12 years to complete including feasibility and authorization phases. Once complete the system will provide Terrebonne with improved protection from hurricane storm surge.

The creation of the U. S. Fish and Wildlife Service Mandalay Wildlife Management area is a positive step in the protection of a large area of prime wildlife habitat in Terrebonne Parish. The Parish has discussed the possibility of acquiring another large wildlife area, Lake Houma, which would be managed in coordination with the Mandalay site. Both of these projects offer the added benefit of providing holding areas for drainage waters from the higher bayou ridges surrounding them.

F. Other Projects

The most important project that will affect growth in Terrebonne is the completion of the new U. S. Highway 90. This highway is proposed as the future corridor of Interstate 49. Transportation has been identified as the main hindrance to economic growth in the Parish. Up to this time, the Houma-Thibodaux metropolitan area was the only metropolitan area in the State without direct interstate highway access. The roadway is elevated across wetland areas and offers scenic vistas of swamplands in northern Terrebonne Parish. The presence of the highway and the traffic generated on it will no doubt have some affect on surrounding habitats in particular from automobile emissions.

Several other projects are ongoing within Terrebonne's coastal area. These include the following:

Ongoing maintenance of a 15 feet deep channel in the Houma Navigation Canal.
Maintenance dredging of other navigable waterways in the Parish.
New development creating additional runoff and sewage problems.
Creation of the Port of Terrebonne. This will initially involve the dredging of a 12 ft. deep, 200 ft. wide channel. Future plans call for the creation of a slip off of the Houma Navigation Canal and a 14 ft. deep, 400 ft. wide channel.
Ongoing maintenance of the Gulf Intracoastal Waterway (GIWW), the major east/west inland waterway route along the Gulf of Mexico.

G. Growth Affects on Management Units

The greatest pressure for growth in Terrebonne coastal management units will be along the natural levee ridges of Bayous Dularge, Grand Caillou, Petit Caillou, Terrebonne and Pointe aux Chenes. In particular Bayous Petit Caillou and Terrebonne have witnessed growth as Houma and other unincorporated areas, such as Bourg and Chauvin, have spread along these two bayous. The lack of suitable land for development and infrastructure necessary to sustain denser development will be a hindrance to most land uses in these areas.

The completion of many of the forced drainage projects along the bayou ridges has set boundaries for the limit of growth. Outside of these forced drainage areas public infrastructure and services will be severely limited.

A major concern regarding further development in these areas is the impact of untreated or improperly treated sewage waste on the surrounding environmental management units. The enormous cost of providing municipal sewage treatment in these communities is largely due to the distance from treatment plants. Treatment is offered in some areas through community package plants but is more commonly provided via private treatment through individual septic or mechanical plants. The water quality in areas near heavily populated bayou communities is poor. Bayou Petit Caillou in particular has water quality problems due to the lack of publicly maintained sewage treatment. The results of these water quality conditions are restrictions on recreational uses and closure of oyster grounds.

With the population increase will come an increase in demand for those kind of uses associated with quality of life. The new Terrebonne Parish Civic Center is one example. The demand for a facility that could attract larger entertainment productions to the Parish resulted in the creation of the new arena. While this has no direct impact on wetland management units, other kinds of quality of life issues will. In particular the increased demand for outdoors-recreational opportunities for the growing population. The kind of recreational activities that will have an impact on the wetlands are associated with sport fishing, boating, and hunting. Projects like the transient marina proposed by Terrebonne Parish will help to prevent further water quality problems in the wetland units by offering boaters a place to properly dispose of used oil and waste.

H. Conclusions

Terrebonne Parish is poised for continued steady growth. Its proximity to the Gulf of Mexico, major east/west water and highway corridors and central location to other smaller communities make it an ideal location for a variety of businesses. The quality of

life enjoyed by Parish residents, economic opportunities and abundance of land suitable for development continue to attract families and businesses to the area. With this growth will come increased demand on the more sensitive lands in the coastal wetland management units. The consequences of this demand will most likely be felt in terms of water quality as affected by drainage, sewage treatment and recreational uses.

V. EXISTING AND FUTURE RESOURCE-USE CONFLICTS

A. Introduction

The resources of Terrebonne Parish are plentiful and diverse. These resources, primarily mineral, wildlife, and fisheries, support extensive commercial and recreational exploitation. Such exploitation has not been without conflict, however, as competing users of a resource pursue their individual needs.

Frequently, competing uses of a resource create social, economic, and environmental havoc in that one use is usually given priority at the expense of others. Also, urbanization and resource exploitation within and surrounding the coastal zone causes considerable stress on the natural environment. The natural system, in turn, constrains the degree and manner in which it is used. This is exemplified by the increasing need for a parish-wide forced drainage project. Urban expansion has altered the natural drainage system, which now must be supported by a forced drainage project, which in turn is required to accommodate existing and future developments.

The proposed Terrebonne Parish Coastal Zone Management Program seeks to achieve a delicate balance between resource uses and to resolve conflicts among competing uses. To achieve this end, implementation of the Program will not necessarily exclude activities but will give conditions for their occurrence. Not all coastal resource conflicts can be addressed by a state or local management program. However, the program can attempt to resolve those conflicts that are actively related to it or are site specific.

Following is a brief discussion of the problems most prevalent in coastal Terrebonne Parish. These issues exemplify the resource-use conflict challenges that must be met to ensure a sustainable future for coastal resource exploitation. The problems are categorized according to some of the 'priority problems' identified by the Barataria Terrebonne National Estuary Program (BTNEP). The BTNEP has involved citizens and government agencies of Terrebonne Parish in its planning process. Thus these issues are broadly recognized as encompassing the problems and conflicts facing coastal zone management in Terrebonne Parish.

B. Hydrologic Modifications

Hydrological modifications are of major concern because they are diverse in type and scale and because they affect many other problems and conflicts within the Parish. When levees are built, canals dredged, or cuts made through natural ridges, the natural flow of water is changed. Changes in flow and salinity patterns can alter natural habitat and may lead to marsh loss, as well as threatening water supplies for local populations and causing flooding of low-lying communities. The main type of hydrologic modification in Terrebonne Parish is canals dredged for navigation and oil and gas exploration and production. When canals are constructed, the excavated material is placed alongside the canal creating banks. The impact of this type of activity can be threefold. First, the canal itself can create paths for waters of higher salinity to penetrate farther inland, forcing animals either to adapt or to relocate. Native plants have little choice but to either adapt to their new environment or die. Second, erosion can occur along the canal banks with the passing of each vessel, converting more land to open water. Third, the dredged material alters the natural flow of water across the estuary landscape, sometimes creating lakes, and in other cases, depriving large areas of water, nutrients, and sediments.

The effects of canals may not be, however, entirely negative. Canal banks provide some diversity of habitat, especially in wetland areas where they increase the area of refuge for small mammals and other animals during periods of high water. Canals also provide significant recreational opportunities and aquatic production potential.

In Terrebonne Parish one of the most significant hydrologic modifications that has taken place is the dredging of the Houma Navigation Canal. The Houma Navigation Canal (HNC) was dredged as a shortcut between the commercial center of Terrebonne Parish in Houma and the Gulf of Mexico (Wicker et al., 1989). The HNC traverses the fresh, brackish, and saline marshes of the Terrebonne estuary and continues through Terrebonne Bay to enter the Gulf through Cat Island Pass. No jetties were required as the channel utilizes a natural tidal inlet in the barrier shoreline.

The construction of the canal was funded by Terrebonne Parish government and was supported by a bond sale in 1955 (P. Prejean, pers. comm.). Falgout Canal, connecting HNC with Bayou DuLarge, was constructed at the same time with dredged material being placed on the south side of the canal to provide for a roadbed. The HNC was opened in

1962 and responsibility passed to the U.S. Army Corps of Engineers (USACE) under the River and Harbor Act. The original dimensions of the channel were 300 feet top width with a bottom depth of 16 feet across the center 150 feet of channel. The channel is currently maintained by the USACE to a depth of 15 feet. In 1973, Cat Island Pass channel was authorized to 300 feet wide and 18 feet deep. The project was completed in 1974 (Wicker et al., 1989).

There is much evidence of salinity penetration along the HNC channel. Wang (1987, 1988) compared the salinity distribution along HNC with Bayou Petit Caillou, a natural bayou located about 6.2 miles east of HNC that intersects with HNC in Cocodrie. The depth of Bayou Petit Caillou, typical of most natural bayous, is only about 10 feet. In September 1986, the 5-ppt isohaline in HNC reached north of Houma, 25 to 31 miles from the channel entrance, while in October 1986 the 1 parts per thousand (ppt) isohaline reached to only 15.5 miles from the channel entrance. These data demonstrate the temporal and spatial variability in the penetration of salt water along the HNC. Essentially, under similar environmental conditions, saltwater penetrates farther inland in large, deep channels (such as HNC) than in smaller, shallower channels (such as Bayou Petit Caillou). Wang also ran a computer model, which confirmed that deepening and widening channels can increase saltwater penetration from the Gulf of Mexico.

Current rates of erosion along the HNC exceed 5 feet/year. The wider channel both allows more saltwater penetration and leads to the direct loss of marsh and swamp habitat adjacent to the channel.

It is anticipated that implementation of the Coast 2050 strategy calling for a multi-use barrier on the HNC will alleviate many of the salinity problems currently experienced. However, operation of any structure on the HNC will require coordination among environmental, water supply, and navigation interests. In addition, erosion of channel banks will continue unless another Coast 2050 common strategy, the protection of navigation channel banks, is also implemented.

C. Sediment Reduction

The combined effects of natural delta switching and the placement of levees on the Mississippi River mean that many of the wetlands and marshes in Terrebonne Parish no

longer receive even an episodic input of river sediment. Prior to these modifications most of Terrebonne Parish would have been flooded by river water every few years during a major flood. The lack of freshwater from the river has resulted in large areas of brackish and salt marsh in Terrebonne. These areas are productive and provide plentiful resources in themselves. However, because of the underlying problem of subsidence in the area, all areas need to increase their elevation or be submerged. In urban areas, subsidence proceeds and forced drainage prevents increased flooding. However, in the wetlands the lack of nutrients and sediment from the river may limit the ability of the wetland vegetation to stay above water. Only areas in the west of the Parish currently receive sediment from the Atchafalaya River.

Some sediment does move into coastal marshes in the eastern part of the Parish during hurricanes and winter cold fronts when winds stir mud from the bottom of shallow bays. The volume of this sediment, however, is usually inadequate to counter the effects of subsidence. In addition, the existence of levees, canal banks, roadbeds, railroad embankments, and changes upriver all contributes to the problem of inadequate sediment distribution in the coastal marshes.

One of the solutions to this problem proposed in Coast 2050 is to use the GIWW and HNC to direct more flows from the Atchafalaya into the eastern parts of the Parish. This may alleviate the environmental problems but needs to be carefully implemented to minimize disruption to navigation and port facilities on these canals (which may experience increased water levels of flows). A bolder solution to the problem in eastern Terrebonne is to build a conveyance channel from the Mississippi River parallel to Bayou Lafourche. This would build a new delta in western Lafourche Parish but would be designed to benefit marshes in eastern Terrebonne. Implementation of this Coast 2050 strategy will require resolution of many resource-use conflicts including water supply, navigation, and flood protection for residents in the area.

D. Land Loss

The problem of coastal land loss in Terrebonne Parish has been documented earlier in this volume for each of the individual planning units. The problem is severe and has implications for many aspects of Parish life including fisheries production and flood protection. The loss of the barrier islands has also been highlighted earlier in this

volume. Coast 2050 includes strategies to address land loss in these areas including a control structure on HNC, enhanced flow of Atchafalaya River water to the east, a new delta in western Lafourche Parish (all discussed above), improved water flow through Penchant-Mechant areas, and coordinated restoration of the Isles Dernieres and Timbalier Island.

The role of the Terrebonne Parish Coastal Zone Program in relation to the implementation of these strategies is to provide direct input to the planning process from all aspects of the Terrebonne Community. Only in this way can the Parish be assured that these problems can be resolved without unnecessary and unmitigated detrimental impacts to other resource users.

E. Eutrophication

Many residents of Terrebonne know about the Gulf's summertime areas of low oxygen, commonly referred to as dead zones. Low oxygen levels result from a process called eutrophication, which begins when high levels of nutrients such as nitrogen, phosphorous, and silicate are discharged into a waterway. The nutrients initially encourage plant and algal growth, and the waterway becomes home to a much greater amount of organic material than usual. When the excess organic material decomposes it uses most of the oxygen in the water. Eventually the plants and animals that live in the water cannot survive these low oxygen levels and so-called dead zone results. Eutrophication is a natural process, but this process has been aggravated by human activity.

This problem in part results from interaction between the coastal waters and the upland or forced drainage areas. Sources of excess nutrients include urban runoff and agricultural runoff, often called "non-point source" pollution. Nutrient levels have remained constant during the last 15 years while other indicators of eutrophication have increased. Chlorophyll levels, which indicate how much algae is growing, have increased in recent decades in Terrebonne Bay. Beyond the algal blooms, eutrophic waters are characterized by a dominance of fish like gar and shad and have a potential for noxious and toxic phytoplankton blooms. At present, toxic and noxious phytoplankton have been observed in Bayou Little Calliou, in the Terrebonne Bay estuary, and in Fourleague Bay. To date,

these tiny plants have not caused harm to human health, but they have discolored the water and caused some fish kills.

When forced drainage waters include high nutrient levels, discharge into slow-flowing canals can cause eutrophication. The location of these discharges can be altered to increase the amount of nutrients taken up by emergent plants, as opposed to algae. As forced drainage projects are implemented in the Parish or modifications are made to existing pump stations, consideration of the nature and fate of the discharge must be a high priority.

F. Pathogens

Pathogens are disease-producing organisms such as bacteria and viruses. The waters of Terrebonne Parish contain shellfish growing areas that can be contaminated by human fecal pathogens (as estimated from fecal coliform bacteria numbers). Fecal coliform bacteria comes from human sewage, from pastureland runoff, and from marsh animals such as nutria and birds. Human fecal pathogens can cause illness in healthy individuals who eat raw contaminated oysters. Seafood can also be contaminated by Vibrio, a naturally occurring marine bacterium. Contact with natural marine pathogens when swimming or eating raw seafood can harm people who are predisposed to liver, blood, stomach, or immune system problems.

To reduce the risk of illness associated with consumption of shellfish contaminated by pathogens, state agencies have been forced to close oyster beds where tests have indicated high fecal coliform levels in the water. The 1994 Louisiana Department of Environmental Quality (LDEQ) Water Quality Inventory shows that fecal coliform is at least a suspected or potential problem in 33 out of 55 assessed water bodies in Terrebonne basin. In spite of the development of plans for a parish-wide sewage treatment system in Terrebonne Parish and regional efforts to prevent dumping of sewage at camps, fecal coliform counts at four sites in the estuary have not declined in 15 years. It is known that 14 towns in Terrebonne Parish have septic tank problems that are contributing to this persistent problem.

One attempt to address this issue in the coastal waters of Terrebonne is the proposed vessel sewerage pump/dump station in Houma on the GIWW. Further efforts must

include the extension of main sewerage service to coastal parts of the Parish. Improvements in pathogen contamination are essential to the sustainability of the important shellfish industry in Terrebonne Parish.

G. Toxic Substances

Testing of water, animal tissue, and sediment has identified a variety of toxic substances in coastal Louisiana. Some of the substances are known cancer-causing agents, while others affect reproduction. When some animals consume contaminated food, the concentration of toxic substances is magnified. Human consumption of highly contaminated seafood poses health risks. Toxins found throughout the estuary system come from point sources, such as industry, and non-point sources, such as urban runoff.

Numerous potential sources of these toxicants exist within coastal Terrebonne:

herbicides used in aquatic weed control,
light industry and domestic inputs from population centers,
storm and urban runoff,
atmospheric deposition,
recreational and commercial vessels,
drilling fluids and produced waters from oil and gas production,
runoff and leachate from hazardous waste sites, and
pesticides and herbicides from agriculture.

Many types of contaminants have been detected in the animals, sediment, and waters of Terrebonne Parish and surrounding waters, including metals, organometals (such as tributyltin, which is used in anti-fouling paints), radionuclides, and numerous organic chemicals. Important among the latter are the chlorinated aromatic hydrocarbons (including PCBs), the chlorinated hydrocarbons (including DDT and other pesticides), the polycyclic aromatic hydrocarbons (PAHs), and petroleum hydrocarbons. How a contaminant affects water quality, sediment quality, and animals depends on its concentration, its toxicity, its stability in the environment, its ability to adhere to sediment, and its potential to accumulate within fish and shellfish. Environmental contaminants may be very stable, toxic at low concentrations, and bioavailable. Moreover, several contaminants may have carcinogenic effects. These characteristics

increase the toxic effects of a contaminant in the environment and its effects on human health.

The most immediate solution to this problem involves the clear and determined enforcement of existing regulations concerning discharges and the use of toxic substances. No further actions are proposed by the Terrebonne Coastal Zone Management Program, but it is expected that the Program will act to educate industrial and agricultural operations in the Parish of potential dangers associated with toxic substances and assist in conflict resolution as necessary to support enforcement of state and federal regulations.

H. Other Problems and Conflicts

Sunken and Derelict Vessels

Sunken and derelict vessels become wetland nuisances when they disrupt drainage, navigation or the overall functioning of the ecosystem. A May 1977, survey by the Terrebonne Parish Department of Public Works along Bayou Black, Bayou Dularge, Bayou Grand Caillou, Bayou Petit Caillou, Bayou Pointe-au-Chene, and Bayou Terrebonne yielded a total of 187 sunken or derelict vessels along these navigable waterways.

Federal law pertaining to removal of such wrecks are contained in Section 15, 19, and 20 of the River and Harbor Act of 1899 and Section 86 of Title 14, United States Code. Removal of an obstruction under the provisions of Sections 19 of the Act may be undertaken without prior approval of the Chief of Engineers of the US Army Corps of Engineers only when the navigation of navigable waters of the United States is obstructed or endangered and its obstruction has been in existence more than 30 days or its abandonment by the owner can be legally established in a shorter period. The obstruction (sunken vessel, boat, watercraft, raft, or other similar obstruction) can be removed by any method deemed most advantages, provided the cost does not exceed $100,000 per incident and the wreck is an obstruction of general navigation. Although federal funding can be used to remove the obstructions, little money is available for this purpose.

To resolve the derelict vessel problem, the Terrebonne Parish Consolidated Government (TPCG) passed a Derelict Vessel Ordinance. Under the Ordinance, the TPCG will notify owners, by public notice to remove their vessels. After ample notice, the TPCG will begin to remove the vessels under the power created by the ordinance.

Flooding and Hurricane Protection

The people of Louisiana have suffered great loss of life and property because of floods and hurricanes. The elevations of Terrebonne Parish range from 15 feet above mean sea level (MSL) in the north, to 0 feet mean sea level at the coast. Because the barrier islands are the only means of protection against gulf storms, many areas of the parish are subject to floodwaters from extremely high tides and/or strong, constant, south or southwest winds. Along with storm waters, flooding may also occur due to subsidence of developed or reclaimed land.

Morganza, La to the Gulf of Mexico Feasibility Study

This study summarizes the feasibility of providing flood protection to parts of Terrebonne and Lafourche parishes in southeastern Louisiana. A decision document, the draft feasibility report for the Morganza, La. to the Gulf of Mexico feasibility study is scheduled to be complete in December 1999. Preparation of a design memorandum (DM) and set of plans and specifications for the Houma Navigation Canal Lock are scheduled to be initiated in fiscal year 2000 and shall serve as the implementation documents for that feature of the overall project.

The Morganza, Louisiana to the Gulf of Mexico study area covers approximately 440 square miles and is home to approximately 69,000 residents. The study area is frequently flooded by tidal events such as tropical storms and hurricanes. The South Terrebonne Tidewater Management and Conservation District (Tidewater) has constructed several small forced drainage levee systems. However, they lack the necessary funding to construct an adequate hurricane protection levee for Terrebonne Parish. The Corps initiated a study of this area in 1992 and prepared a reconnaissance report in 1994. In 1995, a feasibility study was initiated

to investigate several alternative levee alignments that provide various levels of protection to the communities of Terrebonne and Lafourche parishes. The resulting plan formulation and analysis, has identified two economically justified alternatives. Both plans involve construction of earthen levees, floodwalls, and flood control and environmental structures.

In 1997, Congress authorized the Corps to proceed with preconstruction engineering and design (PED) of a lock structure in the Houma Navigation Canal south of Houma, Louisiana. The New Orleans District has preformed a brief economic analysis of various flood control structures and lock sizes to determine the optimum structure for the Houma Navigational Canal. That analysis has determined that a lock measuring 200 feet by 1200 feet would maximize benefits and minimize adverse impacts to the environment, industry, and the local residents.

The Morganza, Louisiana to the Gulf of Mexico feasibility study is being conducted in response to a resolution adopted April 30, 1992, by the Committee on Public Works and Transportation of the US House of Representatives and reads as follows:

"Resolved by the Committee on Public Works and transportation of the US House of Representatives, that the Board of Engineers for Rivers and harbors, is requested to review the report of the Chief of Engineers on the Mississippi River and Tributaries Project, published as House Document 308, Eighty-eighth congress, Second Session, and other pertinent reports, to determine whether modifications of the recommendations contained therein are advisable at the present time in the interest of flood control, navigation, wetlands conservation and restoration, wildlife habitat, commercial and recreational fishing, salt water intrusion and fresh water and sediment diversion, and other purposes in the area between the East Atchafalaya Protection Levee and the Mississippi River/Bayou Lafourche System, from Morganza, Louisiana, to the Gulf of Mexico."

The Energy and Water Development Appropriation Act of 1995 directed the Corps of Engineers to give particular attention to the interrelationships of the various ongoing studies in the area and consider improvements of the Houma Navigational Canal.

This study addresses the economic feasibility of providing improvements in the interest of the water related land resources identified in the above resolution as well as the environmental, social, and local economic impacts of such improvements. Impact studies would attempt to identify the effects on significant environmental habitat as well as the effects on local navigation and industry. The Initial Project Management Plan (IPMP) recognized the impact that Atchafalaya River backwater had on flooding in the Morganza, La. to the Gulf study area. As a result, the IPMP specified that the western study boundary would be Louisiana Highway 311 and Bayou Du Large, the eastern and northern study limit is Bayou Lafourche, and the southern boundary remains the Gulf of Mexico. The area bounded by the East Atchafalaya Protection Levee, Bayou Du Large, and Louisiana Highway 311 is now part of the Lower Atchafalaya Re-Evaluation Study, which is being studied by the New Orleans District concurrently with Morganza, La. to the Gulf of Mexico.

The Terrebonne Parish Coastal Zone Management Program will have direct involvement with the US Army Corps of Engineers and the newly established Terrebonne Levee and Conservation District concerning the monitoring and progress of the Morganza to the Gulf and Lower Atchafalaya Re- Evaluation Study. The Terrebonne Parish Coastal Zone Management Program anticipates working together with the various federal and state agencies involved with this endeavor.

I. Conflicts by Management Units

Montegut Unit

The existing and future resource-use conflicts include:

hydrologic modification from canals and spoil banks,
minor point sources of pollution,
sewer and stormwater overflow,
urban runoff,
canals, and
leveeing to protect developed areas against flooding.

Terrebonne Marshes Unit

The existing and future resource-use conflicts include:

hydrologic modification from canals and spoil banks,
minor point sources of pollution,
sewer discharges, and
sewerage discharges reaching oyster leases.

Timbalier Island Shorelines Unit

The existing and future resource-use conflicts include:

hydrologic modification from canals and spoil banks,
shoreline erosion, and
sewerage discharges reaching oyster leases.

Boudreaux Unit

The existing and future resource-use conflicts include:

hydrologic modification from canals and spoil banks,
minor point sources of pollution,
sewer and stormwater overflow,
urban runoff, and
levees to protect developed areas against flooding.

Pelto Marshes Unit

The existing and future resource-use conflicts include:

hydrologic modification from canals and spoil banks,
minor point sources of pollution, and
sewerage reaching oyster leases.

Caillou Marshes Unit

The existing and future resource-use conflicts include:

hydrologic modification from canals and spoil banks,
minor point sources of pollution,
sewer and stormwater overflow,
urban runoff, and
levees to protect developed areas against flooding.

Isles Dernieres Shorelines Unit

The existing and future resource-use conflicts include:

hydrologic modification from canals and spoil banks,
sewerage reaching oyster leases, and
shoreline erosion.

Penchant Unit

The existing and future resource-use conflicts include:

hydrologic modification from canals and spoil banks,
minor point sources of pollution,
sewer and stormwater overflow,
urban runoff, and
levees to protect developed areas against flooding.

Mechant/DeCade Unit

The existing and future resource-use conflicts include:

hydrologic modification from canals and spoil banks,
sewerage,
runoff from developed areas,
levees to protect developed areas, and
minor point sources of pollution.

Atchafalaya Marshes Unit

The existing and future resource-use conflicts include:

hydrologic modification from canals and spoil banks, and
minor point sources of pollution.

Fourleague Marshes Unit

The existing and future resource-use conflicts include:

hydrologic modification from dredging.

Point-au-Fer Unit

The existing and future resource-use conflicts include:

hydrologic modification from canals and spoil banks, and
minor point sources of pollution.

Houma Navigation Canal Wetlands Unit

The existing and future resource-use conflicts include:

hydrologic modification from canals and spoil banks,
minor point sources of pollution,
major industrial point sources,
sewerage,
urban runoff, and
levees to protect developed areas against flooding.

VI. SPECIAL MANAGEMENT AREAS

A. Introduction

Special management areas within the coastal zone are particular areas identified by the parish that require special management procedures as a result of their unique and valuable characteristics, natural resources, or development potential. Special areas may include important geological formations, such as beaches, barrier islands, shell deposits, salt domes, or formations containing deposits of oil, gas, or other minerals; historical or archaeological sites; corridors for transportation, industrialization, or urbanization; areas subject to flooding, subsidence, salt water intrusion, or the like; unique, scarce, fragile, vulnerable, highly productive, or essential habitat for living resources; ports or other developments or facilities dependent upon access to water; recreational areas; freshwater storage areas; and such other areas as may be determined pursuant to the state and local coastal management program.

This section establishes procedures with the Terrebonne Parish local program for the designation, utilization, and management of special areas within the Terrebonne Parish coastal zone and for establishing guidelines and priorities of uses for each area.

B. Nominations

Any person, local government, state agency, or the Secretary of the Louisiana Department of Natural Resources may nominate an area for designation as a special area. Areas may be nominated for any of the purposes set forth in § 214.29 of State and Local Coastal Resources Management Act (SLCRMA) or for similar purposes, provided that such areas are in the coastal zone have unique and valuable characteristics; require special management procedures different from the normal coastal management process; and are to be managed for a purpose of regional, state, or national importance.

Nominations shall consist of:

1. a statement regarding the area nominated, including its unique and valuable characteristics, its existing uses, the environmental setting, its history, and the surrounding area;

2. a statement of the reasons for the nomination, such as any problems needing correction, anticipated results, need for special management, and need for protection or development;

3. a statement of the social, economic, and environmental impacts of the nomination;

4. a map showing the area nominated;

5. a statement as to why the area nominated was delineated as proposed and not greater or lesser in size or not in another location;

6. proposed guidelines and procedures for the management of the area, including priorities of uses;

7. an explanation of how and why the proposed management program would achieve the desired results;

8. a statement as to how and why the designation of the area would be consistent with the state coastal management program and any affected local programs; and

9. a statement as to why and how the designation would be in the best interest of the state.

C. Administrative Review

The Secretary of the Louisiana Department of Natural Resources (the Secretary) shall review proposals for their suitability and consistency with the Terrebonne Parish coastal management program. If the Secretary finds that a proposal is suitable and does not conflict with the Terrebonne Parish coastal management program, the Secretary may, with the assistance of others in the parish, prepare a draft "Proposal for a Special Area." The proposal shall consist of the delineation of the area to be designated, the guidelines and procedures for management, and priorities of uses.

Public notice announcing a public hearing on the proposal shall be published by the local administrator in a newspaper of general circulation in Terrebonne Parish. Copies of the proposal may be obtained from the Secretary and copies shall be made available for public review at the local program office, at public libraries in Terrebonne Parish, and at the Coastal Management Division, Louisiana Department of Natural Resources, Baton Rouge, LA. Notice and copies of the proposals shall be sent to appropriate governmental bodies.

After the public hearing and consideration of all comments received at or before the hearing, the Secretary shall determine whether to designate the area proposed, a part of it, or an approximately similar area, and to adopt the guidelines and procedures for management and priorities of uses. Public notice of the Secretary's decision shall be given.

D. Establishment by Governor

The Governor may designate special areas and establish the guidelines and procedures for management and priorities of uses applicable in such areas.

E. Local Designation

At this time Terrebonne Parish has not designated any special management areas.

VII. GOALS, OBJECTIVES, POLICIES, AND USES

A. Introduction

The Terrebonne Parish Local Coastal Zone Management Program has been developed:

1. to protect, preserve, enhance, and, where possible, restore the renewable resources of the coastal wetlands for the enjoyment and long-term benefit of parish residents;

2. to promote those water dependent uses in riparian areas and wetlands that preserve and protect the physical, biological, scenic, historical, and cultural resources of the parish;

3. to develop a local coastal program that has clear and concise administrative procedures and does not conflict with federal and state legislation and regulations;

4. to protect public health, safety, and welfare;

5. to implement those goals, objectives, and policies that make possible a viable local coastal management program; and

6. to educate the general public on the value of renewable coastal resources and ways to avoid conflicts between user groups.

The Terrebonne Parish Local Coastal Zone Management Program includes a declaration of parishwide goals and objectives for the coastal zone; a general description of the environmental management units (EMU) of the parish; the areas of jurisdiction for the Local Coastal Zone Management Program; a discussion of the permit system for Uses of Local Concern; procedures for evaluating Uses of State Concern; regulations for designating special management areas; development of a process for intergovernmental coordination for local regulatory programs; and a parish ordinance implementing the Local Coastal Zone Management Program.

B. Terrebonne Parish Goals, Objectives, and Policies

Goals, objectives, and policies applying to the Terrebonne Parish coastal zone result from an analysis of the present and probable future environmental and socioeconomic conditions of the parish. They are intended to encourage long-term plans for the coastal zone. Recommendations for individual Environmental Management Units follow.

Local Coastal Program Goals, Objectives, and Policies that directly or indirectly affect Uses of State Concern shall not be construed as being regulatory or binding on either the permit applicant or the Coastal Management Division, Louisiana Department of Natural Resources, but are for the purpose of submitting the Terrebonne Parish environmental review comments to the State on applications for Uses of State Concern. Local policies which contain prohibitions, restrictions, or performance standards beyond the scope of the Coastal Use Guidelines (CUG) shall be considered as advisory by the Parish, the Coastal Management Division, and permit applicants (i.e., mandatory policies with "shall" are modified such that "should" is the operative verb). This clause is explicitly in effect whenever any such conflict should or could arise.

Parish comments to Coastal Management Division on proposed Uses of State Concern shall be based on the policies of the Local Coastal Program and may recommend specific project alternatives and conditions. The Coastal Management Division consideration of Terrebonne Parish recommendations shall be based on the conformance of the recommendation with the CUGs and other enforceable policies of the Coastal Management Division. Recommendations which reflect further detailing of the CUGs as they apply to Terrebonne Parish shall be given substantial consideration by the Coastal Management Division with the objective of maximizing conformances with the approved Local Coastal Program. The Coastal Management Division shall not consider recommendations, which are not in conformance with the CUGs.

Terrebonne Parish does not promote or encourage the alteration of wetlands for any reason. There may be times that alteration of wetlands is justified if the use is water dependent, no feasible alternative exists, and the ultimate benefits outweigh the environmental impacts. However, simply because a use is water dependent does not in any way mean that it may occur in coastal wetlands areas. Language in the Terrebonne Parish Local Coastal Plan and the accompanying ordinance (see X. Appendix. The

Terrebonne Parish Local Coastal Program Ordinance) that seems to suggest that Terrebonne Parish in any way encourages development in coastal wetlands areas is to be considered within the scope of the above statements.

C. Terrebonne Parish - Parishwide

Goals

1. To issue coastal use permits for uses of local concern.
2. To review and comment on uses of state concern.
3. To be an active participant of coastal restoration in conjunction with the various federal, state, and local governments.
4. To ensure sound management of development in order to:
   a. protect and enhance the resources of the coastal zone for the benefit and enjoyment of present and future generations;
   b. ensure the maintenance, continued protection, and prudent use of the natural resources, renewable and non renewable therein;
   c. promote public safety, health, and welfare;
   d. protect wildlife, fisheries, aquatic life, wetlands, estuaries, and waterways;
   e. protect the remaining scenic, historic, and cultural resources of the coastal zone; and
   f. promote public education and awareness concerning the value of coastal ecosystems to the Parish, the State and the Nation.
5. To promote continued coordinated development within the coastal zone as delineated by the Louisiana State and Local Coastal Resources Management Act or as further amended.
6. To prescribe minimum requirements for land use and control measures in wetlands, estuaries and watercourses in accordance with state and federal statutes.
7. To develop policies and procedures for preserving the barrier islands and to deal with problems associated with shoreline erosion.
8. To develop policies and procedures for preserving inland marshes from deterioration and to deal with marsh submergence, sediment deprivation, and salt water intrusion.
9. To facilitate cooperation between private landowners, the Parish, the State, and the federal government.

Objectives

1. To retard and where possible stop the rate of land loss in Terrebonne Parish by managing those activities of man as well as exotic species that accelerate the natural process of coastal erosion and subsidence and developing management strategies which minimize the damaging effects of natural disasters.
2. To establish policies and projects that protect the barrier islands and bay and inland shorelines of Terrebonne Parish from further deterioration and loss due to the interruption of natural processes by man; and also where feasible to rebuild the barrier islands in order to protect inland areas from storm surge and tidal action; and also where feasible to create bay shoreline barriers to decrease energy produced by tidal flux; and also where feasible to constrict tidal passes and/or channels in order to decrease energy produced by tidal flux. These projects will be accomplished in consideration for the barrier islands and shoreline of the entire Louisiana coast as a single unit and in association with the State's 2050 plan.
3. To establish a mechanism for coordination of coastal management plans and the development of new information concerning Terrebonne, between, or by, various government agencies and private concerns to ensure an overall benefit to the Parish of Terrebonne and its people.
4. To retard and, where possible, prevent saltwater from intruding into freshwater areas in order to protect the freshwater supply of Terrebonne necessary to the population, to keep a balance of salt and freshwater in order to maintain the vast estuaries of Terrebonne and to prevent land loss due to vegetation die off caused by saline waters.
5. To improve the quality of water in the coastal area of Terrebonne in order to ensure its safety for consumption and use by the human population and not impair or contaminate wildlife or fishery populations.
6. To establish a coordinated coastal use permit system that is consistent with Act 361 of 1978, and rules, regulations, and guidelines developed pursuant to the Act, in order to prescribe standards for various activities within the coastal zone so as not to cause irreparable damage to one resource while developing another.
7. To ensure that the goals and objectives of the Louisiana Coastal Resources Program are carried out within Terrebonne Parish.

8. To make management recommendations in individual environmental management units and the entire coastal zone of Terrebonne based on the best available scientific understanding of natural resources, engineering technology, economic, social, historical, and cultural considerations.
9. To make recommendations for the effective use of spoil from any dredging or excavation activity in the stabilization of shorelines and bayou or canal banks, in the restoration of marshes, shorelines, barrier islands, or other appropriate uses.
10. To ensure that the banks and shorelines of navigable canals are maintained to prevent erosion of adjoining land areas.
11. To ensure that existing projects that act to protect, sustain, or enhance coastal wetlands and barrier islands are maintained and operated for the benefit of the coastal ecosystem.
12. To establish a method to evaluate water access routes for commercial and industrial development activities to avoid, where possible, and minimize impacts on marsh and bay areas.
13. To monitor cumulative impacts of management proposals and activities or uses in individual environmental management units and the coastal zone of Terrebonne Parish as a whole.

Policies

1. No new canals shall be dredged, nor existing canals be widened or deepened when existing routes can be used to gain access to a particular site.
2. No barrier island or bay shoreline barriers should be breached or traversed by a dredging.
3. Based upon sound practices, spoil dredged during any activity shall be used for bank stabilization, barrier islands, the Gulf shoreline, bay shoreline barrier nourishment, and marsh restoration projects.
4. Any new activity requiring a local coastal use permit shall be judged, on a case by case basis, in relation to the management unit it occurs in and to the coastal zone as a whole, in order to avoid cumulative impacts and avoid detrimental impacts on the coastal zone.
5. Mangrove stands and sand dunes should not be disturbed.
6. Development of residential, commercial, industrial, or other urban activities shall be allowed along those portions of the natural levee ridges that are already

developed and are suitable (based on flood potential and soil conditions) for continued development.

7. Mineral extraction shall be conducted in a manner consistent with the Guidelines of Louisiana Coastal Resources Program and should be consistent with the Goals of the Terrebonne Parish Coastal Zone Management Program and individual environmental management units.
8. Permits shall be processed in a timely manner according to the guidelines, rules and regulations of the Louisiana State and Local Coastal Resources Management Act of 1978, as amended.
9. Whenever new information becomes available for an EMU, its goals, objectives, and policies shall be revised accordingly to ensure management based on the best practices.
10. EMU goals, objectives, and policies shall be reviewed at least once a year to determine whether revisions are necessary.
11. Any activity such as ineffective sewage treatment or open waste pits occurring within the parish that may have a detrimental effect on water quality in Terrebonne Parish's Coastal Zone shall be avoided to the maximum extent practicable.
12. Any activity that could lead to an increase in the rate of land loss of Terrebonne Parish shall be tested against Guideline 1.8 of the State Coastal Use Guidelines, other Guidelines and the overall benefit to the people of Terrebonne Parish before a local coastal use permit is granted. Activities that lead to land loss shall be avoided to the maximum extent practicable.
13. Whenever a coastal use permit and a development permit (pursuant to Chapter 7, Article III Division 3 of the Parish Code) are both required for a particular activity, the Parish shall not issue, nor recommend to the State the issuance of, a coastal use permit, until applicant's development permit has been granted.
14. Ensure that established marsh management plans and programs, which have been submitted and approved by the Coastal Zone Management Review Board, and recognized land erosion projects are maintained and followed to the extent that such plans, programs and projects are compatible with the Guidelines of the State Coastal Resources Program.
15. Encourage recreational activities provided the activities do not interfere with marsh conservation practices and the owners use of private property.
16. Prohibit the open dumping of waste, garbage, or refuse of any kind into any bayou, lake, marsh, wetland, or vegetated area of the coastal zone.

17. Maintain quantitative and qualitative water data characteristics to assure optimum health levels for flora and fauna.
18. Prohibit the abandonment of derelict vessels in all bayous, lakes or other waterways of the coastal zone and ensure that laws are applied and upheld.
19. Existing and future trenasses are prohibited from being connected to canals, bayous, or streams unless the damming or weir provisions of this paragraph are followed. Existing trenasses should be dammed in a manner to act as a small weir to allow some surface water to continue to drain into the canal but could be shut off in case of saltwater intrusion. Weir openings should be designed to maintain optimum beneficial water flow characteristics consistent with the locality in which it is installed.
20. Encourage educational activities that increase public awareness of coastal zone management issues and the magnitude and severity of the problem of coastal land loss in Terrebonne Parish.

D. Montegut Unit

Status

High rates of land loss in the past in Montegut marsh, north of Island Road. Includes LaCache Marsh Management Project, Montegut Marsh Management Project and proposed project for eastern side of unit.

Goals

1. To improve the quality of all water throughout the planning unit.
2. To maintain and increase where possible, freshwater inputs to the system and decrease saltwater intrusion.
3. To balance the development of non-renewable resources with the management of renewable resources.
4. To restore the deteriorating marsh.
5. To protect the natural habitat of the Pointe-au-Chien Wildlife Management Area.
6. To provide protection for local communities from hurricane storm surges.

Objectives

1. Maintain and enhance existing projects, and support future projects, within the unit to increase vegetated marsh area.
2. Maintain and enhance existing projects, and support future projects, within the unit to increase renewable resources, especially within the Pointe-au-Chien Wildlife Management Area.
3. Minimize the adverse effects of non-renewable resource development on renewable resources.
4. Minimize the adverse effects of hurricane protection levees on renewable resources while maintaining protection for local communities.
5. Minimize salt-water intrusion into the upper parts of the management unit.

Policies

1. Minimize new canal development and their adverse impacts on the environment.
2. Maintain hydrologic exchanges between managed areas and other parts of the estuary.
3. Support efforts to enhance the Parishwide Sewerage Project, where feasible.
4. Monitor the use and efficacy of private wastewater treatment facilities which discharge into the Montegut Marshes, to ensure they achieve treatment levels comparable to state levels recommended in the Terrebonne Parish.
5. Prohibit the discharge of hazardous, toxic, or unseptic wastes into the management unit.
6. Require, to the maximum extent practicable, that any site altered for mineral or other temporary activities be restored to pre-project condition.
7. Provide hurricane protection and safe hurricane evacuation route for local communities within the planning unit.

E. Terrebonne Marshes Unit

Status

Severe land loss in Wonder Lake and Madison Bay areas and shoreline erosion on marshes at edge of Lake Barre and Lake Felicity.

Goals

1. To improve water quality throughout the entire management unit.
2. To minimize any adverse impact of non-renewable resource development on the hydrology of the marsh.
3. To maximize freshwater inputs to the upper part of the unit and maintain a fresh/salt gradient to the south.
4. To minimize continued erosion, land subsidence, and saltwater intrusion.
5. To restore the deteriorating marsh.
6. To protect the natural habitat of the Pointe-au-Chien Wildlife Management Area.
7. To provide protection for local communities from hurricane storm surges.
8. To maintain shoreline integrity of Terrebonne and Timbalier Bays.

Objectives

1. Minimize the adverse impacts caused by the development of non-renewable resources in order to prevent detrimental impacts on renewable resources.
2. Minimize saltwater intrusion into upper parts of the management unit.
3. Minimize the adverse effects of hurricane protection levees on renewable resources while maintaining protection for local communities.
4. Encourage the use of freshwater and sediment diversion into the marsh.
5. Encourage the use of bank stabilization practices to control erosion and deterioration of the marsh.
6. Decrease the horizontal tide range within the unit by creating bay shoreline barriers and maintaining existing bay shorelines.

Policies

1. Support efforts to enhance the Parishwide Sewerage Project, where feasible.
2. Monitor the use and efficacy of private wastewater treatment facilities which discharge into the Terrebonne Marshes, to ensure they achieve treatment levels comparable to state levels recommended in the Terrebonne Parish.
3. Maintain natural hydrologic exchanges throughout the Terrebonne marshes.
4. Restrict, to the maximum extent practicable, the use of new linear corridors that breach the natural gulf shoreline.

5. Create new and maintain existing shoreline barriers to decrease the energy associated with tidal influx.
6. Ensure, to the maximum extent practicable, that all new non-navigation canals be plugged upon abandonment at intersections with other navigable or non-navigable water bodies, at both ends, and that the plugs are maintained.
7. To the maximum extent practicable, promote the use of new technologies for exploitation of subsurface mineral resources that minimize adverse impacts to the environment.
8. Require, to the maximum extent practicable, that any site altered for mineral or other temporary activities be restored to pre-project condition.
9. Recommend the use of existing routes and conditions as access to particular sites rather than the constructing, widening, or dredging of new or existing canals.
10. Promote marsh restoration practices that utilize spoil and revegetation techniques.
11. Promote and encourage surface water management practices that introduce freshwater and sediment into the marsh and decrease saltwater intrusion.
12. Require, to the maximum extent practicable, the beneficial disposal of spoil in an effort to restore the marsh.
13. Ensure, to the maximum extent practicable, that spoil dredged from the Houma Navigation Canal should be used to stabilize its banks and, that activities of the Corps of Engineers pertaining to this practice be coordinated with the Terrebonne Parish Coastal Zone Advisory Committee.
14. Establish "no wake" and/or speed limit requirements for all boats, ships, and barges of the Houma Navigation Canal, and on other channels in the marsh to prevent further erosion due to wave action.

F. Timbalier Island Shorelines Unit

Status

High rates of shoreline erosion. Recent restoration projects have focused on canals in central portion of island. There is a CWPPRA sand-fencing/vegetative plating project on the island.

Goals

1. To maintain the integrity of Timbalier island for the protection of interior marshes, local infrastructure, and coastal communities.

Objectives

1. To minimize continued erosion, land submergence, and storm damage to the Timbalier Island Barriers.
2. To minimize the adverse impact of non-renewable resource development on the barrier islands.
3. To encourage and support barrier island restoration programs.

Policies

1. Seal breaches and washovers to prevent permanent inlets from developing.
2. Encourage and recommend construction of artificial dunes in low, potential washover areas.
3. Recommend dune vegetation projects to aid in the stabilization of introduced sediment and to trap beach sediments eroded by winds and waves.
4. Require the filling of potential sand traps, behind the dune, such as, canals, bayous, ponds, and bays to minimize sediment loss as a result of shoreline erosion.
5. Recommend bay fill in areas, which are precariously narrow to increase the width of the back-barrier zone.
6. Require, to the maximum extent practicable, that any site altered for mineral or other temporary activities be restored to pre-project condition.
7. Promote and recommend planting of marsh vegetation or mangroves to stabilize newly deposited material along the bay shorelines.
8. Support efforts by local agencies and industries to stabilize dunes through revegetation.
9. Prohibit, to the maximum extent practicable, the use of new linear corridors, which breach the natural barriers.
10. Continue the cultural and historical uses of the islands by citizens.

G. Boudreaux Unit

Status

Land loss in all periods especially around margins of lakes in south of unit, shoreline of Lake Boudreaux, area south of Boudreaux Canal, and margins of Bayou Chauvin wetlands.

Goals

1. To improve the quality of all water throughout the planning unit.
2. To maintain and increase where possible, freshwater inputs to the system.
3. To balance the development of non-renewable resources with the management of renewable resources.
4. To restore the deteriorating marsh.
5. To protect existing and future shoreline and banks from erosion.
6. To provide protection for local communities from hurricane storm surges.
7. To decrease the negative impacts of saltwater intrusion.

Objectives

1. Promote and support projects, which increase freshwater inputs to marshes and swamps in the northern parts of the planning unit.
2. Minimize the adverse effects of non-renewable resource development on renewable resources.
3. Minimize the adverse effects of hurricane protection levees on renewable resources while maintaining protection for local communities.
4. Maximize bank stabilization in order to prevent erosion and deterioration of adjacent wetlands.
5. Minimize the adverse effects of increased saltwater intrusion.

Policies

1. Minimize, to the maximum extent practicable, new canal development and their adverse impacts on the environment.
2. Maintain natural hydrologic exchanges throughout the Boudreaux marshes.

3. Prohibit, to the maximum extent practicable, any detrimental use of new linear corridors that may connect fresher areas north of Lake Boudreaux to more saline areas south of the Lake and/or outside the planning unit.
4. Ensure, to the maximum extent practicable, that new canals be plugged upon abandonment at both ends and at intervals between and wherever such canals cross natural streams, or other navigable waterways, and that the plugs are maintained.
5. Promote the use of existing routes and conditions as access to particular sites rather than the constructing, widening or dredging of new or existing canals.
6. Constrict the avenues of salt-water intrusion in the southern reaches of the management unit.
7. To the maximum extent practicable, promote the use of new technologies for exploitation of subsurface mineral resources that minimize adverse impacts to the environment.
8. Require, to the maximum extent practicable, that any site altered for mineral or other temporary activities be restored to pre-project condition.
9. Support efforts to enhance the Parishwide Sewerage Project, where feasible.
10. Monitor the use and efficacy of private wastewater treatment facilities which discharge into the Boudreaux Marshes, to ensure they achieve treatment levels comparable to state levels recommended in the Terrebonne Parish.
11. Prohibit the discharge of hazardous, toxic, or unseptic wastes into the management unit.

H. Pelto Marshes Unit

Status

Brackish-saline marshes. Historical loss in area south of Highway 57. Present problems associated with subsidence and shoreline erosion along canals, bays, and lakes.

Goals

1. To improve water quality throughout the entire management unit.
2. To maximize the development of renewable resources.
3. To restore deteriorated marshes.

4. To balance the development of non-renewable resources with the management of renewable resources.
5. To protect existing and future shorelines and banks from erosion.
6. To create barriers on bay shorelines.

Objectives

1. Minimize the adverse impacts caused by the development of non-renewable resources in order to prevent detrimental impacts of renewable resources.
2. Minimize the negative effects of saltwater intrusion.
3. Maximize the distribution of suspended sediments into marshes.
4. Maximize the distribution of freshwater throughout this planning unit.
5. Promote the use of dredged material from the Houma Navigation Canal and other sources for marsh restoration and creation in the area.
6. Encourage the use of bank stabilization practices to control erosion and deterioration of the marsh.
7. Create of bay shoreline barriers in order to decrease energy associated with tidal flux.

Policies

1. Support efforts to enhance the Parishwide Sewerage Project, where feasible.
2. Monitor the use and efficacy of private wastewater treatment facilities which discharge wastes into the Pelto Marshes, to ensure they achieve treatment levels comparable to state levels recommended for Terrebonne Basin.
3. Prohibit, to the maximum extent practicable, new canal development and minimize adverse environmental impacts of any new canals.
4. Restrict the use of new linear corridors that traverse beaches, tidal passes or other natural Gulf shorelines.
5. Ensure, to the maximum extent practicable, that new and existing canals, upon abandonment, be plugged at both ends and at intervals between whenever such canals cross natural streams, the Houma Navigation Canal or other navigable waterways, and that the plugs are maintained.
6. Ensure that spoil banks adjacent to new and existing canals, to the maximum extent practicable, upon abandonment, be degraded to natural marsh elevation with the material being placed into the canal.

7. Protect interior marshes from effects of bays by creating new and maintaining existing shorelines.
8. Require, to the maximum extent practicable, that any site altered for mineral or other temporary activities be restored to pre-project condition.
9. Establish "no wake" and/or speed limits requirements for boats, ships, and barges.
10. To the maximum extent practicable, promote the use of new technologies for exploitation of subsurface mineral resources that minimize adverse impacts to the environment.
11. Recommend the use of existing routes and conditions as access to particular sites rather than the constructing, widening, or dredging new or existing canals.
12. Promote the beneficial disposal of spoil in an effort to restore the marsh.
13. Promote and encourage surface water management practices that introduce freshwater into the marsh and decrease saltwater intrusion.
14. Promote the restoration of barrier islands in adjacent planning units to protect marshes in the Caillou Marsh unit.
15. Require, to the maximum extent practicable, the beneficial disposal of spoil in an effort to restore the marsh.
16. Ensure, to the maximum extent practicable, that spoil dredged from the Houma Navigation Canal be use to stabilize its banks and, that activities of the Corps of Engineers pertaining to this practice be coordinated with the Terrebonne Parish Coastal Advisory Committee.

I. Caillou Marshes Unit

Status

Brackish-saline marshes. High loss rates in area south of Falgout Canal. Lower parts relatively stable.

Goals

1. To maximize the development of renewable resources.
2. To restore deteriorated marshes.
3. To balance the development of non-renewable resources with the management of renewable resources.
4. To protect existing and future shorelines and banks from erosion.

5. To decrease the energy of tidal influx.

Objectives

1. Promote the use of dredged material from the Houma Navigation Canal and other sources for marsh restoration/creation in the area south of Falgout Canal between Bayou Dularge and Bayou Grand Caillou Marsh.
2. Maximize the distribution of suspended sediments into marshes.
3. Minimize the adverse effects of non-renewable resource development on renewable resources.
4. Maximize bank stabilization in order to prevent erosion and deterioration of adjacent wetlands.
5. Maximize the distribution of freshwater in the upper portion of the planning unit near Falgout Canal.
6. "Neck-down" tidal passes in order to decrease energy of tidal influx and saltwater intrusion.

Policies

1. Prohibit, to the maximum extent practicable, new canal development and minimize adverse environmental impacts of any new canals.
2. Restrict, to the maximum extent practicable, the use of new linear corridors that traverse beaches, tidal passes, or other natural Gulf shorelines.
3. Ensure, to the maximum extent practicable, that new and existing canals, upon abandonment, be plugged at both ends and at intervals between whenever such canals cross natural streams, the Houma Navigation Canal or other navigable waterways, and that the plugs are maintained.
4. Ensure that spoil banks adjacent to new and existing canals, to the maximum extent practicable, upon abandonment, be degraded to natural marsh elevation with the material being placed into the canal.
5. Require, to the maximum extent practicable, that any site altered for mineral or other temporary activities be restored to pre-project condition.
6. Decrease energy of tidal influx and saltwater intrusion.
7. Establish “no wake” and/or speed limit requirements for boats, ships and barges.

8. To the maximum extent practicable, promote the use of new technologies for exploitation of subsurface mineral resources that minimize adverse impacts to the environment.
9. Promote the beneficial disposal of spoil in an effort to restore the marsh.

J. Isles Dernieres Shorelines Unit

Status

High rates of shoreline erosion. Three restoration projects (East Island, Trinity Island, and Whiskey Island) have been implemented in 1998. Segmented breakwaters around eastern end of Raccoon Island.

Goals

1. To maintain the integrity of the Isles Dernieres for the protection of interior marshes, local infrastructure, and coastal communities.

Objectives

1. To minimize continued erosion, land subsidence, and storm damage to the Isle Dernieres Barrier.
2. To minimize the adverse impact of resource development on the barrier islands.
3. To encourage and support barrier island restoration programs.

Policies

1. Encourage the use of barrier island restoration practices to maintain or increase island elevation, preventing washover during storms and further deterioration of the islands.
2. Encourage the use of shoreline stabilization practices to control erosion and further deterioration of the islands.
3. Seal breaches and washovers after storms to prevent the development of permanent inlets.

4. Recommend dune vegetation projects to aid in the stabilization of introduced sediment and to trap beach sediments eroded by winds and waves.
5. Recommend the filling of potential sand traps behind the dunes, such as, canals, bayous, ponds, and bays to minimize sediment loss from the island during washover.
6. Recommend bay filling in areas which are precariously narrow to increase the width of the back-barrier zone, preferably 2,000 feet but at least 650 feet.
7. Promote and recommend planting of marsh vegetation or mangroves to stabilize newly deposited material along the bay shoreline.
8. Recommend that dredged material generated during maintenance of Cat Island Pass be beneficially used on Wine Island.
9. Recommend, to the maximum extent practicable, that any site altered for mineral or other temporary activities be restored to pre-project condition.
10. Restrict, to the maximum extent practicable, the use of new linear corridors, which breach the natural barriers.
11. Continue the cultural and historical uses of the islands by citizens.

K. Penchant Unit

Status

High rates of loss between 1930s and early 1970s. Mainly fresh-intermediate floating marshes. Penchant Basin Project is designed to remediate current hydrologic problems. Herbivory is a problem.

Goals

1. To optimize freshwater input from the Atchafalaya River in order to continue marsh build-up and stabilization.
2. To minimize effects of resource development on the hydrology of this marsh.
3. To balance the development of non-renewable resources with the management of renewable resources.
4. Minimize incursions of saline water.
5. Ensure continued maintenance and operation of restoration projects in the area.

Objectives

1. Maintain, and if possible, improve existing waterflow patterns to reduce excessive water levels.
2. Maximize renewable resource development.
3. Minimize the adverse effects of future non-renewable resource development on renewable resources.
4. Retain the integrity of Mauvais Bois Ridge, Marmande Ridge, and Bayou LaPointe Ridge.
5. Minimize stress on vegetation due to increased waterflow, excessive water levels, exotic species, herbivory, and saltwater intrusion.
6. Maintain bank stability where bank failure is detrimental to interior marshes.

Policies

1. Ensure coordination by Terrebonne Parish Advisory Committee with the US Army Corps of Engineers, Natural Resources Conservation Service, and Louisiana Department of Natural Resources concerning the Lower Atchafalaya Reevaluation Study, the Atchafalaya Basin Plan, and the Penchant Basin Plan.
2. Prohibit, to the maximum extent practicable, new canal development and minimize adverse environmental impacts of any new canals.
3. Restrict the use of linear corridors that cross the natural Mauvais Bois ridge, Marmande ridge, and the Bayou LaPointe ridge.
4. Establish "no wake" and/or speed limit requirements for boats, ships, and barges.
5. Prohibit, to the maximum extent practicable, the disruption of the natural flow of water and transport of sediment by linear corridors.
6. Promote the use of overflow banks, rather than levees, adjacent to dredged or maintained channels.
7. Decrease the negative impacts of increased tidal influx and saltwater intrusion.
8. To the maximum extent practicable, promote the use of new technologies for exploitation of subsurface mineral resources that minimize adverse impacts to the environment.

9. Avoid, to the maximum extent practicable, impounding areas or segmentation of wetlands by canals, levees, or other linear corridors, which may adversely impact the natural biological and hydrologic profile of the area.
10. Require, to the maximum extent practicable, that any site altered for mineral or other temporary activities be restored to pre-project condition.
11. Facilitate coordination of landowners with Louisiana Department of Wildlife and Fisheries and US Army Corps of Engineers to develop programs to minimize herbivory and exotic species impacts on vegetated marshes.

L. Mechant/DeCade Unit

Status

Brackish-saline marshes. High loss rates north of Lake Mechant, especially during Hurricane Andrew. Brady Canal project affects area between Superior Canal and Voss Canal.

Goals

1. To maximize the development of renewable resources.
2. To restore deteriorated marshes.
3. To balance the development of non-renewable resources with the management of renewable resources.
4. To minimize the negative effects of increased tidal influx and saltwater intrusion.

Objectives

1. Minimize the adverse impacts caused by the development of non-renewable resources in order to prevent detrimental impacts on renewable resources.
2. Maximize the distribution of suspended sediments into marshes.
3. Avoid excessive ponding of fresh and saltwater within marsh areas.
4. Maximize bank integrity where failure is detrimental to interior marshes.

Policies

1. Avoid, to the maximum extent practicable, structure or activities that adversely restrict the flow of water and/or the transport of sediment.
2. Prohibit, to the maximum extent practicable, new canal development and minimize adverse environmental impacts of any new canals.
3. Establish "no wake" and/or speed limit requirements for boats, ships, and barges.
4. Protect existing stands of emergent vegetation to the maximum extent practicable.
5. Avoid the creation of impounded areas or the segmentation of wetlands by canals, levees, or other linear corridors, which adversely affect the biological and hydrologic profile of the area.
6. Prohibit, to the maximum extent practicable, the disruption of natural flows of water and sediment by linear facilities or corridors.
7. Require, to the maximum extent practicable, that any site altered for mineral or other temporary activities be restored to pre-project condition.
8. To the maximum extent practicable, promote the use of new technologies for exploitation of subsurface mineral resources that minimize adverse impacts to the environment.
9. "Neck-down" tidal passes and channels in order to decrease energy of tidal influx and saltwater intrusion.

M. Atchafalaya Marshes Unit

Status

Mainly fresh, floating marshes. Storm loss during Hurricane Andrew. Wave erosion along Bay margins. Herbivory is a problem.

Goals

1. To optimize freshwater input from the Atchafalaya River in order to continue marsh build-up and stabilization.
2. To minimize effects of resource development on the hydrology of this marsh.
3. To balance the development of non-renewable resources with the management of renewable resources.

Objectives

1. Maintain, and if possible, improve existing waterflow patterns.
2. Maximize renewable resource development.
3. Minimize the adverse effects of future non-renewable resource development on renewable resources.
4. Minimize stress on vegetation due to herbivory and exotic species.

Policies

1. Ensure coordination by the Terrebonne Parish Advisory Committee with the US Army Corps of Engineers concerning the Lower Atchafalaya Reevaluation Study, the Atchafalaya Basin Plan, and flood control structures.
2. Prohibit, to the maximum extent practicable, new canal development and minimize adverse environmental impacts of any new canals.
3. To the maximum extent practicable, promote the use of new technologies for exploitation of subsurface mineral resources that minimize adverse impacts to the environment.
4. Establish "no wake" and/or speed limit requirements for boats, ships, and barges.
5. Prohibit, to the maximum extent practicable, the disruption of the natural flow of water and transport of sediment by linear corridors.
6. Require, to the maximum extent practicable, that any site altered for mineral or other temporary activities be restored to pre-project condition.
7. Avoid, to the maximum extent practicable, impounding areas or segmentation of wetlands by canals, levees or other linear corridors, which may adversely impact the natural biological and hydrologic profile of the area.
8. Facilitate coordination of landowners with Louisiana Department of Wildlife and Fisheries and the US Army Corps of Engineers to develop programs to minimize herbivory and exotic species impacts on marshes.

N. Fourleague Bay Unit

Status

The Atchafalaya River has increasingly influenced this area in the last 25 years. Many parts of the bay are becoming shallow and barely navigable by small boat. The salinity of the lake varies from brackish during low river flow periods to entirely fresh during times of high river flow.

Goals

1. To maintain freshwater inflows from the Atchafalaya River.
2. To maintain sustainable fisheries habitat in the open waters of the bay.

Objectives

1. To promote and support projects which increase or maintain freshwater inputs to the EMU.
2. To minimize the adverse effects of non-renewable resource development on renewable resources.

Policies

1. To maintain natural hydrologic exchanges throughout the Fourleague Bay EMU.
2. To prohibit, to the maximum extent practicable, the use of new linear facilities that reduce the integrity of bay shorelines.
3. To promote the use of directional drilling techniques on all petroleum, geothermal, and other wells, when appropriate, and to reduce dredging activities in the Bay.
4. To prohibit the discharge of hazardous, toxic, or unseptic wastes into the EMU.

O. Point-au-Fer Unit

Status

Localized areas of land loss. High rates of Gulf shoreline retreat. Interior marsh impacted by altered hydrology as a result of non-renewable resource development.

Goals

1. To balance the development of non-renewable resources with management of the renewable resources.
2. To maximize the potential of new land build-up caused by Atchafalaya River delta formation.
3. To maintain existing restoration projects in the area.

Objectives

1. Maximize renewable resource development.
2. Maintain integrity of Gulf of Mexico shoreline.
3. Minimize the adverse effects of non-renewable resource development on renewable resources.
4. Maximize beneficial effects of proximity to the Atchafalaya River.
5. Ensure new development activities do not impair the function of existing restoration projects.

Policies

1. Avoid structures or activities that alter or restrict the flow of fresh-water and/or the transport of sediment from the Atchafalaya into the Point-au-Fer Marsh.
2. Restrict, to the maximum extent practicable, the use of linear corridors that traverse beach, tidal passes, or other natural Gulf shorelines.
3. Prohibit, to the maximum extent practicable, new canal development and minimize adverse environmental impacts of any new canals.
4. Protect existing stands of emergent vegetation and mangrove to the maximum extent practicable.

5. To the maximum extent practicable, promote the use of new technologies for exploitation of subsurface mineral resources that minimize adverse impacts to the environment.
6. Require, to the maximum extent practicable, that any site altered for mineral or other temporary activities be restored to pre-project condition.
7. Establish "no wake" and/or speed limit requirements for boats, ships, and barges.
8. Control the development of linear corridors, to the maximum extent practical, that may disrupt the potential of new land build-up caused by the Atchafalaya River delta complex.

P. Houma Navigation Canal Wetlands Unit

Status

Loss of marsh and cypress forest in adjacent areas associated with saltwater intrusion, increased energy of tidal influx, and vessel effects including wake and vessel draft surge along Houma Navigation Canal (HNC). Continued increased expansion of main channel of HNC and continued deterioration of adjacent marshes and swamps.

Goals

1. To improve the quality of all waters throughout the marsh, but specifically in areas important to the development of renewable resources.
2. To maintain a freshwater source in this planning unit for effective management of other coastal marshes.
3. To protect drinking water supply intakes in Houma from saltwater intrusion.
4. To balance the development of non-renewable resources with the management of renewable resources.
5. To protect existing and future shorelines and banks from erosion and control saltwater intrusion.

Objectives

1. Promote the use of freshwater inputs from the Houma Navigation Canal to benefit marshes and swamps.

2. Minimize saltwater intrusion.
3. Minimize the adverse impacts caused by the development of non-renewable resources in order to prevent detrimental impacts or renewable resources.
4. Maximize bank stabilization in order to prevent erosion, saltwater intrusion, and deterioration of adjacent wetlands.

Policies

1. Support and maintain existing marsh management projects in the area to maximize retention of freshwater within marshes and swamps without excessive flooding of vegetation.
2. Establish "no wake" and/or speed limit requirements for boats, ships, and barges on the Houma Navigation Canal.
3. Support the Coast 2050 Plan strategy of a multi-purpose control structure on the HNC.
4. Promote the beneficial disposal of spoil in an effort to restore the marsh and decrease effects of saltwater intrusion.
5. To the maximum extent practicable, promote the use of new technologies for exploitation of subsurface mineral resources that minimize adverse impacts to the environment.
6. Explore with the Corps of Engineers possibly implementing an underwater sill across the lower HNC in order to block saltwater intrusion during susceptible times of the year.
7. Require, to the maximum extent practicable, that any site altered for mineral or other temporary activities be restored to pre-project condition.
8. Ensure, to the maximum extent practicable, that spoil dredged from the Houma Navigation Canal be used to stabilize its banks or restore marsh and that activities of the Corps of Engineers pertaining to this practice be coordinated with the Terrebonne Parish Coastal Advisory Committee.

VIII. CONSISTENCY WITH SLCRMA

A. Consistency

The Terrebonne Parish Local Coastal Zone Management Program is consistent with the State and Local Coastal Resources Management Act of 1978 (SLCRMA), as amended (L.R.S. 49:214.21-214.41). The SLCRMA and the Louisiana Coastal Resources Program are incorporated by reference and made a part of the Terrebonne Parish Local Coastal Zone Management Program. The Coastal Management Division, Louisiana Department of Natural Resources document, "A Coastal User's Guide to the Louisiana Coastal Resources Program," appears as volume two of the Terrebonne Parish Local Coastal Zone Management Program. Should differences arise, the SLCRMA and the requirements of the Louisiana Coastal Resources Program shall supersede the local program document and decisions.

The Terrebonne Parish Local Coastal Zone Management Program includes decision making criteria that protect, develop, and where feasible, restore the natural resources of the parish and state while providing for adequate economic growth and development. This Program requires that a proposed use conform to all applicable laws, standards, and regulations.

B. Modifications

Any significant alterations or modifications to the approved Terrebonne Parish Local Coastal Zone Management Program shall be submitted to the Secretary of the Louisiana Department of Natural Resources for review and approval along with the following:

1. a detailed description of the proposed change;
2. if appropriate, maps of sufficient scale and detail depicting geographically how the program would be changed;
3. an explanation of how the proposed change would better accommodate local conditions and better serve to achieve the objectives of the state program and the local program;

4. a resolution from the Terrebonne Parish Council expressing approval of the modifications as submitted and its intent to implement the changes subsequent to state approval;
5. all parish ordinances relevant to the proposed modifications;
6. any comments from governmental units that may be affected by the proposed modifications;
7. the record of the public hearing on the proposed modification, including any written testimony or comments received; and
8. documentation that Terrebonne Parish has provided a full opportunity for governmental and public involvement in the development of the proposed modifications.

C. Periodic Review

An annual report on the activities of the Terrebonne Parish Local Coastal Zone Management Program shall be submitted to the Secretary of the Louisiana Department of Natural Resources each year and shall include:

1. the number, type, and characteristics of the applications for coastal use and other permits;
2. the number, type, and characteristics of coastal use and other permits granted, conditioned, denied, and withdrawn;
3. the number, type, and characteristics of permits appealed to the courts;
4. results of any appeals;
5. a record of all variances granted;
6. a record of any enforcement actions taken;
7. a description of any problem areas within the state or local program and proposed solutions to any such problems; and
8. proposed changes in the state or local program.

9. any other data as required by the State Coastal Zone Management Program.

The first annual report should be submitted to the Secretary of the Louisiana Department of Natural Resources 12 months following implementation of the local program.

IX. Local Coastal Program Operations

A. The Local Coastal Zone Management Program Process

The Terrebonne Parish Local Coastal Zone Management Plan (TPLCZMP) recognizes the value of the natural coastal ecosystems. The TPLCZMP protects, preserves, restores, and enhances the parish coastal zone as:

> a natural storm barrier, flood control system, water filtration system, and natural saltwater intrusion control;
>
> a habitat for wildlife, an aquatic resource, an aesthetic resource, a parish, state and national resource, and a historic cultural resource; and
>
> a legacy to future generations.

Many coastal-dependent commercial, residential, and recreational activities requiring public access occur in Terrebonne Parish. To overcome these sometimes potentially conflicting uses, the plan promotes coordinated development through conflict resolution. Balancing the diverse values allows current and future residents the opportunity to enjoy the multiple benefits and cultural values associated with a healthy coastal zone while fostering the public safety, health, and welfare of its residents. In the event that sections of this plan may be subject to multiple interpretations, they must be read to further the purposes stated above and provide fair and impartial judgment to all parties.

This plan emphasizes uses of local concern that directly and significantly affect coastal waters and are in need of coastal management but are not uses of state concern, which shall be regulated by the Coastal Management Division at the state level. (See IX.B. Activities Requiring a Coastal Use Permit. Uses of State Concern and Uses of Local Concern).

Should any provision of this process be deemed contrary to law, it shall be severed from the remainder and shall not affect other provisions that may remain applicable, irrespective of the invalid provision. This process shall be read and construed as a whole and in accord with the Louisiana Coastal Zone Management Program, L.R.S. 49:214 et seq. Unless specifically defined in the plan, the Terrebonne Parish Coastal Zone Management Ordinance, or the Louisiana Coastal Zone Management Program, words and

phrases in this process shall be read as commonly used and to give this process its most reasonable application.

Anyone seeking a Local Coastal Use Permit will work with three entities: the Local Coastal Zone Management Program Administrator, the Terrebonne Parish Coastal Zone Management Advisory Committee (Coastal Advisory Committee), and the Terrebonne Parish Council.

The Local Coastal Zone Program Administrator (local administrator)

The Local Coastal Program Administrator (local administrator):

manages the Local Coastal Zone Management Program based upon the local Coastal Zone Management Plan, as adopted by the Terrebonne Parish Council.

issues, denies, or modifies Coastal Use Permits (CUPs) consistent with the Local Coastal Zone Management Plan for Terrebonne Parish.

adopts any rules and regulations that are reasonable and necessary to carry out this ordinance in conformance with the generally established procedures for Terrebonne Parish rulemaking.

conducts investigations necessary to ascertain compliance with this plan.

acts as liaison for Terrebonne Parish to the US Army Corps of Engineers, other parishes, and other state, federal, and local governmental entities relative to projects governed by this ordinance or the Act which are proposed to take place in or impact the coastal zone of Terrebonne Parish.

reviews and comments upon uses of state concern (L.R.S. 49:214.25 A (1)).

determines whether a proposed project has direct and significant impacts and whether a proposed project is a local use.

maintains and holds open for public inspection records pertaining to this program and activities governed by the program.

regularly updates the Coastal Advisory Committee on actions taken and seeks their advise on future actions.

enforces the elements of this program.

requests and receives the assistance of other officers and employees of Terrebonne Parish, when necessary to carry out these duties.

considers written requests from Terrebonne Parish residents to add, modify, or delete local rules implementing this program.

has the capacity to initiate a Terrebonne Parish Wetlands Conservation and Restoration Fund.

To avoid duplication, any of the local administrator's duties already performed by another Terrebonne Parish Office, such as the Planning Department or Department of Public Works, may remain a responsibility of that office. A standardized method of communicating between the offices and the local administrator will be established.

The Coastal Zone Management Advisory Committee (Coastal Advisory Committee)

The Coastal Zone Management Advisory Committee (Coastal Advisory Committee) has 15 members representing the geographic and socioeconomic interests of Terrebonne Parish (See XI.A. The Terrebonne Parish Coastal Zone Management Ordinance). Twelve members, chosen and ratified by the Terrebonne Parish Council, represent specific interests. Three members, appointed by the Parish President, are at-large positions representing no specific group or interest. The Coastal Advisory Committee:

reviews and comments upon proposed rules and regulations impacting the coastal zone.

recommends to the Parish Council any modifications to this program and the Parish coastal ordinance and may require state and federal approval.

reviews and comments upon any coastal use permit at the request of the local administrator or any committee member.

nominates a representative to hear appeals in accord with the parish ordinance.

submits an annual report describing the activity of Terrebonne Parish Local Coastal Zone Management Program to the Secretary of the Department of Natural Resources and makes copies available to the public.

has the capacity to direct the Terrebonne Parish Coastal Zone Management Office to establish Terrebonne Parish Wetlands Conservation and Restoration Fund.

enforces the elements of this Program and the parish ordinance.

The Terrebonne Parish Council

The Terrebonne Parish Council has the authority of general jurisdiction and operation at the parish level. The Terrebonne Parish Council shall amend the Terrebonne Parish Coastal Zone Management Ordinance by following the procedures according to the Terrebonne Parish Code Section 2, 11-16. A modification to the Terrebonne Parish Coastal Zone Management Ordinance shall be submitted to the Secretary of the Louisiana Department of Natural Resources for review and approval. No alterations or modifications to this ordinance shall become effective until approval by the federal government and the Secretary of the Department of Natural Resources. (See VIII. Consistency with SLCRMA)

B. Activities Requiring a Coastal Use Permit

Uses of State Concern

Uses of state concern are uses which directly and significantly affect coastal waters and which are in need of coastal management and which have impacts of greater than local significance or which significantly affect interests of regional, state, or national concern. Uses of state concern shall include but not be limited to:

a. Any dredge or fill activity, which intersects with more than one water body.
b. Projects involving use of state owned lands or water bottoms.
c. State publicly funded projects.
d. National interest projects.
e. Projects occurring in more than one parish.
f. All mineral activities, including exploration for and production of oil, gas, and other minerals, all dredge and fill uses associated therewith, and all other associated uses.
g. All pipelines for the gathering, transportation, or transmission of oil, gas, and other minerals.
h. Energy facility siting and development.
i. Uses of local concern, which may significantly affect interests of regional, state, or national concern.

When only part of a use lies within the coastal zone, only that portion of the use, which is located within the coastal zone, is considered a use subject to a coastal use permit. Uses of State Concern are permitted through the Coastal Management Division, Louisiana Department of Natural Resources, Baton Rouge, LA.

Uses of Local Concern

Uses of local concern shall include, but not be limited to:

a. Privately funded projects, which are not uses of state concern.
b. Publicly funded projects, which are not uses of state concern.
c. Maintenance of uses of local concern.
d. Jetties or breakwaters.
e. Dredge or fill projects not intersecting more than one water body.
f. Bulkheads.
g. Piers.
h. Camps and cattlewalks.
i. Maintenance dredging.
j. Private water control structures of less than $15,000 in cost.
k. Uses on cheniers, salt domes, or similar landforms.

Undertaking a local or state use in the Terrebonne Parish coastal zone without a Coastal Use Permit or in violation of permit terms is unlawful.

General Exemptions

Activities listed under L.R.S. 49:214.34 (A)1-10 are exempt from this program. These include the following: agricultural, forestry, and aquaculture activities on lands consistently used in the past for such activities; hunting, fishing, trapping, and the preservation of scenic, historic, and scientific areas and wildlife preserves; normal maintenance or repair of existing structures including emergency repairs of damage caused by accident, fire, or the elements; construction of a residence or camp; construction and modification of navigational aids such as channel markers and anchor buoys.

The following activities listed under L.R.S. 49:214.34 (A) 1, 2, 9, & 10 must be described in a permit application to allow a determination of whether they have a direct and significant impact on coastal waters:

Activities occurring wholly on lands five feet above mean sea level except when the Secretary of the Department of Natural Resources finds, subject to appeal, that the particular activity would have direct and significant impact on coastal waters.

Activities occurring within fastlands except when the Secretary of the Department of Natural Resources finds, subject to appeal, that the particular activity would have direct and significant impacts on coastal waters.

Construction, maintenance, repair, or normal use of any dwelling, apartment complex, hotel, motel, restaurant, service station, garage, repair shop school, hospital, church, office building, store, amusement park, sign, driveway, sidewalk, parking lot, fence, or utility pole or line, when these activities occur wholly on lands five feet or more above mean sea level or on fast lands except when the Secretary of the Department of Natural Resources finds, subject to appeal, that the particular activity would have direct and significant impacts on coastal waters.

Uses which do not have a significant impact on coastal waters.

Upon finding no impact(s) and with the concurrence of the Secretary, the local administrator shall notify the project proponent in writing that the activity may proceed without a Coastal Use Permit (CUP).

Grandfathered Projects

Any use or activity which, prior to October 1, 1980, the initiation of the Louisiana Coastal Use Permit Program, has been lawfully commenced in good faith and for which all required permits have been obtained is consistent with the Coastal Management Program and no coastal use permit is required. Moreover, such use or activity shall thereafter be consistent with the program even if renewals of previously issued permits become necessary or if new permits are required by other governmental bodies provided that there is no significant change in the nature, shape, size, location, or impacts of the use or activity. To be so exempt, a use or activity must have met the following requirements prior to the date of the Coastal Use Permit Program:

1. actual construction or operation of the use or activity must have begun, in good faith;

2. all permits, licenses, and clearances required by governmental bodies must have been obtained, and the use or activity must be in compliance with all said permits, licenses, and clearances; and

3. no significant change in the nature, size, location or impacts of the use or activity takes place.

Emergency Uses

Coastal use permits are not required in advance for uses necessary to correct emergency situations. Emergency situations are those brought about by natural or manmade causes, such as storms, floods, fires, wrecks, explosions, or spills which would result in hazard to life, loss of property, or damage to the environment if immediate corrective actions were not taken. This exemption applies only to those corrective actions which are immediately required for the protection of lives, property, or the environment necessitated by the emergency situation.

Prior to undertaking such emergency uses, or as soon as possible thereafter, the person carrying out the use shall notify the Secretary and the local administrator of Terrebonne Parish. The person carrying out the use shall give a brief description of the emergency use and the necessity for carrying it out without a coastal use permit. As soon as possible after the emergency situation arises, any person who has conducted an emergency use shall report on the emergency use to the local administrator of Terrebonne Parish or to the Secretary. A determination will be made as to whether the emergency use will continue to have direct and significant impacts on coastal waters. If so, the user must apply for an after-the-fact permit. The removal of any structure or works occasioned by the emergency and the restoration of the condition existing prior to the emergency use may be ordered if the permit is denied in whole or in part.

Normal Maintenance and Repair

Normal repairs and the rehabilitation, replacement, or maintenance of existing structures shall not require a coastal use permit provided that:

1. the structure or work was lawfully in existence, currently serviceable, and in active use during the year preceding the repair, replacement or maintenance; and

2. the repair or maintenance does not result in an encroachment into a wetland area greater than that of the previous structure or work; and

3. the repair or maintenance does not involve dredge or fill activities; and

4. the repair or maintenance does not result in a structure or facility that is significantly different in magnitude or function from the original.

This exemption shall not apply to the repair or maintenance of any structure or facility built or maintained in violation of the coastal management program. Coastal use permits will normally authorize periodic maintenance including maintenance dredging. All maintenance activities authorized by coastal use permits shall be conducted pursuant to the conditions established for that permit. Where maintenance is performed which is not described in an applicable coastal use permit, it shall conform to this section.

Construction of a Residence or Camp

The construction of a residence or a camp shall not require a coastal use permit provided that the terms shall refer solely to structures used for noncommercial and nonprofit purposes and which are commonly referred to as "single family" and not multiple family dwellings. The terms shall refer solely to the construction of one such structure by or for the owner of the land for the owner's use and not to practices involving the building of more than one such structure as in subdividing, tract development, speculative building, or recreational community development.

Exemptions apply only to the construction of the structure and appurtenances, such as septic fields, outbuildings, walkways, gazebos, small wharves, landings, boathouses, private driveways, and similar works. Not exempt are bulkheading and/or any dredging or filling activity, except for small amounts of fill necessary for the structure itself and for the installation and maintenance of septic or sewerage facilities. The construction of a residence or camp must be in full compliance with the provisions of all parish ordinances. The local administrator will review all sites to insure consistency with the local program.

Navigational Aids

Construction and modification of navigational aids shall not require a coastal use permit. Navigational aids include channel markers, buoys, marker piles, dolphins, pilings, pile clusters, etc., provided that the exemption does not apply to associated dredge or fill uses or the construction of mooring structures, advertising signs, platforms, or similar structures associated with such facilities. All navigational aids constructed pursuant to this section shall conform to United States Coast Guard standards and requirements.

Excluded Federal Lands

In accordance with Section 304(1) of the Coastal Zone Management Act of 1972, all federal lands owned, leased, held in trust or whose use is otherwise subject solely to the discretion of the federal government are excluded from the Louisiana coastal zone. Any activities or projects conducted within these excluded lands which directly effect the Louisiana coastal zone are, however, subject to the consistency provisions of the federal Coastal Zone Management Act. The federal activities should be fully consistent with the state program unless compliance is prohibited based upon the requirements of existing law applicable to the federal agency's operation. The Coastal Management Division is responsible for securing necessary review and comment from other state, regional or local government agencies. Thereafter, only the Coastal Management Division is authorized to comment officially on the federal consistency determination, concur with or object to a consistency certification, or determine the consistency of a proposed federal assistance activity.

C. Evaluation of Uses of Greater than Local Concern

L.R.S. 49:214 and the Louisiana Coastal Resources Program (LCRP) require that local governments develop "special procedures and methods for considering uses within special areas, uses of greater than local benefit, and uses affecting the state and national interest." Uses of federal and regional consideration or concern, as well as the national and regional interests in the development and implementation of the LCRP, are described in Chapter VI of the Final Environmental Impact Statement on the LCRP (1980). Resources that have greater than local concern include air and water quality, wetlands and endangered species, flood plains and barrier islands, historic and cultural resources, and fisheries and other living marine resources. Table 5 shows facilities that have greater than local benefit and concern.

Table 5. Facilities of greater than local concern.

National defense and aerospace: Military bases and installations; defense manufacturing facilities, aerospace facilities.

Energy production and transmission: Oil and gas rigs, storage, distribution and transmission facilities; power plants; deep-water ports; liquefied natural gas facilities; geothermal facilities; coal mining facilities.

Recreation: National seashores, parks, forests; large and outstanding beaches and recreational waterfronts.

Transportation: Interstate highways, railroads, airports; aids to navigation including Coast Guard Stations.

The federal Coastal Zone Management Act (CZMA) requires that state programs be able to prevent local governments from unreasonably restricting use of regional benefit. The CZMA states: "The program must provide for a method of assuring that local land and water use regulations within the coastal zone do not unreasonably restrict or exclude land and water uses of regional benefit. 'Unreasonable' shall mean that which would

constitute arbitrary, capricious or confiscatory action as defined in the jurisprudence involving zoning and land use regulations."

A "use of regional benefit" is a use, which benefits more than one parish or state, and which has direct and significant impacts on coastal waters. Uses of regional benefit include:

1. interstate natural gas transmission pipelines;

2. major state or federal transportation facilities such as highways and expressways;

3. major state or federal transportation facilities such as deepwater ports and navigational projects;

4. public wildlife and fisheries management projects;

5. public utility or cooperative energy generation plants; and

6. state parks and beaches and other state-owned recreational facilities.

All activities of regional and national interest should be presented in a public hearing in Terrebonne Parish and should be coordinated with the local administrator. The public hearings are for the purpose of informing the general public about the project and receiving comments and ideas from Terrebonne Parish citizens.

If the Coastal Management Division, Louisiana Department of Natural Resources determines that an activity of "state concern" is an activity, which represents regional, state, or national interest and should have a public hearing, the following procedures should apply.

1. The local administrator should be contacted to schedule and coordinate a public hearing in the Terrebonne Parish.

2. The local administrator may make recommendations for a position of the parish on the project. The Coastal Advisory Committee may rule against any recommendations of the local administrator by a majority of voting members present.

3. The Terrebonne Parish Council must approve recommendations of the Coastal Advisory Committee before any changes become effective.

4. The local administrator will forward the final parish recommendations on a proposed project in or directly affecting the parish, to the Secretary of the Department of Natural Resources and the Coastal Management Division for review and consideration in the state's final decision.

All agencies undertaking activities which may impact the Terrebonne Parish coastal wetlands or conflict with its coastal program are encouraged to notify the local administrator of their intentions, uses, or projects in order to help coordinate and negotiate conflict resolutions.

Intergovernmental Coordination

Permit decisions or management objectives of Terrebonne Parish may affect the neighboring parishes of Lafourche, Assumption, and St. Mary. Actions of such magnitude are normally considered Uses of State Concern and will not be permitted by a Terrebonne Parish Local Coastal Zone Management Program. With coordination of CMD's Joint Public Notice Office, the local administrator shall undertake the following.

1. All public notices for Uses of State Concern in Lafourche, Assumption, and St. Mary parishes should be forwarded by the Coastal Management Division to the Terrebonne Parish local administrator.

2. Upon receipt of such public notices, a review process will be undertaken if it is determined that such activity will have a direct and significant impact upon the Terrebonne Parish coastal zone.

3. The local administrator will forward comments to the host parish, the Coastal Advisory Committee, and the Coastal Management Division in Baton Rouge.

4. At the determination of the local administrator, or at the request of one member of the Coastal Advisory Committee, a joint interparish permit conference may be requested to discuss the proposed use and its impacts on Terrebonne Parish coastal zone.

Barataria-Terrebonne National Estuary Program

Terrebonne Parish will continue to participate in the efforts of the Barataria-Terrebonne National Estuary Program. Coastal use guidelines and boundaries for the Terrebonne Parish local coastal resources program have been designed to be consistent with the boundaries used in the State 2050 Plan being developed and implemented through the Coastal Restoration Division, Louisiana Department of Natural Resources. Close communication will be maintained between Barataria-Terrebonne National Estuary Program, the Coastal Restoration Division, and the Terrebonne Parish Coastal Zone Management Office.

US Army Corps of Engineers

The local administrator will maintain close coordination with the US Army Corps of Engineers through the use of the Section 404 permit application as the local program permit application. The local administrator will send a copy of any local permit application to the US Army Corps of Engineers, New Orleans District, within two working days of the permit application receipt.

Uses of State Concern

The SLCRMA established that a "coastal use permit decision must be consistent with the state program and approved local program for affected parishes and must represent an

appropriate balance of social, environmental and economic factors. In all instances, local government comments shall be given substantial consideration." The Terrebonne Parish Office of Coastal Zone Management has developed the following procedure for reviewing and commenting on permit applications for Uses of State Concern.

1. Permit application may be taken by either the Terrebonne Parish local administrator or the Coastal Management Division for determination of whether the use is of state or local concern.

2. Once the local administrator makes his determination as to whether a use is a state or local concern, the application and local administrator's rationale for the decision are forwarded to the Coastal Management Division within two days of receipt of a completed application for the concurrence of the CMD. If a permit application for a Use of Local Concern is submitted to the Coastal Management Division, the application and rationale for the decision are forwarded to Terrebonne Parish within two (2) working days of the receipt of the completed application.

3. If the initial determination by the local administrator is allowed to stand by the Secretary of the Louisiana Department of Natural Resources, the application is processed according to the Rules and Procedures for coastal use permits as established by the LCRP Final Environmental Impact Statement.

4. Public notice is issued within 10 working days of receipt of an apparently complete application by the Coastal Management Division.

5. The notice shall state that comments on the proposed development shall be submitted to the Coastal Management Division within twenty-five (25) calendar days of the date of official journal publication of the notice.

6. Within this comment period, the local administrator will forward copies of the Coastal Management Division's public notice to members of the Coastal Advisory Committee, the Terrebonne Parish Council, Parish President, and Department of Public Works and solicit comments from them.

7. The local administrator may publish a notice in the official parish journal inviting public comment and assessing the need to hold a local public hearing on the requested activity. The notice will include the name of the applicant, the projects location, a brief description of the proposed coastal use, and a declaration if any of the work has been initiated, is being done at the present time, or is complete.

8. A local public hearing on the proposed Use of State Concern will be held by the Terrebonne Parish Department of Planning and Economic Development, Office of Coastal Zone Management at the determination of the local administrator or upon written request by the applicant.

If a determination is made to hold a public hearing, the local administrator shall promptly notify the applicant in writing, setting a time and place for the hearing, and providing local and state public notice.

Notice that a local public hearing is being held shall be forwarded to the Secretary and the Coastal Management Division. All public comments by the parish will be forwarded to the Secretary and the Coastal Management Division. The public hearing will be conducted by the Terrebonne Parish Coastal Advisory Committee and staffed by the local administrator. The local administrator will present his findings on the proposed state or local coastal use permit to the Terrebonne Parish Coastal Advisory Committee and offer a recommendation for the issuance of a letter of no objection, a letter of objection, or a letter of no objection with conditions.

The Terrebonne Parish Coastal Advisory Committee by majority vote will make its recommendation and stipulate any conditions. Recommendations will be consistent with the local and state programs and will represent an appropriate balance of social, environmental, and economic factors.

All decisions will be forwarded to the Secretary and the Coastal Management Division within the stated comment period.

If a determination is made that a local public hearing is not required and no requests were made, by the Terrebonne Parish Council, the Terrebonne Parish Coastal Advisory Committee, or the general public the local administrator shall conduct a review of the proposed use. Upon determination that the project does not conflict with the parish local coastal program policies and guidelines, environmental review and field investigations (if necessary), a decision to issue a letter of objection, letter of no objection, or letter of no objection with conditions will be made by the local administrator. A letter will insure that the proposed use does not conflict with:

1. the general parishwide goals, objectives, and policies where they remain applicable.

2. the special goals and policies of the environmental management unit.

3. the goals, objectives and policies of SLCRMA and the state guidelines.

Public comments and any other available information on the proposed use will also be considered.

A signed copy of the letter with the parish recommended conditions shall be mailed to the Secretary and the Coastal Management Division within the comment period. It is expected that these recommendations will be given substantive consideration by the Coastal Management Division in the state decision making process. A copy of the draft and final signed permit with conditions as issued by the Coastal Management Division will be sent to the local administrator. Permits for Uses of State Concern issued by the Coastal Management Division through its general permit authority shall be likewise forwarded to the local administrator.

Terrebonne Parish reserves the right to enter into mutual cooperative agreements and mitigative arrangements with the applicant of the permit request to insure compliance with the goals, objectives, and policies of the local program, or to compensate or mitigate the parish for damage caused to the environment by the permitted activity.

D. Applying for a Coastal Use Permit

Application Form

All applications shall be made on the form(s) prescribed by the Secretary of the Department of Natural Resources and available at the Terrebonne Parish Coastal Zone Management Office. Applications may be submitted to either the Local Administrator, Coastal Zone Management Office, Department of Planning and Economic Development, P.O. Box 6097, Houma, LA 70361, or the Coastal Zone Management Division, Louisiana Department of Natural Resources, P.O. Box 44487, Baton Rouge, LA 70804-4487.

Separate applications shall be made for each unrelated, single action. Actions that are closely related should be included in a single permit application.

Basic Information

Applications must include material required by L.A.C. Title 43 §723(C)(2), including, but not limited to, the following:

maps showing actual location, size and dimensions of the real property proposed as the use site. Maps shall be the latest available, e.g., Infrared, Coast and Geodetic Survey maps or equivalent;

plans showing the exact location, size, and height of the buildings or structures to be developed;

a list of all applications, approvals, and/or denials already made concerning the development to/by federal, state, or local agencies;

a description of the extent to which any watercourse or natural drainage will be altered or relocated as a result of the proposed coastal use;

a description of how the projects impacts might be tracked in the future; and

if the development involves dredging, a description of the type, quantity, and composition of the dredged material, the method of dredging and disposal, and alternatives to use the dredge material beneficially.

Supplemental Information

Upon receipt, the local administrator shall review the local use application for completeness, issue a local number, and may assess fees in accordance with a schedule prepared and posted by the local administrator.

Applicants may be requested to provide supplemental material upon determination of need by the local administrator plus any such information as the local administrator determines to be reasonably necessary for the proper evaluation of an application.

Within five working days of receiving an incomplete application the material shall be returned to the applicant along with a brief statement explaining how the application may be made complete.

If an application is found to be incomplete or inaccurate after processing has begun or if it is determined that additional information from the applicant is necessary to assess the application adequately, processing will be stopped pending receipt of the necessary changes or information. Upon receipt of the required changes or information a new processing period will begin.

If after 30 calendar days an applicant should fail to respond to the request for supplemental material, the application will be deemed withdrawn. The local administrator shall notify the applicant in writing of the withdrawal and include a copy of the request for supplemental material.

Fees

Application fees may be assessed in accordance with state (LAC 43:I.723 (C) (3)) and federal statues and a schedule prepared and posted by the local administrator. Applicants should telephone the local administrator for the current fee schedule.

E. Processing a Permit Application

Should the local administrator determine that direct and significant impact(s) on coastal waters may result from the proposed activity, the local administrator will forward the application materials and any supplemental materials to the Secretary of the Louisiana Department of Natural Resources (the Secretary) for an authoritative determination. Concurrently, the local administrator will notify the project proponent of the referral to the Secretary. If the Secretary determines that direct and significant impact(s) will result from the proposed project, the finding and application will be returned to the local administrator to continue the permit process.

If the Secretary determines that direct and significant impact(s) will not result from the proposed project, the finding will be returned to the local administrator who will then notify the project proponent in writing that the activity may proceed without a CUP.

Review Process

Upon receipt of a complete application packet, the local administrator shall assign it a number, acknowledge receipt, and ascertain whether the application is for a state or local use in accord with L.R.S. 49:214.25. Within 2 working days of receipt of a complete application, a full and complete copy will be sent to the Coastal Management Division, Louisiana Department of Natural Resources (DNR), if the application was submitted to the local government. Additionally, a copy of the local administrator's determination of state or local use shall accompany the copy.

When an application is determined to be for a state use, the local administrator shall promptly notify the applicant that the application has been forwarded to Department of Natural Resources (DNR) Coastal Management Division who is responsible for the final determination. The local administrator will provide the applicant with contact information for the Department of Natural Resources.

Within 10 working days of receipt, the local administrator shall provide for a public notice of the pending local use application in the following two ways:

publication in the official journal of Terrebonne Parish for one week;

by posting a notification at the proposed site.

A notice of a pending application shall include the permit number, the location of the proposed activity, and information allowing members of the public to comment on the proposal for 25 calendar days.

After expiration of the applicable public comment period, the local administrator shall take one of the following actions:

solicit comment upon a state use application from the Coastal Advisory Committee;

solicit input upon the local use application from the Committee prior to taking action under sections 10.4.1-3 of the Terrebonne Parish Local Coastal Program Ordinance (See XI.A. The Terrebonne Parish Coastal Zone Management Ordinance);

issue or deny the local use permit, based on the Terrebonne Parish Coastal Zone Management Program, the guidelines, and the Act.

Public Hearings

The local administrator will initiate a public hearing, in accordance with LAC 43:I.727 and LRS 49:214.35 governing public hearings, prior to taking action under Sections 10.4.1-3 of the Terrebonne Parish Local Coastal Program Ordinance. In addition to those circumstances outlined in the Terrebonne Parish procedures governing public hearings, a public hearing on a CUP is appropriate under the following circumstances:

at the discretion of the local administrator;
at the request of a majority of the Coastal Advisory Committee;
at the request of the applicant.

Any documents, studies, or other data in the applicant's possession relevant to the proposed use must be made available to the public for review, study, and duplication 30 calendar days prior to a hearing. As additional materials are developed, they must also be made available. The Terrebonne Parish Coastal Zone Management Administrative Office shall be the repository for these materials. Any person may obtain a copy of the permit application and supporting documents by making a request to Terrebonne Parish Office of Coastal Zone Management and providing reasonable costs of copying, postage, and handling.

Decisions on Applications

The decision is issued on the date signed by the local administrator or 30 calendar days following receipt of the complete permit application by the local administrator, whichever is first. In the absence of a signed decision within 15 calendar days and in the absence of mutually agreeable, written extensions of this deadline, the permit application shall be deemed denied.

Each comment received on the application shall be considered in the final permit decision. The applicant or other agencies with expertise may be provided an opportunity to address issues raised in comments prior to the final permit decision.

The local administrator shall make a final decision on the application within 30 calendar days of the expiration of the public comment period (or 30 calendar days from receipt of the complete application). Copies of the final decision shall be mailed to the applicant within 5 working days. The local administrator shall include a short, plain statement explaining the basis for decision on each final permit decision.

Modifications to Permits for Uses of Local Concern

The terms and conditions of a local coastal use permit may be modified by the local administrator to allow changes in the type of use or how the project is conducted for the

approved use of local concern, in the plans and specifications for that use, in the methods by which the use is being implemented, or to assure that the permitted use will be in conformity with the Local Coastal Zone Management Program and the Louisiana Coastal Resources Program and its Coastal Use Guidelines. Changes which, in the opinion of the local administrator or the Terrebonne Parish Coastal Advisory Committee, would increase the impact of a permitted activity to an unacceptable level shall be processed as new applications, not as modifications.

Appeals

Any person adversely affected by a permit decision and any government authority may request an appeal of the local administrator's decision by filing a written notice with a Terrebonne Parish Coastal Zone Administrator within 10 calendar days from the date the decision was issued (LRS 49:214.35 (B)). The party requesting any appeal shall provide to all parties of record and to the local administrator a copy of the notice. The party requesting an appeal shall include in the submission to the local administrator a copy of the permit decision being appealed and a copy of the permit application.

An appellant may appeal a notice by:

identifying how the permit decision of the local administrator is contrary to law and any issues providing grounds for appeal;

stating sufficient facts regarding the proposed project to allow adequate analysis of whether or not the local administrator's decision was supported by fact;

including the name, address, and phone number of the party requesting review and, if applicable, the party's legal representative;

providing a short statement indicating how the party requesting the appeal would like the appeals panel to remedy the situation;

including a statement that the party requesting an appeal has read the notice and believes the contents to be true, followed by the party's signature and that of the party's representative, if any;

stating that issues raised during the application process constitute the sole grounds for appeal, except for allegations of any of the following:

providing new evidence pertinent to the key issues upon which the permit decision was based that may not have been discovered before or during the application review process by using due diligence, or

alleging fraud, as defined by state law, or corruption in the application process, or

presenting other good grounds for further consideration in the public interest. Good grounds include, but are not limited to, a failure to consider pertinent issues or facts in the initial review process.

Upon receipt of a completed appeals packet, containing proper notice as defined above, a copy of the decision, and a copy of the application, the local administrator shall notify the appellant and applicant of its receipt by mail.

The local administrator shall schedule an appeal within 10 working days of receiving a completed appeals packet. The local administrator shall promptly send each party of record the date, time, and location of the appeal by registered mail. The local administrator shall publish the date, time, and location of any appeal in the official journal of Terrebonne Parish of the proposed site for the project at issue.

The local administrator shall require the applicant to post notification of the upcoming appeal on the proposed site of the activity at issue. Interested parties may appear personally or be represented by counsel at the appeal to produce any competent evidence on their behalf.

An appeals panel may administer oaths, examine witnesses, and issue notices of hearings or subpoenas requiring the testimony of witnesses and production of books, records or other relevant documents. An appeals panel may admit and give probative effect to evidence that possesses probative value commonly accepted by reasonably prudent men in the conduct of their affairs. An appeals panel may exclude evidence they find incompetent, irrelevant, immaterial, or unduly repetitive. The appeals panel shall give effect to the rules of privilege recognized by law. Objections may be made and considered, and shall be noted in the record.

An appeals panel may take notice of judicially cognizable facts, as requested by interested parties. Such facts include, but are not limited to, recognized technical or scientific facts. Depositions may be taken in accord with provisions governing the taking of depositions for civil court proceedings and admitted in the appeal. Discovery may occur in accord with provisions governing discovery for civil court proceedings in the District Court of Terrebonne Parish. A verbatim transcript of testimony at the appeal shall be prepared and, in addition to exhibits and documents introduced, constitute the record.

An appeals panel shall make findings of fact and a decision based upon the record and on any of the following:

written submissions from interested parties prepared for purposes of appeal,

the original permit application and associated documentation, and

any legislative facts (such as scientific studies) or documented communications the panel deems trenchant relative to material issues in the permit.

An appeals panel shall issue a written decision of a length and depth to enable a court to evaluate the rationale and fundamental facts underlying the decision. A copy of the appeals panel's decision shall be provided to each of the interested parties by the local administrator.

Interested parties may review the documentation prepared for and by the appeals panel upon written request to the local administrator. The party requesting an appeal bears the burden of presenting a prima facie case, as state law for civil trials determines that

standard. The standard for review of the local administrator's decision by the appeals panel is whether the decision on the permit application was supported by substantial evidence, as defined in state law. See L.R.S. 49:964. Appeals panel decisions are subject to judicial review. Nothing in this provision shall impede other authorized means for review.

Fees for Appeals

The local administrator may establish a fee system to cover administrative costs associated with implementing the appeals process, including, but not limited to, reasonable charges for copies and postage.

F. Length of a Permit

A Local Coastal Use Permit shall remain valid for two years after the date of issuance.

G. Permit Extension

Should a project proponent desire more time, they may seek to either:

> have the local coastal use permit renewed based on a demonstration that diligent efforts have been made to complete the project within the allotted time but that events beyond the proponent control delayed completion; or
>
> have the local coastal use permit issued for a longer period, up to three years, based upon conclusive evidence demonstrating that the use will extend beyond a year under ordinary circumstances.

After three years, if a local concern project is not completed per the issued permit, a new local coastal use permit must be obtained.

H. Variances

A variance from the Local Coastal Zone Management Program may be granted when the administrator and a majority of the Coastal Advisory Committee find that the property proposed as the site for the project is subject to exceptional circumstances that warrant recognition and special provision, the local concern issues have no impacts to wetlands, and the granting of a variance poses no detriment to the coastal zone so long as there is no conflict with the state Coastal Zone Management Program. For purposes of the Local Coastal Zone Management Program, a permit variance shall be treated as any other permit.

I. After-the-Fact Permits

Coastal Use Permits may be issued as an after-the-fact permit under one of the following circumstances:

the activity taken was undertaken in response to an emergency and the Terrebonne Parish CZM Administration was notified of the activity.

the activity taken was in violation of the Coastal Zone Management Program but would likely have been permitted if the applicant had applied for a permit.

An after-the-fact permit must be requested within 15 calendar days of the identification of a non-permitted activity subject, at which time the application will proceed as any other application. When an after-the-fact permit is issued as part of an enforcement action, additional terms and conditions may be included at the discretion of the local administrator in consideration of circumstances unique to the particular applicant including, but not limited to, fines and reporting requirements to monitor the project. Increased mitigation requirements may be required on or off site over normal permit requirements. An applicant for an after-the-fact permit may be required to fulfill conditions in the permit despite completion of the activity or return the area to its pre-emergency state if the application is denied. For purposes of the Coastal Zone Management Program, an after-the-fact permit shall be treated as any other permit after it is issued.

Length of an After-the-Fact Permit

An after-the-fact permit may be limited in duration at the discretion of the local administrator but shall not exceed the time allocated for issuance of similar CUPs obtained through the normal process.

J. Permit Requirements

By accepting the permit, the applicant agrees to act in accordance with the plans and specifications as contained in the approved application; to comply with permit conditions imposed to ensure compliance with the Coastal Zone Management Program; and to adjust, alter, or remove any structure or physical alteration if the local administrator and a majority of the Committee determine such action is necessary to achieve compliance with the Coastal Zone Management Program.

The permit recipient agrees to hold the state of Louisiana, Terrebonne Parish, and all officers and employees thereof harmless from any injury to persons or property resulting from actions undertaken to carry out the permit; to certify that the permitted activity has been completed in accord with permit or, upon request of the local administrator, provide certification from a licensed professional to that effect; and to allow reasonable inspection of the project for purposes of monitoring and compliance inspections.

K. Mitigation

Provisions on mitigation shall be read and construed as a whole and in accord with applicable state regulations L.A.C. Title 43, Part I, Chapter 7, §724, which designate the Secretary of the Louisiana Department of Natural Resources as the authority responsible for all decisions respecting mitigation pursuant to L.R.S. 49.214.41(B). All non-exempt wetland impacting activities shall be adequately mitigated in a manner consistent with the State Coastal Management Program.

Permits issued by the local administrator may recommend mitigation. Consequently, all proposals that meet the parish standards for mitigation detailed in the Terrebonne Parish Coastal Zone Management Ordinance (See XI.A.) and that are authorized by the local

administrator as acceptable mitigation shall be read and construed as a whole and in accord with applicable state regulations. The L.A.C. Title 43, Part I, Chapter 7, §724, designates the Secretary of the Department of Natural Resources as the authority responsible for all decisions respecting mitigation pursuant to L.R.S. 49:214.41 (B).

L. Enforcement

The local administrator shall coordinate surveillance and enforcement with the Department of Planning and Economic Development and other parish departments. Enforcement of the Terrebonne Parish Local Coastal Zone Management Program is described in the Terrebonne Parish Coastal Zone Management Ordinance (See XI.A.).

M. Suspension

The Terrebonne Parish Department of Planning and Economic Development, Office of Coastal Zone Management may suspend a local use permit upon finding that:

the permittee has failed or refused to comply with the terms and conditions of the permit or any modification thereof; or

the permittee has submitted false or incomplete information in his application or otherwise; or

the permittee has failed or refused to comply with any lawful order or request of the local administrator.

The local administrator shall give written notice to the permittee suspending the permit, stating the reasons why, ordering the permittee to cease immediately all previously authorized and unauthorized activities, and advising the permittee that he will be given, upon request to the local administrator made within ten (10) working days of receipt of the notice, an opportunity to respond to the reasons given for suspension.

After consideration of the permittee's response and an appearance before the Terrebonne Parish Coastal Advisory Committee, if it is requested, or, if none, within 30 calendar days

after issuance of the notice, the local administrator shall take action to reinstate, modify, or revoke the permit and shall notify the permittee of the action taken.

N. Revocation

If, after compliance with the suspension procedures above, the local administrator determines that revocation or modification of the permit is warranted, written notice of the revocation or modification shall be given to the permittee.

O. Penalties

Terrebonne Parish shall seek appropriate civil and criminal relief if the permittee fails to comply with the provisions of the local coastal program, fails to comply with a cease and desist order, fails to comply with the suspension or revocation of a permit, or attempts to bribe or intimidate any public officials or civil servants. Such actions shall constitute a violation of the local coastal program. Each violation of an individually named condition of a permit or order and each day a violation continues constitutes a separate violation. A fine of $500 (L.R.S. 33:1243), plus attorney collection fees, per offense per day may be assessed by the Terrebonne Parish Coastal Zone Management Administrator, subject to Coastal Zone Management Advisory Committee approval. Such fines will be in addition to fines imposed by other government agencies. The Terrebonne Parish Consolidated Governments, Coastal Zone Management Office, will utilize monetary proceeds from such violations. All fines collected will go to the Terrebonne Parish Coastal Monitoring Enforcement Fund (See XI.A.).

P. Permit Monitoring

The local administrator will coordinate monitoring. It is anticipated the Terrebonne Parish Coastal Zone Management Office will hire a field inspector. Field inspections may be conducted on a scheduled basis by cooperating parish and city departments. Special site visits by boat, car, or aircraft may be made in response to requests for determination by the general public, parish employees, elected officials, or state or federal agencies. Violations will be reported to the local administrator who shall initiate

appropriate actions. Terrebonne Parish personnel may enter upon any land and make examinations in accord with L.R.S. 49:214.36(A) and 32.4.7 of this ordinance (See XI.A.). The local administrator shall inform the Terrebonne Parish Coastal Advisory Committee of known violations.

Q. Areas and Uses Requiring Local Coastal Use Permits

Uses requiring a local coastal use permit are those uses which directly and significantly affect coastal waters and are in need of coastal management but are not uses of state concern and which should be regulated primarily at the local level. Uses of local concern shall include, but not be limited to:

a. Privately funded projects, which are not uses of state concern.
b. Publicly funded projects, which are not uses of state concern.
c. Maintenance of uses of local concern.
d. Jetties or breakwaters.
e. Dredge or fill projects not intersecting more than one water body.
f. Bulkheads.
g. Piers.
h. Camps and cattlewalks.
i. Maintenance dredging.
j. Private water control structures of less than $15,000 in cost.
k. Uses on cheniers, salt domes, or similar landforms.

Should any provision of this process be deemed contrary to law, it shall be severed from the remainder and shall not affect other provisions that may remain applicable, irrespective of the invalid provision. This process shall be read and construed as a whole and in accord with the Louisiana Coastal Zone Management Program (L.R.S. 49:214 et seq.). Unless specifically defined in the plan, words and phrases in this process shall be read as commonly used and to give this process its most reasonable application.

R. Activities Which May Have Direct and Significant Impacts

Direct and significant impact means a direct and significant modification or alteration in the physical or biological characteristics of coastal waters which results from an action or series of actions caused by man (L.A.C. 43, Chapter 7 Coastal Management, Subchapter A. Definitions, §700. Definitions). The secretaries of the Departments of Natural Resources and Wildlife and Fisheries are authorized to jointly develop for adoption by the Secretary of the Department of Natural Resources, after notice and public hearing, rules for the further delineation of the types of uses that have a direct and significant impact on coastal waters and that demonstrate a need for coastal management (L.R.S. 49:214.25C).

To be consistent with the Louisiana Coastal Zone Program, the Local Advisory Committee through the Terrebonne Parish Local Coastal Program will apply the state's list as developed above to activities within Terrebonne Parish. During this period, the Local Advisory Committee, the local administrator, and the Terrebonne Parish Council will determine if a need exists to further expand the activities identified by the state as having direct and significant impact on coastal waters. At such time as it is appropriate, Terrebonne Parish may propose activities other than those on the state's list, which should be further, regulated through the Terrebonne Parish Local Coastal Zone Management Program.

Because there appears to be no definition of direct or significant in Act 361 of 1978, the Terrebonne Parish program will use the following meanings for direct and significant. Direct impacts are caused by the action and occur at the same time and place. Significant impacts will be evaluated on a case-by-case basis. For site specific actions significant impacts will depend upon the effects of the action on the locale. An action may be considered having a significant impact either adverse or beneficial if the proposed action:

affects public health and safety;

impacts vegetated wetlands;

impacts ecologically critical coastal waters;

effects the quality of the human environment in relation to coastal waters;

establishes precedent for future actions which may have impacts on coastal waters either individually or cumulatively; and

threatens a violation of local law or requirements imposed for protection of coastal waters.

The Local Advisory Committee will keep the Secretary advised of its actions through the Annual Report.

S. Terrebonne Parish Ordinances Included in the Local Program

No other Terrebonne Parish Ordinances are included in the Local Program.

T. Public Participation in Preparing the Local Program

The public has been actively involved in the preparation of the Terrebonne Parish Local Coastal Zone Management Program from the inception of the idea. The Terrebonne Parish Coastal Zone Management Advisory Committee met 25 times in open forum between December 1997 and April 2000. Most meetings were held at 6:30 p.m. in the Terrebonne Parish Council Meeting Room, Terrebonne Parish Courthouse, Houma, La. They were duly posted in advance in the Public Notices of the Houma Courier as per Terrebonne Parish Council policy and procedure. Agendas and minutes of the regular meetings are available from the Terrebonne Parish Council.

The following list gives the dates of the Terrebonne Parish Coastal Zone Management Advisory Committee Meetings and the more important issues related to the preparation of the Terrebonne Parish Local Coastal Management Program.

December 8, 1997 — First meeting of LAC. Mr. Greg Ducote, CMD, DNR presents information on developing a local coastal management program.

January 5, 1998	Dr. Denise Reed reviews the goals and objectives for the LCP.
February 2	LAC reviews the proposed LCP goals and objectives.
March 16	LAC elects a Chairman and Vice-chairman. Review goals and objectives for six of the coastal management units.
April 13	LAC reviews goals and objectives of coastal management units.
May	No meeting
June 1	Bob Jones discusses the ordinance making process. LAC discusses goals, objectives, and policies of the LCP.
June 19	Tour Pointe-Aux-Chene Wildlife Refuge
July 20	Matt Sevier introduced as the Coastal Zone Management Administrator. LAC discusses goals, objectives, and policies for LCP and the Louisiana Department of Natural Resources model ordinance.
August 3	LAC receives report of the Model Ordinance Sub-committee.
September 14	LAC receives report of the Model Ordinance Sub-committee.
October 6	LAC receives report of the Model Ordinance Sub-committee.
November 3	LAC receives report of the Model Ordinance Sub-committee.
December 8	LAC receives report of the Model Ordinance Sub-committee. LAC elects 1999 officers.
January 20, 1999	LAC discusses change to the model ordinance. Dr. Denise Reed reports on goals, objectives, and policies of the LCP.

February 17	Dr. Denise Reed leads discussion on the Environmental Setting portion and the goals, objectives, and policies section of the LCP.
March 17	Receive information on projects in coastal zone.
April 21	Receive information on projects in coastal zone.
May 19	Review coastal permits for first time.
June 16	Receive information on projects in coastal zone. Pass resolutions on Landowners Hurricane Protection Alignment feasibility study, the Abandon Sunken Vessel Ordinance, and the Dularge Levee System.
July 19	Discuss LCP
August 18	LAC receives DRAFT LCP document.
September 15	LAC reviews DRAFT LCP and approves first eight sections.
October 20	No Meeting
November 17	No Meeting
December 15	LAC reviews DRAFT LCP and approves section nine and ordinance.
January 19, 2000	LAC Election of new officers Review of coastal projects
February 16	LAC reviews DRAFT LCP Presentations on the Houma Navigational Canal
March 15	Meeting cancelled due to tornado hit in Houma
April 19	LAC approved moving CZM Program to Parish Council

The Terrebonne Parish Local Coastal Zone Management Program is available for public review at the Department of Planning and Economic Development in Houma and at each public library in the parish. Written comments should be mailed to:

Coastal Zone Manager
Department of Planning and Economic Development
Terrebonne Parish Consolidated Government
P.O. Box 6097
Houma, LA 70361.

Questions should be directed to the Coastal Zone Manager at (504)-580-8145.

U. Effective Date

The ordinance should be effective 90 (ninety) days after final publication by the Terrebonne Parish Council and final approval by the Secretary of the Louisiana Department of Natural Resources and U. S. National Oceanic and Atmospheric Administration (NOAA).

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XI. APPENDIX

A. **The Terrebonne Parish Local Coastal Program Ordinance**

B. **Terrebonne Parish Ordinance No. 5827**

C. **La. DNR Data available for Terrebonne Parish's Local CZM Program**

D. **Terrebonne Parish Coastal Zone as defined by the Louisiana Revised Statutes 49:214.24 A, B, C, D.**

A. Terrebonne Parish Coastal Zone Management Ordinance
Terrebonne Parish, LA

1. Purposes & construction of this ordinance:
   1.1. Recognize the value in natural coastal ecosystems.

      1.1.1. Protect, preserve, restore and enhance the coastal zone as a natural storm barrier, flood control system, and water filtration system.

      1.1.2. Protect, preserve, restore and enhance the coastal zone as a habitat for wildlife, an aquatic resource, an aesthetic resource, a parish, state and national resource, and a historic cultural resource.

      1.1.3. Protect, preserve, restore and enhance the coastal zone as a legacy to future generations.

   1.2. Recognize the value in coastal-dependent commercial and residential activity.

      1.2.1. Promote coordinated development within the coastal zone.

      1.2.2. Promote conflict resolution arising from multiple, competing uses.

      1.2.3. Promote recreational uses (respect private property) and monitor public access within the coastal zone.

   1.3. Balance these values in Terrebonne Parish to allow current and future residents the opportunity to enjoy the multiple benefits and cultural values associated with a healthy coastal zone.

   1.4. Foster the public safety, health and welfare of Terrebonne Parish residents.

   1.5. In the event that sections of this ordinance may be subject to multiple interpretations, they must be read to further the purposes stated above and provide fair and impartial judgment to all parties.

   1.6. This ordinance applies to all local uses, defined in L.R.S. 49: 214.25 A (2).

   1.7. Should any provision herein be deemed contrary to law, it shall be severed from the remainder and shall not affect other provisions that may remain applicable, irrespective of the invalid provision.

   1.8. This ordinance shall be read and construed as a whole and in accord with the Coastal Zone Management Program.

2. Definitions:

2.1. Unless specifically defined in this section, words and phrases in this ordinance shall be read as commonly used and to give this ordinance its most reasonable application.

2.2. "Act" means the Louisiana Coastal Zone Management Program, L.R.S. 49:214.21 et seq.

2.3. "Administrator" means the administrator of the Coastal Management Division within the Louisiana Department of Natural Resources.

2.4. "After-the-fact Permit" means a coastal use permit issued after the commencement of an activity or use.

2.5. "Aggrieved Party" means any person who receives a decision adverse to their interests or proposed objectives.

2.6. "Agricultural, Forestry and Aquaculture Activities" means those activities that are common practice and incident to agriculture, forestry and aquaculture provided that the activity is one of an on-going basis for a period of at least 5 years, including the year previous to the activity in question; that do not require a permit from the U.S. Army Corps of Engineers; and that do not result in a new or changed use of the land. Examples include seeding, fence building, and harvesting.

2.7. "Applicant" means the owner of the property for which a use requiring a Coastal Use Permit is requested, an agent, or someone specifically authorized in writing by the owner to make an application. No "unknown owner" applicants will be allowed.

2.8. "Buffer zone" means a strip of land adjoining a wetland mitigation site to protect the wetland habitat and wildlife within the bank from the impact of an activity outside the buffer zone. The term includes a strip of land composed primarily of water or a strip of land that includes a fence, wall, or screen of vegetation when these visual barriers also provide functional protection for the wetland.

2.9. "Camp" means a structure built and used for non-commercial and non-profit purposes and commonly referred to as "single family," not multiple family dwellings and shall apply only to such structure built singly, not as part of a subdivision, tract development, speculative building, or recreational community development and intended for periodic occupancy.

2.10. "Closely-related actions" means those actions that

2.10.1. automatically trigger other actions which may require permits;

2.10.2. cannot proceed unless other actions are taken previously or simultaneously; or

2.10.3. are interdependent parts of a larger action and depend upon the larger action for their justification.

2.11. "Coastal Use Permit" or "permit" or "CUP" means those permits required by L.R.S. 49:214.30.

2.12. "Coastal Waters" means bays, lakes, inlets, estuaries, rivers, bayous and other bodies of water within the boundaries of the coastal zone.

2.13. "Coastal Zone" means that area described in L.R.S. 49:214.24.

2.14. "Coastal Zone Management Program" means the applicable laws, regulations, policies and guidelines developed by federal, state, and local government to implement the Coastal Zone Management Act.

2.15. "Compensatory Mitigation" means replacement, substitution, enhancement, or protection of ecological values to offset anticipated loses of those values caused by a permitted activity.

2.16. "Cumulative Impacts" means the influence on the environment resulting from the incremental effects of the activity when added to other past, present, and reasonably foreseeable future activities regardless of what agency or person undertakes those activities. Cumulative impacts may result from individually minor but collectively significant activity taking place over a period of time. "Secondary" impacts caused or enabled by a particular project are considered cumulative; including, but not limited to, increased development in an area where new sewers, roads, and other infrastructure have been built whether plans exist for this area at the time the infrastructure is built or not. Cumulative impacts to coastal zone resources may result from activity outside the coastal zone or from activity exempt under coastal zone permitting.

2.17. " "X" number of Days" means that the number of days shall be interpreted as generally 10 and under days will mean "Working" days and over 10 days will mean "Calendar" days.

2.18. "Department" or "DNR" means Department of Natural Resources.

2.19. "Direct and Significant Impact" means an impact that perceptibly or measurably alters the physical, hydrological, chemical, or biological characteristics of coastal waters as a result of an action or series of actions undertaken by man.

2.20. "Emergency" means a situation that poses an immediate threat to public safety, life, health or property and action in response to the threat cannot await the permitting process. Declaration of an emergency must come from a governmental body with authority to make such declarations and continues for the time that body specifies.

2.21. "Environmental Management Unit" or "EMU" means an area with certain distinguishing physical, hydrological, chemical, biological or cultural characteristics.

2.22. "Exempted Use" shall mean any use specifically listed in this ordinance as not requiring a permit.

2.23. "Fastlands" means that area surrounded by publicly-owned, maintained, or otherwise valid existing levees, or natural formations, which would normally prevent activities therein from having a direct and significant impact on coastal waters.

2.24. "Guidelines" means L.A.C. Title 43, Chapter 7 entitled "Coastal Management."

2.25. "Interested person" means any of the following:

2.25.1. Any applicant, an agent or an employee of the applicant, or a person receiving consideration for representing the applicant, or a participant in a proceeding on the matter.

2.25.2. Any person with a financial interest in a matter before the appeals panel, or an agent or employee of the person with a financial interest, or a person representing the person with a financial interest.

2.25.3. A representative acting on behalf of any civic, environmental, neighborhood, business, labor, trade, or similar organization who intends to influence the decision of the appeals panel on a matter before the appeals panel.

2.26, "Levee" any use or activity which creates an embankment to control or prevent water movement, to retain water or other material, or to raise a road or other linear use above normal or flood water levels. Examples include levees, dikes, and embankments of any sorts.

2.27. "Local administrator" means the Terrebonne Parish professional charged with implementing and administering this ordinance and the Local Coastal Zone Management Program.
2.28. "Local Coastal Program Advisory Committee" or "Committee" means the group of 15 individuals, representing coastal area user groups.

2.29. "Local government" means the Terrebonne Parish Council.

2.30. "Mitigation" means all actions taken by an applicant to avoid, minimize, restore and compensate for loss of an area's ability to support vegetation, fish and wildlife populations due to a permitted activity.

2.31. " Mitigation bank" an area identified, with specific measures implemented to create, restore, protect, and/or enhance wetlands, for the purpose of producing ecological values, measured as average annual habitat units or cumulative habitat units (mitigation credits). Those credits may be donated, sold, traded, or otherwise used for the purpose of compensating for the ecological values lost due to a permitted activity. Currently, LDNR/CMD is also using mitigation "areas" as well as banks. The areas are allowed under L.A.C. 43:I.724(E)(e).

2.32. "Mitigation credit" means a unit of measured area that supports wetland habitat, wetland habitat value, and wetland function that did not exist at the mitigation bank site before the bank was developed. Credits are determined in accord with L.A.C. Title 43, Part I, §724. Currently, LDNR/CMD is also using mitigation "areas" as well as banks. The areas are allowed under L.A.C. 43:I.724(E)(e).

2.33. "Navigational Aids" means buoys, marker piles, dolphins, piling, and/or pile clusters when in conformance with U.S. Coast Guard standards and do not involve dredge and fill activity.

2.34. "Normal Maintenance and Repair" means activity taken to reasonably preserve the utility of a lawfully existing structure in active use for the year preceding the proposed activity. It does not include expanding an existing structure, dredging and filling, or altering the magnitude or function of the original structure.

2.35. " On-site mitigation" means all measures that may be taken to offset or eliminate damage or destruction to the functional characteristics and processes of a wetland, changing the operational characteristics of the proposed activity, or creating or enhancing wetland functions or values at the project site.

2.36. "Out-of-kind mitigation" means the creation of habitat functions and types at the mitigation site substantially different from those that existed at the project site; restoration of a bottomland hardwood site as mitigation for a project in a salt marsh is one example.

2.37. "Person" means any individual, partnership, association, trust, corporation, or government body.

2.38. "Parish Council" means the Terrebonne Parish Council, the authority of general jurisdiction and operation at the parish level.

2.39. "Public Hearing" means any hearing announced to the public at least 30 and no more that 60 calendar days in the official journal of Terrebonne Parish. Hearings will be held in the closest available site to the permit site or local community. All interested persons shall be afforded a reasonable opportunity to make written or oral submissions on the subject of the meeting.

2.40. "Residence" means structure built and used for non-commercial and non-profit purposes and commonly referred to as "single family," not multiple family, dwellings and shall apply only to such structures built singly, not as part of a subdivision, tract development, speculative building, or recreational community development and intended as a primary resident.

2.41. "Residents" means both real persons and entities whose occupancy in Terrebonne Parish is intended to be of an on-going, primary nature. These include, but are not limited to, civic, environmental, neighborhood, business, labor, trade, or similar organizations or a legally recognized business entity.

2.42. "Same-kind mitigation" means the creation of habitat functions and types at the mitigation site substantially similar to those that existed at the project site; restoration of a bottomland hardwood site as mitigation for a project in a bottomland hardwood site is one example.

2.43. "Secretary" means the Secretary of the Department of Natural Resource or his/her designee.

2.44. "Special Areas" means those portions of the coastal zone within Terrebonne Parish that require special management procedures due to certain unique and valuable characteristics. Examples include barrier islands, shell deposits, salt domes, archaeological sites, transportation corridors, endangered species habitat, ports, and recreational sites among others. These areas may be designated by the Parish Council and recommendation by the Committee.

2.45. "Supplemental material" means any of the following or other, unlisted material deemed appropriate by the local administrator: a description of the physical, chemical, hydrological, biological, and cultural environment in which the activity is proposed to take place; a list of alternatives to the proposed activity including a 'status quo' alternative; a complete description of expected consequences to the physical, chemical, hydrological, biological, and cultural environment; how any such impacts will be mitigated or offset including when these environmental benefits will be achieved, evidence to support the proposal's intended results and how the projected results -- both positive and negative -- may be monitored in the future.

2.46. "Uplands" means land that is five feet or more above sea level.

2.47. "Use" means any use or activity within the coastal zone which has a direct and significant impact on coastal waters.

2.48. "Wetland" means land that

2.48.1.has a predominance of hydric soil;

2.48.2. is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of hydrophytic vegetation typically adapted for life in saturated soil conditions; and

2.48.3. under normal circumstances does support a prevalence of that vegetation.

2.49. "Wetland functions" means a service that wetlands perform, including flood water storage, flood water conveyance, ground water discharge, erosion control, wave attenuation, water quality protection, scenic and aesthetic use, food chain support, and habitat for fish, wildlife, invertebrates, and plants, among others.

3. Duties of the Local Administrator

3.1. manage the local Coastal Zone Management Program based upon the local Coastal Zone Management Plan, as adopted by the Terrebonne Parish Council;

3.2. issue, deny or modify CUPs consistent with the Coastal Zone Management Plan for Terrebonne Parish;

3.3. adopt any rules and regulations that are reasonable and necessary to carry out this ordinance in conformance with the generally established procedures for Terrebonne Parish rulemaking;
3.4. conduct investigations necessary to ascertain compliance with this ordinance;

3.5. act as liaison for Terrebonne Parish to the U.S. Army Corps of Engineers, other parishes, and other state, federal, and local governmental entities relative to projects governed by this ordinance or the Act which are proposed to take place in or impact the coastal zone of Terrebonne Parish;

3.6. review and comment upon uses of state concern, as defined in L.R.S. 49:214.25 A (1);

3.7. make an initial determination as to whether a proposed project has direct and significant impacts and whether a proposed project is a local use, for concurrence by the Secretary.

3.8. maintain and hold open for public inspection records pertaining to this ordinance and activities governed by this ordinance;

3.9. regularly update the Committee on actions taken by the local administrator; and seek their advise on future actions.

3.10. enforce this ordinance and the Act;

3.11. request and receive the assistance of other officers and employees of the parish, when necessary to carry out these duties;

3.12. consider written requests from Terrebonne Parish residents to add, modify, or delete local rules implementing this ordinance;

3.13. have the capacity to initiate a Terrebonne Parish Wetlands Conservation and Restoration Fund, that will be subject to all Louisiana statutes governing such funds.

4. Duties of the Local Coastal Program Advisory Committee

4.1. The Terrebonne Parish President and the Terrebonne Parish Council shall attempt to select members for the Terrebonne Parish Coastal Zone Management (CZM) Advisory Committee so that as great a variety of the geographic and socioeconomic interests of the citizens of Terrebonne Parish are represented on the Committee as possible;

4.2.The Terrebonne Parish CZM Advisory Committee shall be composed of fifteen members. Twelve of these members shall represent specific interests of the Terrebonne Parish community. Three of these members of this committee shall be at large positions representing no specific group or interest. Twelve of these members shall be chosen and ratified by the Terrebonne Parish Council from submitted nominations. Three of the members of this committee shall be directly appointed by the Terrebonne Parish President;

4.3.The Terrebonne Parish CZM Advisory Committee shall be composed of the following fifteen members in accordance with Terrebonne Parish Consolidated Government Ordinance No. 5827;

4.3.1.A member representing the oyster industry chosen and ratified by the Terrebonne Parish Council from at least two nominations submitted by the Oyster Leaseholders and Dealers Association of Terrebonne Parish and/or the Terrebonne Parish Council;

4.3.2.A member representing the commercial fishing (fin fish) industry chosen and ratified by the Terrebonne Parish Council from at least two nominations submitted by the Louisiana Commercial Fisherman's Association of Dulac and/or the Terrebonne Fisherman's Association and/or the Terrebonne Parish Council;

4.3.3.A member representing the commercial fishing (shrimping) industry chosen and ratified by the Terrebonne Parish Council from at least two nominations submitted by the Louisiana Commercial Fisherman's Association of Dulac and/or the Terrebonne Fisherman's Association and/or the Terrebonne Parish Council;

4.3.4.A member representing the recreational fishing industry chosen and ratified by the Terrebonne Parish Council from at least two nominations submitted from Terrebonne Black Bass Club and/or the Terrebonne Sportsman's League and/or the Terrebonne Parish Council;

4.3.5.A member representing the property owners of Terrebonne Parish chosen and ratified by the Terrebonne Parish Council from at least two nominations submitted by the Louisiana Land Owner's Association and/or the Chamber of Commerce and/or the Terrebonne Parish Council;

4.3.6.A member representing the property developers of Terrebonne Parish chosen and ratified by the Terrebonne Parish Council from at least two nominations submitted by the Bayou Board of Realtors and/or the Terrebonne Parish Council;

4.3.7.A member representing the oil industry of Terrebonne Parish chosen and ratified by the Terrebonne Parish Council from at least two nominations submitted by the Chamber of Commerce and/or the Terrebonne Parish Council;

4.3.8.A member representing the marine navigation industry of Terrebonne Parish chosen and ratified by the Terrebonne Parish Council from at least two nominations submitted by the Chamber of Commerce and/or the Terrebonne Parish Council;

4.3.9.A member representing flood protection for Terrebonne Parish chosen and ratified by the Terrebonne Parish Council from at two nominations submitted by the North Terrebonne Drainage and Conservation District and/or the South Terrebonne Tidewater Management and Conservation District and/or the Terrebonne Parish Council;
4.3.10.A member representing the Port of Terrebonne Parish chosen and ratified by the Terrebonne Parish Council from at least two nominations submitted by the Terrebonne Parish Port Commission and/or the Terrebonne Parish Council;

4.3.11.An at-large member chosen and ratified by the Terrebonne Parish Council from at least two nominations submitted by the Terrebonne Parish Council;

4.3.12.An at-large member chosen and ratified by the Terrebonne Parish Council from at least two nominations submitted by the Terrebonne Parish Council;

4.3.13.An at-large member chosen and appointed by the Terrebonne Parish President;

4.3.14.A member representing flood protection for Terrebonne Parish chosen and appointed by the Terrebonne Parish President;

4.3.15.A member representing economic development for Terrebonne Parish chosen and appointed by the Terrebonne Parish President;

4.4.Members of the Terrebonne Parish CZM Advisory Committee shall be appointed for a two year term. Through alphabetical listing, odd numbered committee members shall be replaced in odd numbered calendar years. Except for its first year, even numbered committee members shall be replaced in even numbered calendar years. The first even numbered committee members shall have a three year term;

4.5. Any member of the Terrebonne Parish CZM Advisory Committee may be removed at any time by a vote of the Terrebonne Parish Council, where at least six of the Council members vote for removal of the Terrebonne Parish Coastal Zone Management Advisory Committee member;

4.6.The Terrebonne Parish CZM Advisory Committee shall follow Robert's Rules of Order;

4.7.The Terrebonne Parish CZM Advisory Committee shall elect a Chairman and Vice Chairman to conduct meetings. The Chairman shall have the authority to appoint Sub-Committees of both Terrebonne Parish CZM Advisory Committee members and non-members to help in the conduct of the Terrebonne Parish CZM Advisory Committee business. Further functions of the Terrebonne Parish CZM Advisory Committee include;

4.7.1. review and comment upon any proposed rules and regulations impacting the Coastal Zone;

4.7.2. recommend to the Parish Council any modifications to this ordinance that may require State and federal approval;

4.7.3. review and comment upon any coastal use permit at the request of the local administrator or any committee member;

4.7.4. nominate a representative to hear appeals in accord with this ordinance;

4.7.5. submit a regular report describing the activity of Terrebonne Parish's Coastal Zone Management Program to the DNR Secretary as required and make copies available to the public.

4.7.5.1. The report shall include the number, type and characteristics of the CUP applications, decisions, appeals, variances, enforcement actions, and problem areas in the Terrebonne Parish Coastal Zone Management Program for the past year and proposed changes in the state or local Coastal Zone Management Program. In addition, the LDNR/CMD will need copies of reports and permit decisions required for the La. State Conservation Plan.

4.7.6. Have the capacity to direct the Terrebonne Parish Consolidated Government CZM Office to initiate a Terrebonne Parish Wetlands Conservation and Restoration Fund.

4.7.7. enforce this ordinance and the Act.

5. To avoid duplication, any of the local administrator's duties that are already performed by another Terrebonne Parish Office (i.e. the Planning Department or Public Works, etc....) may remain a responsibility of that office that a standardized method of communicating between that office and the local administrator exists.

6.0. Permit Requirement.

6.0.1. In accordance with La. R. S. 214.25 A(1) & (2), uses of the coastal zone subject to the Terrebonne Parish Coastal Zone Management Program's coastal use permitting program shall be of two types:

(1) Uses of state concern: Those uses which directly and significantly affect coastal Waters and which are in need of coastal management and which have impacts of greater Than local significance or which significantly affect interests of regional, state, or national Concern. Uses of state concern shall include, but not be limited to:

(a) Any dredge or fill activity which intersects with more than one water body.
(b) Projects involving use of state owned lands or water bottoms.
(c) State publicly funded projects.
(d) National interest projects.
(e) Projects occurring in more than one parish.
(f) All mineral activities, including exploration for, and production of, oil, gas, and other minerals, all dredge and fill uses associated therewith, and all other associated uses.
(g) All pipelines for the gathering, transportation, or transmission of oil, gas, and other minerals.
(h) Energy facility siting and development.
(i) Uses of local concern which may significantly affect interests of regional , state, or national concern.

(2) Uses of local concern: Those uses which directly and significantly affect coastal waters and are in need of coastal management but are not uses of state concern and which should be regulated primarily at the local level if the local government has an approved program. Uses of local concern shall include, but not be limited to:

(a) Privately funded projects which are not uses of state concern.
(b) Publicly funded projects which are not uses of state concern.
(c) Maintenance of uses of local concern.
(d) Jetties or breakwaters.
(e) Dredge or fill projects not intersecting more than one water body.
(f) Bulkheads.
(g) Piers.
(h) Camps and cattlewalks.
(i) Maintenance dredging.
(j) Private water control structures of less than $15,000 in cost.
(k) Uses on cheniers, salt domes, or similar land forms.

6.0.2. Undertaking a local or state use in the Terrebonne Parish Coastal Zone without a Coastal Use Permit or in violation of permit terms is unlawful.

6.1. Activities listed under L.R.S. 49:214.34 (A)1-10 are exempt from this ordinance. These include the following: Activities occurring wholly on lands five above sea level except when the Secretary finds, subject to appeal, that the particular activity would have a direct and significant impact on coastal waters. Activities occurring within fast lands except when the Secretary finds, subject to Appeal, that the particular activity would have direct and significant impacts on coastal waters. Agricultural, forestry, and aquaculture activities on lands consistently used in the past for such activities; hunting, fishing, trapping, and the preservation of scenic, historic, and scientific areas and wildlife preserves; normal maintenance or repair of existing structures including emergency repairs of damage caused by accident, fire or the elements; uses and activities permitted by the Offshore Terminal Authority in accord with its environmental protection plan and proposed for the special area established in L.R.S. 49:214.29(C); construction of a residence or camp; construction and modification of navigational aids such as channel markers and anchor buoys. Construction, maintenance, repair, or normal use of any dwelling, apartment complex, hotel, motel, restaurant, service station, garage, repair shop, school, hospital, church, office building, store, amusement park, sign, driveway, sidewalk, parking lot, fence, or utility pole, or lines, when these activities occur wholly on lands five feet or more above mean sea level or on fast lands except when the Secretary finds, subject to appeal, that the particular activity would have direct and significant impact on coastal waters. Uses which do not have a significant impact on coastal waters.

6.2. Activities listed under L.R.S. 49:214.34 (A) 1, 2, 9 and 10 must be described in a permit application to allow a determination of whether they have a direct and significant impact on coastal waters.

7. Permit Application

7.0. All applications shall be made on the form(s) prescribed by the Secretary of the Department of the Natural Resources. These forms shall be available at the Terrebonne Parish Coastal Zone Management Office.

7.1. Applications may be submitted to either the Secretary or Administrator of the Department of Natural Resources or the Local Administrator.

7.2 Applications submitted to the local administrator shall contain material required by L.A.C. Title 43 §723(C)(2), and such additional information as the local administrator Determines to be reasonably necessary for the proper evaluation, including but not limited to the following:

7.2.1. maps showing actual location, size and dimensions of the real property proposed as the use site. Maps shall be the latest available e.g. Infrared, Coast and Geodetic Survey maps or equivalent

7.2.2. plans showing the exact location, size, and height of the buildings or structures to be developed,

7.2.3. a list of all applications, approvals, and/or denials already made concerning the development to/by federal, state, or local agencies,

7.2.4. a description of the extent to which any watercourse or natural drainage will be altered or relocated as a result of the proposed coastal use,
7.2.5. a description of how the projects impacts might be tracked in the future, if applicable; and

7.2.6. if the development involves dredging, a description of the type, quantity and composition of the dredged material, plats showing the extent of dredge and fill, the method of dredging and disposal and, if possible, used beneficially.

7.3. Upon receipt, the local administrator shall review the local use application for completeness, issue a local number, and may assess fees in accordance with a schedule prepared and posted by the local administrator.

7.4. Applicants may be requested to provide supplemental material upon determination of need by the local administrator.

7.5. Within 5 working days of receiving an incomplete application, the materials shall be returned to the applicant along with a brief statement explaining how the application may be made complete.

7.6. If after 30 calendar days an applicant should fail to respond to the request for supplemental material, the application will be deemed withdrawn. The local administrator shall notify the applicant in writing of the withdrawal and include a copy of the request for supplemental material.

7.7. Separate applications shall be made for each unrelated, single action. Actions that are closely-related should be included in a single permit application.

8. Initial Processing of the Coastal Use Application

8.0. Upon receipt of a completed Coastal Use Application, a determination shall be made whether the activity is of state or local concern. The initial decision may be made either by the Secretary or Administrator of the Department of Natural Resources or by the Local Administrator. A decision by the local administrator with regard to the type of use or concern Shall be forwarded along with a copy of the application and any supplemental materials to the Department of Natural Resources Coastal Management Division for its concurrence within Two (2) working days of the application's receipt.

8.0.1. When a local administrator decides that an activity is a state concern and this determination is confirmed by the Department of Natural Resources, The local administrator shall notify the applicant of this referral to the state.

8.1. As a part of the initial consideration of a completed application or at any time thereafter, the Secretary or Administrator of the Department of Natural Resources or the Local Administrator may decide that the proposed activity has no significant impact(s) on coastal Waters. A decision by the local administrator with regard to a finding of no significant Impact shall be forwarded along with a copy of the application and any supplemental Materials to the Department of Natural Resources Coastal Management Division.

8.1.1. When a local administrator decides that an activity of local concern has no significant impact on coastal waters the local administrator shall notify the applicant that the activity may proceed without a Coastal Use Permit.

8.2. Any person may obtain a copy of the permit application and supporting documents by making a request to Terrebonne Parish Office of Coastal Zone Management and providing reasonable costs of copying, postage, and handling.

8.3. An applicant can expect to receive either a draft permit or a notice of denial within 30 calendar days of the giving of public notice or within 15 calendar days after the closing of the record of a public hearing, if held, whichever is later.

8.4. If an application is found to be incomplete or inaccurate after processing has begun or if it is determined that additional information from the applicant is necessary to access the application adequately, processing will be stopped pending receipt of the necessary changes or information from the applicant and the processing periods will be interrupted. Upon receipt of the required changes or information, a new processing period will begin.

8.4.1. With regard to a state use or concern, the local administrator shall contact both the applicant and the Department of Natural Resources Coastal Management Division in writing to request additional information.

8.4.2. For a local use or concern, the local administrator shall contact the applicant in writing to request additional information. The request for information shall indicate that the applicant has 30 calendar days to provide the necessary information and that failure to respond may result in a withdrawal of the application.

8.5. If after 30 calendar days an applicant should fail respond to the request for supplemental material, the application will be deemed withdrawn. The local administrator shall notify the applicant in writing of the withdrawal and include a copy of the request for supplemental material.

8.6. In addition to LAC 43:I.727 and LRS 49:214.35 procedures governing public hearing , a public hearing on a local coastal use may be appropriate under the following circumstance:

8.6.1. At the discretion of the local administrator;
8.6.2. At the request of a majority of the Committee;
8.6.3. At the request of the applicant;

8.7. Any documents, studies or other data in the applicant's possession relevant to the proposed use must be made available to the public for review, study, and duplication 30 calendar days prior to the hearing. As additional materials are developed, they must also be made available. The Terrebonne Parish Coastal Zone Management Administrative Office shall be the repository for these materials.

8.8. Any person may obtain a copy of the permit application and supporting documents by making a request to the Terrebonne Parish Coastal Zone Management Office and providing reasonable costs of copying, postage, and handling.

8.9. Each comment received on the application shall be considered in the final permit decision as per Sections 10.1-6 of this Ordinance.

8.10. The applicant or other agencies with expertise may be provided an opportunity to address issues raised in comments prior to the final permit decision.

9. State Concerns Considerations

9.0. Before expirations of the applicable public comment period, the local administrator shall;

9.0.1. Review State Concern application with regard to consistency with Local Program.
9.0.2. Solicit comments from Terrebonne Parish CZM Advisory Committee Members and the public;
9.0.3. Request additional information;
9.0.4. As appropriate, call for a public hearing;
9.0.5. Notify the Department of Natural Resources of any concerns, comments, inconsistencies, and objections with regard to the proposed activity.

10. Local Concern Considerations

10.1. Within 10 working days of receipt, local administrator shall make public notice of the pending local use application in the following ways:

10.1.1. Publication once in a newspaper of general circulation in the official journal of Terrebonne Parish.

10.1.2. Provide notification at the proposed site of the activity by posting.

10.2. Notice of a pending application shall include the permit number, the location of the proposed activity, and information allowing members of the public to comment on the proposal for 25 calendar days.

10.3. Before expiration of the applicable public comment period, the local administrator shall take one of the following actions:

10.3.1. Solicit input upon the local use application from the Committee prior to taking action under sections 10.4.1-3 of this ordinance.

10.3.2. Initiate a public hearing on local use application, in accordance with Terrebonne Parish procedures governing public hearings, prior to taking action under sections 10.4.1-3 of this ordinance.

10.4. After the comment period as stated in section 8.3 of this Ordinance, the local administrator shall take one of the following actions.

10.4.1. Issue the local use permit, based on the Terrebonne Parish Coastal Zone Management Program, the Guidelines, and the Act.

10.4.2. Issue the local use permit with conditions, based on the Terrebonne Parish Coastal Zone Management Plan, the Guidelines, and the Act.

10.4.3. Deny the local use permit, based upon the Terrebonne Parish Coastal Zone Management Plan, the guidelines, and the Act.

10.5. Copies of the final decision shall be mailed to the applicant by mail within the legal time limits.

10.5.1. the local administrator shall include a brief, plain statement explaining the basis for the final permit decisions.

10.6. In the absence of a signed decision or a mutually agreeable written extension of the 30 calendar day deadline, the local concern permit application shall be denied and the applicant notified by mail within legal time constraints.

11. Appeals

11.0. Any person adversely affected by a permit decision and any government authority may request an appeal of the local administrator's decision by filing a written notice with the Local Coastal Administrator within 15 calendar days from the date the decision was issued.

11.1. A decision or determination shall be subject to reconsideration by the Terrebonne Parish Coastal Zone Management Appeals Panel if written notice is timely filed. The grounds for Reconsideration shall be either that;

11.1.1. The decision or determination is clearly contrary to the law or the evidence before the local administrator.

11.1.2. New evidence pertinent to the key issues upon which the permit decision was based that may not have been discovered before or during the application review process by using due diligence, or

11.1.3. There is a showing that issues not previously considered, through no fault of the petitioner, ought to be examined in order to properly dispose of the matter, or

11.1.4. Petitioner/appellant alleges fraud, as defined by state law, or corruption in the application process, or

11.1.5. Petitioner/appellant presents other good grounds for further consideration in the public interest. Good grounds include, but are not limited to, a failure to consider pertinent issues or facts in the initial review process.

11.2. The local administrator may establish a fee system to cover administrative cost associated with implementing the appeals process including, but not limited to, reasonable charges for copies, transcribing, and postage.

11.3. The party requesting an appeal shall provide to all parties of record and to the local administrator a copy of the notice and shall remit all appropriate fees.

11.4. The party requesting an appeal shall include in the submission to the local administrator a copy of the permit decision being appealed, a copy of the permit application, and written statement(s) addressing or describing the following:

11.4.1. Identifying how the permit decision of the local administrator is contrary to law and any issues providing grounds for appeal;

11.4.2. Stating sufficient facts regarding the proposed project to allow adequate analysis of whether or not the local administrator's decision was supported by fact;

11.4.3. Including the name, address, and phone number of the party requesting review and, if applicable, the party's legal representative;

11.4.4. Providing a short statement indicating how the party requesting the appeal would like the appeals panel to remedy the situation;

11.4.5. Including a statement that the party requesting an appeal has read the notice and believes the contents to be true, followed by the party's signature and that of the party's representative, if any.

11.4.6. Stating that issues raised during the application process constitute the sole grounds for appeal, except for allegations raised pursuant to grounds for reconsideration (above, 11.1.1.- 11.1.5.) and consistent with L.R.S. 49:214.35.

12. Upon receipt of a completed appeals packet, containing proper notice as defined above, a copy of the decision, and a copy of the application, the local administrator shall notify both the applicant and the appellant of its receipt by mail.

13. The local administrator shall schedule an appeal within 10 working days of receiving a completed appeals packet.

13.1. The local administrator shall promptly send each party of record the date, time, and location of the appeal by registered mail.

13.2. The local administrator shall publish the date, time, and location of any appeal in the official journal of Terrebonne Parish of the proposed site for the project at issue.

13.3. The local administrator shall require the applicant to post notification of the upcoming appeal on the proposed site of the activity at issue.

14. Interested parties may appear personally or be represented by counsel at the public appeal to produce any competent evidence on their behalf.

15. The appeals panel as selected according to section 19 of this Ordinance, may administer oaths, examine witnesses, and issue notices of hearings or subpoenas requiring the testimony of witnesses and production of books, records or other relevant documents.

15.1. The appeals panel may admit and give probative effect to evidence that possesses probative value commonly accepted by reasonably prudent men in the conduct of their affairs. The appeals panel may exclude evidence they find incompetent, irrelevant, immaterial or unduly repetitive in accordance with LA COE Art. 101-1104.

15.2. The appeals panel shall give effect to the rules of privilege recognized by law.

15.3. Objections may be made and considered, and shall be noted in the record in accordance with LA COE Art. 101-1104.

15.4. The appeals panel may take notice of judicially cognizable facts, as requested by interested parties. Such facts include, but are not limited to, recognized technical or scientific facts.

15.5. Depositions may be taken in accord with provisions governing the taking of depositions for civil court proceedings (LA CCP Art. 1420-1515 and admitted in the appeal.

15.6. Discovery may occur in accord with provisions governing discovery for civil court proceedings (LA CCP Art. 1420-1515) in the District Court of Terrebonne Parish.

16. A verbatim transcript of testimony at the appeal shall be prepared and, in addition to exhibits and documents introduced, constitute the record. Interested parties may review the documentation prepared for and by the appeals panel upon written request of the local administrator.

17. An appeals panel shall make findings of fact and a decision based upon the record and on any of the following:

17.0.1. Written submissions from interested parties prepared for purposes of appeal, and
17.0.2. The original permit application and associated documentation, and
17.0.3. Any legislative facts (such as scientific studies) or documented communications the panel deems trenchant relative to material issues in the permit.

17.1. The party requesting an appeal bears the burden of presenting a prima facie case, as state law for civil trials determines that standard under La COE 308 and 309.

17.2. The standard for review of the local administrator's decision by the appeals panel is whether the decision on the permit application was supported by substantial evidence, as defined by state law. See L.R.S. 49:964.

17.3. Appeals panel decisions are subject to judicial review. Nothing in this provision shall impede other authorized means for review.

18. The appeals panel shall issue a written decision of a length and depth to enable a court to evaluate the rationale and fundamental facts underlying the decision.

18.1. A copy of the appeals panel's decision shall be provided to each of the interested parties by the local administrator.

19. The appeals panel hearing appeals of permit decisions on applications for a local CUP in Terrebonne Parish shall be composed of three, unbiased members as follows:

19.0.1. One member representing the Terrebonne Parish Administration. This member shall be the head of the Public Works Department. The administrative alternate shall be the parish engineer. The administrative representative shall serve as chair of the panel.

19.0.2. One member representing the Terrebonne Parish Council. This member shall be the Council Chairperson. The Council alternate shall be the Chairperson of the Natural Resources Subcommittee.

19.0.3. One member representing the Coastal Zone Management community. This member shall be the Chairman of the Lafourche Parish Coastal Advisory Committee. The CZM community alternate shall be the local administrator of the Lafourche's Local Coastal Program.

19.1. The Terrebonne Parish Council shall appoint members and alternates. Alternates shall serve when members are not available, when their service might pose a conflict of interest, or when there might exist some bias.

19.1.1. For these purposes, bias may include, but is not limited to interest in the outcome of the appeal or individual prejudice toward an interested party. Bias' must be alleged prior to the convening of the panel.

19.2. Each member of the appeals panel has an equal vote and decisions shall be determined by majority rule.

20. Local representatives including Terrebonne Parish Officials and Terrebonne Parish CZM Advisory Committee Members shall be available on a rotating basis to hear appeals from other parishes as required.

21. Members of the appeals panel shall have no outside contact with any interested party regarding a fact in issue without prior notice to the other interested parties.

22. Members of the appeals panel shall not communicate privately with anyone regarding the merits of the appeal without documenting such communication. However communication is allowed with the Department of Natural Resources for reporting information as required for local coastal programs.

22.1. Documentation shall include

22.1.1. The date, time, form and location of the communication, and

22.1.2. The identity of the persons initiating and receiving the communication, and

22.1.3. A description of the content of the communication.

22.2. Interested parties may review the documentation upon written request to the appeals panel.

23. No appeals panel member shall make, participate in making, or attempt to use in any other way, the position of appeals panel member to influence a decision about which he or she has knowingly had communications required to be documented but that were not documented.

23.1. In addition to any other applicable penalty, an appeals panel member who violates this provision shall be subject to a civil fine, and be barred from participation in the current appeal and all future appeal decisions.

24. Any appeals panel member shall withdraw from any adjudicative proceeding in which he or she cannot accord a fair and impartial hearing or consideration.

24.1. Any interested party may request the disqualification of an appeals panel member based on the inability of the member to make a fair and impartial decision by filing an affidavit, upon discovery of the alleged grounds for disqualification. The affidavit shall state with particularity the grounds upon which it is claimed that a fair and impartial hearing cannot be accorded.

24.1.1. The issue of disqualification shall be heard and determined promptly by the Parish Council, or a designee.

24.2. Upon the disqualification of a member of the appeals panel, a substitute shall be obtained from the pool of local representatives in accord with the rotation schedule when the disqualified member is a local representative.

25. Review of the decision of the appeals panel by a competent court shall be provided if the following criteria are met:

25.1. Written request is made,

25.2. The request is filed within 15 calendar days of the appeals panel's final decision in the District Court in the Parish of the proposed project location,

25.3. The request is made by any interested party who participated in the process before the appeals panel.

26. Judicial review of the appeals panel's decision shall be based on the substantial evidence standard, as defined by state law. See LRS 49:964.

27. Nothing in this provision shall impede other authorized means for review.

28. Issued Permits

28.1. A local C U P shall remain valid for two years after the date of issuance. Local CUP time constraints shall not take precedence over time constraints associated with state or federally issued permits.

28.1.1. Should a project proponent desire more time, they may seek to either:

28.1.1.1. have the permit renewed based on a demonstration that diligent efforts have been made to complete the project within the allotted time but that events beyond the proponent control delayed completion; or

28.1.1.2. have the permit issued for a longer period up to one additional year based upon conclusive evidence demonstrating that the local use will extend beyond a year under ordinary circumstances. After 3 years a new permit must be obtained.

28.2. Variances that include impacts to vegetated wetlands might require a State CUP.

28.2.1. A variance from the Coastal Zone Management Program may be granted when the administrator and a majority of the Committee find that:

28.2.1.1. the property proposed as the site for the project is subject to exceptional circumstances that warrant recognition and special provision; and

28.2.1.2. the granting of a variance poses no detriment to the Coastal Zone

28.2.2. For purposes of the Coastal Zone Management Program, a a permit variance shall be treated as any other permit.

28.3. After-the-fact Permits

28.3.1. C U P may be issued as an after-the-fact permit under the following circumstances:

28.3.1.1. The activity taken was undertaken in response to an emergency and the Terrebonne Parish CZM Administration was notified as soon as possible of the activity(in accordance with LAC 43:I.723.B.3) ;

28.3.2. An after-the-fact permit may be limited in duration at the discretion of the local administrator but shall not exceed the time allocated for issuance of similar CUPs obtained through the normal process.

28.3.3. Upon discovery and notification of an unpermitted coastal zone activity, An after-the-fact permit must be requested within 15 calendar days of the activity subject to permitting, at which time the application will proceed as any other application.

28.3.4. When an after-the-fact permit is issued as part of an enforcement action, additional terms and conditions may be included at the discretion of the local administrator in consideration of circumstances unique to the particular applicant including, but not limited to, fines and reporting requirements to monitor the project. Increased mitigation requirements may be required on or off site over normal permit requirements.

28.3.5. An applicant for an after-the-fact permit may be required to fulfill conditions in the permit despite completion of the activity or return the area to its pre-emergency state if the application is denied.

28.3.6. For purposes of the Coastal Zone Management Program, an after-the-fact permit shall be treated as any other permit after it is issued.

28.4. By accepting the permit, the applicant agrees to the following:

28.4.1. to act in accordance with the plans and specifications as contained in the approved application;

28.4.2. to comply with permit conditions imposed to ensure compliance with the Coastal Zone Management Program;

28.4.3. to adjust, alter, or remove any structure or physical alteration if the local administrator and a majority of the Committee determine such action is necessary to achieve compliance with the Coastal Zone Management Program;

28.4.4. to hold the state of Louisiana, Terrebonne Parish, and all officers and employees thereof harmless from any injury to persons or property resulting from actions undertaken to carry out the permit;

28.4.5. to certify that the permitted activity has been completed in accord with permit or, upon request of the local administrator, provide certification from a licensed professional to that effect;

28.4.6. to allow reasonable inspection of the project for purposes of monitoring and compliance inspections.

29. Permits issued by the local administrator may recommend mitigation. Provisions on mitigation shall be read and construed as a whole and in accord with applicable state regulations, L.A.C. Title 43, Part I, Chapter 7, §724, which designate the Secretary as the authority responsible for all decisions respecting mitigation pursuant to L.R.S. 49:214.41 (B).

29.1. Consequently, all proposals that meet the parish standards for mitigation detailed below and that are authorized by the local administrator as acceptable mitigation shall be read and construed as a whole and in accord with applicable state regulations, L.A.C. Title 43, Part I, Chapter 7, §724, which designate the Secretary as the authority responsible for all decisions respecting mitigation pursuant to L.R.S. 49:214.41 (B).

29.2. Compensatory mitigation is not required in a CUP for an activity that does not have direct and significant coastal zone impacts.

29.2.1. in a wetland existing in a fastland, or

29.2.2. in a wetland more than five feet above mean sea level, or

29.2.3. when an applicant has satisfactorily demonstrated to the Secretary that the required mitigation would render impracticable an activity proposed to be permitted and that such activity serves a clearly overriding public interest, and the provisions of L.R.S. 49:214.41 (c) are met.

29.3. Projects exempt from the compensatory mitigation requirements may still be required to include other forms of mitigation or to mitigate for other types of impact(s) under regulations promulgated in accord with L.R.S.49:214.41, such as L.A.C. Title 43 §724 (B)(1)(a) and (b).

29.4. When the permit applicant is not the owner of the mitigation site, the applicant must document the acquisition of mitigation from the owner of the site. Documentation includes, but is not limited to, a receipt for purchase.

29.5. The applicant must also record the acquisition in the Terrebonne Parish Clerk of Court Office and the Terrebonne Parish Coastal Zone Management Office.

29.6. Mitigation may be same kind, or out-of-kind or any other action deemed appropriate to avoid, minimize, restore, or compensate for ecological values lost due to a permitted activity, and has to demonstrate no net loss of wetlands as defined in LAC 43:I.724. et. al.

30. Public funds cannot be used to subsidize wetland mitigation for private projects.

30.1. If public resources are used in the creation or maintenance of a mitigation project, the applicant and owner of the mitigation site are jointly responsible for reimbursing the parish for the fair market value of its costs, including the reasonable worth of time expended by government employees, in order to comply with this prohibition.

31. One of the primary objectives of mitigation is to ensure the continuance of valuable wetland functions in the watershed ecosystem and coastal zone.

31.1. Under most circumstances, this objective is achieved by compensatory mitigation that replaces wetlands lost with the same type of wetlands, same-kind mitigation.

31.1.1. If an applicant can demonstrate and document the functions will be sustained within the watershed by another type of wetland, the local administrator has discretion to allow out-of-kind mitigation.

31.1.2. Out-of-kind mitigation, when allowed, may require altering the ratio of wetlands-lost to wetlands-created.

31.1.3. The proposed mitigation site shall be located adjacent to lands that will not adversely affect the continued viability of the mitigation project due to unsuitable land uses or conditions and be located within the coastal zone.

31.2. Under most circumstances, this objective is achieved by replacing wetlands lost with wetlands in the same service area, equivalent to the U.S.G.S. cataloging units defined in the Hydrologic Unit Map of the United States (U.S.G.S. 1980) or its successors.

31.2.1. Priority exists for avoiding wetland loss or degradation of functions as part of a specific project. Avoidance includes, but is not limited to, relocating, minimizing or reducing the project.

31.2.2. When all means to avoid loss or degradation have been exhausted and loss or degradation of wetlands remains, on-site mitigation is the next preferred option for projects within the parish. On-site mitigation ensures wetland functions remain within the watershed and the parish.

31.2.3. The local administrator may allow off-site mitigation even if on-site mitigation is available, If the applicant demonstrates the following:

31.2.3.1. restoration of other areas would be scientifically justified by hydrological or ecological priorities and,

31.2.3.2. greater consistency with the Environmental Management Unit (EMU), or where EMU's are outdated or nonexistent with the overall Coast 2050 plan for the region, considering cumulative effects.

31.2.4. This section does not authorize mitigation credit for work done in another watershed or drainage system.

31.2.5. Priority exists for those sites which may be restored and enhanced. This allows uplands and wetlands to remain as intact ecosystems rather than altering landscapes to create wetlands where none formerly existed and promotes self-sufficient, low-maintenance mitigation projects.

31.2.6. Priority is given to those mitigation sites within Terrebonne Parish when more than one equally viable site exists. Mitigation cannot be denied solely on the basis that it will occur outside the parish boundaries when the ecologically established service unit boundaries do not coincide with the politically established parish boundaries.

31.3. Under most circumstances, this goal is met by physical alterations to landscapes. However, monetary contributions equal to the cost of creating these physical alterations, fee-in-lieu banking, may be appropriate if the local administrator documents that each of the following conditions is met:

31.3.1. the funds are requested pursuant to L.A.C. Title 43, Part 1, Chapter 7, §724, in particular, subsection l;

31.3.2. the funds are dedicated to a specific project under one permit number or apportioned among several specific projects covered by permits with separate numbers;

31.3.3. the specific project is planned and approved but may not be completed until after wetland draining or filling occurs;

31.3.4. circumstances beyond the control of the applicant (such as weather) prevent replacement of wetlands prior to or concurrent with the project;

31.3.5. no mitigation alternative meeting the standards of L.A.C. Title 43, Part 1, Chapter 7, §724 and the local priorities expressed in this ordinance exists; and

31.3.6. a trust account has been established at a local bank with the name and contact information of the trustee provided to the local administrator.

32. Failure of the specific project to be completed within reasonable time results in a forfeiture of the fee-in-lieu funds to the Louisiana Wetlands Conservation and Restoration Fund, or the Terrebonne Parish Wetlands Conservation and Restoration Funds when applicable; funds cannot be transferred to different projects after initial dedication to a specific project.

33. Failure to properly manage and account for fee-in-lieu contributions will result in the forfeiture of all such contributions to the Louisiana Wetlands Conservation and Restoration Fund, or the Terrebonne Parish Wetlands Conservation and Restoration Fund when applicable, in addition to any appropriate legal action authorized under this section and other local, state, or federal law.

33.1. Interest which accrues on these contributions may not revert to the parish general fund but may be used by the local administrator for periodic public education on wetlands conservation and restoration, wetlands restoration projects, and other wetlands-related activities.

33.2. Yearly reports of fee-in-lieu contributions, and the corresponding uses to which they have been put, shall be published in the state register. At minimum, this report shall include the amount and type of the contribution, the name of the donor, the name, address, permit number and description of the project to which the contribution was applied, and the permit number and description of the project for which the contribution served as mitigation.

33.3. The contributions must be kept in a trust account, the books for which are to be open for public review at all times and audited in accord with state procedures for public assets.

33.4. Withdrawal of assets from the trust account requires the signatures of the local administrator, a designated community member who has no pecuniary interest in the project, and a representative of the DNR.

34. Payment schedule, values, credits, and ratios are to be determined in accord with L.A.C. Title 43, Part 1, Chapter 7, §724.C, F. G. H. 1 and J.

34.1. These determinations may be made by either the local administrator or the DNR. Fees in lieu in Terrebonne Parish shall be $2000 per acre minimum.

34.2. When made by the local administrator, they are subject to review by DNR.

35. In determining whether proposed mitigation is acceptable, the local administrator shall consider the cumulative impacts on surface water and wetlands within the same drainage basin as

35.1. the activity for which the permit is sought,

35.2. existing projects or those under construction, and

35.3. activities which are under permit review, approved, or vested, or other activities requiring a coastal use permit which may reasonably be expected to be located within surface waters or wetlands in the same drainage basin based on plans existing at the time of consideration.

36. When any activity authorized by a permit issued pursuant to this chapter is conditioned upon compensatory mitigation, the applicant may be permitted to satisfy all or part of such mitigation requirements by the purchase of credits from any wetlands mitigation bank that has been approved and is operating in accordance with applicable federal and state guidance so long as:

36.1. the bank is in the same U.S.G.S. cataloging unit or a unit within the same watershed as the impacted site when catalog units would allow mitigation to occur outside the coastal zone. Any mitigation occurring outside of the Conservation Plan Boundary must demonstrate benefits to coastal waters;

36.2. the bank is ecologically preferable to other mitigation options;

36.3 financial assurance exists for the long-term maintenance of the bank.

37. Each mitigation bank proposed to be located within the boundaries of the parish must demonstrate adequate, dedicated financial surety exists to provide for the land management and hydrological maintenance of lands operated as mitigation banks for a period of at least twenty years for marsh habitat and fifty years for forested wetlands to prevent public, parish funds from being used to maintain private mitigation projects.

37.1. This includes financial surety in the event of a natural disaster or man-made activity that impairs the functioning of the wetland and may be achieved by obtaining insurance, posting a bond, establishing a trust or a similar arrangement which satisfies both the local administrator and DNR (See L.A.C. Title 43 Part I, §724 (F)(7)) .

37.2. In the event that natural forces result in the former wetland becoming open water, financial surety shall provide for the establishment of a comparable wetland site at another appropriate location.

38. A failure of performance in accordance with this ordinance, other applicable law, or the terms of the mitigation bank approval document will result in one or more of following:

38.1. Revocation of the authority to use these mitigation banking credits to satisfy mitigation requirements within the parish;

38.2. forfeiture of any remaining funds in the banking project to the Louisiana Wetlands Conservation and Restoration Fund, or the Terrebonne Parish Wetlands and Conservation Fund when applicable;

39. The establishment of any mitigation bank site within the parish, for parish use only requires the signature of the local administrator and of a DNR representative on the agreement. In addition to requirements outlined in L.A.C. Title 43, Part 1, Chapter 7, §724, the agreement must also contain, at minimum, the following items:

39.1. identification of the site, including legal property description, acreage, types and location of existing wetlands within the boundaries of the bank site;

39.2. an agreement by each of the concerned government agencies that all new, successfully created wetland acreage shall qualify on a case by case basis to be credited against the approved removal or fill of wetlands located in the qualifying area

39.3. acknowledgment by each of the concerned governmental agencies that the proposed bank is consistent with both federal, state and local guidelines regarding mitigation and mitigation banks;

39.4. provisions obligating the operator to do the following:

39.4.1. Maintain all wetland habitat within the bank in optimum condition for as long as the impacts mitigated by the site are in existence, as well as the terms of mitigation banking agreements shall be in accord with L.A.C. Title 43, Part 1, Chapter 7, §724.

39.4.2. obtain insurance or establish a trust or bond in favor of Terrebonne Parish that provides sufficient funds to ensure administration, protection, operation, and maintenance of the wetland habitat acreage, functions and values at the bank site for the life of the bank, if the operator defaults in performing the duties required by federal, state, and local guidelines and a memorandum of understanding; and

39.4.3. regularly monitor to demonstrate achievement of the desired wetland functions; and

39.4.4. provides for public notice and comment on the project.

40. Breach of an agreement shall be determined by an administrative hearing, subject to judicial review, and in accord with Louisiana's administrative procedure.

41. No credit shall be given for habitat values or functions that existed prior to the establishment of the bank.

42. When establishing the price of a mitigation credit, at minimum, the following factors should be incorporated into the decision:

42.1. land costs, including reasonable interest cost of holding the land;
42.2. wetland creation, restoration, or enhancement costs;

42.3. wetland administration, maintenance, and protection costs;

42.4. annual taxes, including all tax increases and in-lieu payments;

42.5. costs incurred and direct costs of monitoring and oversight;

42.6. insurance premiums or trust account administrative costs for the protection of the site improvements;

42.7. all costs incurred by the state and parish government relative to the mitigation bank.

43. Criteria to be considered and addressed in the permitting of a mitigation bank include the following:

43.1. historical wetland trends, including estimated rate of current and future loses;
43.2. projected plan for the coastal zone as embodied in EMU's, or the Coast 2050 plan where EMU's are non-existent or outdated;
43.3. the contributions of the wetlands to;
43.3.1. wildlife, migratory birds and resident species
43.3.2. commercial and sport fisheries
43.3.3. surface and groundwater quality and quantity
43.3.4. flood moderation
43.3.5. habitat and species diversity
43.3.6. outdoor recreation, including enhancement of scenic waterways.

44. If significant disparity between actual and anticipated functions and values of wetlands exists, the local administrator shall suspend the withdrawal of credits from that mitigation site at least until the resolution of action by the local administrator under sections 44 and 46 of this ordinance, or action by DNR under Title 43 Part I §724 (F)(9).

45. Actions by the local administrator respecting wetlands mitigation banks and wetland mitigation areas (allowed by LAC 43:I.724(E)(e), may include the following:

45.1. authorizing or making a continuing study of wetland areas, wetland mitigation programs, and initiating pilot restoration projects that meet the requirements of the Louisiana Coastal Restoration Program objectives ;

45.2. consulting with, providing information to, and entering into an agreement with a federal, state, or local agency, private entity, individual, or educational institution or university to identify and publish information concerning wetland areas;

45.3. cooperating with a federal or state agency in connection with a study or investigation regarding the adequacy of a local measure with respect to a federal or state wetland program;

45.4. improving the long-range management or use of wetlands or a wetland mitigation bank or mitigation area;

45.5. purchasing, leasing, or otherwise acquiring property inside the parish that is necessary for a wetland mitigation bank, wetland mitigation area, or a buffer zone and, as necessary, improving the land or other property as a wetland mitigation bank or wetland mitigation area, including any adjacent buffer zone;

45.6. requesting or receiving aid from a federal, state, or local agency, private entity, individual, or educational institution or university;

45.7. purchasing, selling, or contracting to purchase or sell a mitigation credit in a mitigation bank or mitigation area;

45.8. incurring a liability or borrowing money on terms approved by the Terrebonne Parish Council;

45.9. acquiring, holding, using, selling, leasing, or disposing of real or personal property, including a license, patent, right or interest, that is necessary, convenient, or useful for the full exercise of a power under this chapter;

45.10. contracting with any operator or owner to use or operate any part of a mitigation bank or mitigation area;

45.11. procuring any type of insurance and paying an insurance premium in an amount the governing body of the eligible political subdivision considers necessary or advisable;

45.12.administering a fee-in-lieu and in-kind contribution trust fund.

46. Enforcement

46.1. Each violation of an individually named condition of a permit or order and each day a violation continues constitutes a separate violation. A fine of $500 (L.R.S. 33:1243), plus attorney & collection fees, per offense per day may be assessed by the Terrebonne Parish Coastal Zone Management Administrator, subject to Coastal Zone Management Advisory Committee approval. Such fines will be in addition to fines imposed by other government agencies. Monetary proceeds from such violations will be utilized by the TPCG CZM Office.

46.2. Enforcement actions may be initiated in any of three ways; As a part of:

46.2.1. Investigation and monitoring as a matter of course under L.R.S. 49:214.36(A);

46.2.2. Referrals from other agencies; or

46.2.3. Complaints from individuals or groups.

46.3. Every effort is made to use the investigation and monitoring to correct deficiencies in site compliance whenever possible.

46.3.1. The inspection shall include a routine inspection form, examination of specialized provisions in the permit, photographs, videographics, and notes or other documentation developed during the permit process.

46.3.2. Should compliance fail to be achieved or if the inspecting official deems a violation serious enough to warrant enforcement -- considering the gravity of the violation and the actor's compliance history -- the violation may be deemed either non-compliance or significant non-compliance.

46.3.2.1. Significant non-compliance exists when the violation poses an imminent threat to the public welfare, is egregious in nature or results from action by a person that has been in violation of the Coastal Management Program within the preceding 2 year(s); in these instances, a cease and desist order shall be issued promptly by the local administrator.

46.3.2.2. Non-compliance exists when the violation is of a minor nature or can be remedied without significant hardship; in these instances, a letter of warning shall be issued promptly by the local administrator.

46.3.2.2.1. A letter of warning describes the observations of the inspector, identifies the corrective actions that may be taken to come into compliance, provides a date by which the actions must be made, identifies the provisions of the Coastal Zone Management Program in violation and is signed by the inspector.

46.3.2.2.2. A letter of warning must be sent by certified mail to the permit applicant or record owner of the property when no permit exists.

46.3.3. The inspector shall investigate the response. After examining the timeliness, completeness, documents, and any meetings or interviews necessary, the inspector determines whether or not compliance has been achieved.

46.4. Referrals from other agency officials

46.4.1. After receiving a referral of notice of a possible violation from a federal, State, Local Official, the local administrator shall promptly take whatever investigatory actions are necessary in order to ascertain whether or not a violation does in fact exist.

46.4.2. When a violation does not exist, the local administrator inform the agency official who made the referral of such in writing.

46.4.3. If the inspecting official deems a violation serious enough to warrant enforcement considering the gravity of the violation and the actor's compliance history, the violation may be deemed either non-compliance or significant non-compliance.

46.4.3.1. Significant non-compliance exists when the violation poses an imminent threat to the public welfare, is egregious in nature or results from action by a person that has been in violation of the Coastal Management Program within the preceding 2 year(s); in these instances, a cease and desist order shall be issued promptly by the local administrator.

46.4.3.2. Non-compliance exists when the violation is of a minor nature or can be remedied without significant hardship; in these instances, a letter of warning shall be issued promptly by the local administrator.

46.4.3.2.1. A letter of warning describes the observations of the inspector, identifies the corrective actions that may be taken to come into compliance, provides a date by which the actions must be made, identifies the provisions of the Coastal Zone Management Program in violation, and is signed by the inspector.

46.4.3.2.2. A letter of warning must be sent by certified mail to the permit applicant or record owner of the property when no permit exists.

46.4.4. The inspector shall investigate the response to any notice of violation. After examining the timeliness, completeness, documents, and any meetings or interviews necessary, the inspector determines whether or not compliance exists.

46.4.4.1. When compliance does not exist, the local administrator shall issue a cease and desist order. If a cease and desist order has already been issued, the local administrator may suspend, revoke, or modify a coastal use permit or bring injunctive, declaratory or other actions necessary to enforce the ordinance.

46.5. Complaints from concerned citizens or others

46.5.1. All complaints will be directed to a Terrebonne Parish CZM Official to determine whether or not a violation exists or make a referral.

46.5.2. If the inspecting official deems a violation serious enough to warrant enforcement; considering the gravity of the violation and the actor's compliance history, the violation may be deemed either non-compliance or significant non-compliance.

46.5.2.1. Significant non-compliance exists when the violation poses an imminent threat to the public welfare, is egregious in nature or results from action by a person that has been in violation of the Coastal Management Program within the preceding 2 year(s); in these instances, a cease and desist order shall be issued promptly by the local administrator.

46.5.2.2. Non-compliance exists when the violation is of a minor nature or can be remedied without significant hardship; in these instances, a letter of warning shall be issued promptly by the local administrator.

46.5.2.2.1. A letter of warning describes the observations of the inspector, identifies the corrective actions that may be taken to come into compliance, provides a date by which the actions must be made, identifies the provisions of the Coastal Zone Management Program in violation, and is signed by the inspector.

46.5.2.2.2. A letter of warning must be sent by certified mail to the permit applicant or record owner of the property when no permit exists.

46.5.3. The inspector shall investigate the response. After examining the timeliness, completeness, documents, and any meetings or interviews necessary, the inspector determines whether or not compliance exists.

46.5.3.1. When compliance does not exist, the local administrator shall issue a cease and desist order. If a cease and desist order has already been issued, the local administrator may suspend, revoke, or modify a coastal use permit or bring injunctive, declaratory or other actions necessary to enforce the ordinance.

46.6. In addition to any other information required by Terrebonne Parish or State Law, a cease and desist order shall contain the following:

46.6.1.a concise statement of the facts alleged to constitute a violation;

46.6.2. a statement of the amount of the potential penalties for violating the cease and desist order;

46.6.3. a copy of the regulation, permit, order, statute or other legal provision applicable;

46.6.4. information enabling the recipient to contact the local administrator; and

46.6.5. information on how the recipient may obtain a hearing to contest the cease and desist order.

46.7. A recipient of a cease and desist order may challenge the validity of the order in the Terrebonne Parish District Court.

46.8. To perform the duties required under this ordinance, Terrebonne Parish Personnel may enter upon any land and make examinations in accord with L.

R. S. 49:214.36 (A) and 28.4.6 of the Ordinance, provided that

46.8.1. a warrant is obtained, or

46.8.2. the examinations do not interfere with the use of the land by its owners or possessors, and

46.8.3. prior to inspection the owner or possessor of the land is informed that an inspection is to take place and allowed to accompany the inspector if they so desire.

46.9. Relief available for violation of the Coastal Zone Management Program is governed by L.R.S. 49:214.36 (E)- (N).

46.10. Pursuit of remedies and enforcement actions taken under this ordinance in no way preclude seeking any other applicable remedy or enforcement action available.

46.11. Funds collected for violations in Terrebonne Parish shall be maintained in a "Coastal Monitoring Enforcement Fund." These monies, including interest accruing thereon, shall be used by Terrebonne Parish CZM Office for the cost of providing aircraft overflights or boat use for coastal monitoring and similar surveillance and enforcement activities conducted by Terrebonne Parish CZM Office, as well as for purposes designated by the TPCG CZM Advisory Committee to be used for the enhancement of the Terrebonne Parish CZM program.

OFFERED BY: Mr. C. Chauvin.
SECONDED BY: Mr. D. Henry.

B.

ORDINANCE NO. 5827

AN ORDINANCE WHICH ESTABLISHES THE TERREBONNE PARISH COASTAL ZONE MANAGEMENT ADVISORY COMMITTEE AND WHICH DEFINES THE DUTIES OF THIS TERREBONNE PARISH COASTAL ZONE MANAGEMENT ADVISORY COMMITTEE.

BE IT ORDAINED by the Terrebonne Parish Council, on behalf of the Terrebonne Parish Consolidated Government, that the existing Terrebonne Parish Code be amended to include:

SECTION I - Purposes

The Terrebonne Parish Coastal Zone Management Advisory Committee is hereby being established for the purpose of:

1) Ensuring sound management of uses in the coastal zone in order to:

a) Protect, restore and enhance the resources of the coastal zone for the benefit, employment, and enjoyment of present and future generations of Terrebonne Parish citizens/

b) Ensure the maintenance, continued protection and prudent use of the natural resources, renewable and non-renewable, therein;

c) Promote public safety, health and welfare;

d) Protect wildlife, fisheries, aquatic life, wetlands, estuaries and waterways; and,

e) Preserve and protect the remaining scenic and historic resources of the coastal zone.

2) Promoting coordinated development within the coastal zone by promoting procedures and practices that resolve conflicts among competing uses within the coastal zone in accordance with the purposes of this section and the simplification of administrative procedures.

3) Striving to maintain a balance between conservation and development in the coastal zone of Terrebonne Parish.

4) Helping to develop and commenting on the Terrebonne Parish Consolidated Government application to the Louisiana Department of Natural Resources for a Terrebonne Parish Coastal Zone Management Program, prepared in conformance with the State Local Coastal Resources Act of 1978.

5) Implementing the goals, objectives and policies of a Terrebonne Parish Coastal Zone Management Program, once such a program has been approved by the State and Federal Governments, and adopted by the Terrebonne Parish Consolidated Government.

SECTION II - Composition of the Terrebonne Parish Coastal Zone Management Advisory Committee

The Terrebonne Parish Coastal Zone Management Committee shall be composed of fifteen members. Twelve of these members shall represent specific interests of the Terrebonne Parish community. Three of the members of the committee shall be at large positions represting no specific group or interest. Twelve of these members shall be chosen and ratified by the Terrebonne Parish Council from submitted nominations. Three of the members of this committee shall be directly appointed by the Terrebonne Parish President. The Terrebonne Parish President and Terrebonne

Parish Council shall attempt to select members for the Terrebonne Paish Coastal Zone Management Committee so that as great a variety of the geographic and socioeconomic interests of the citizens of Terrebonne Parish are represented on the Committee as possible. The Terrebonne Parish Coastal Zone Management Committee shall be composed of the following fifteen members:

1) A member representing the oyster industry chosen and ratified by the Terrebonne Parish Council from at least two nominations submitted by the Oyster Leaseholders and Dealers Association of Terrebonne Parish and/or members of the Terrebonne Parish Council.

2) A member representing the commercial fishing (fin fish) industry chosen and ratified by the Terrebonne Parish Council from at least two nominations submitted from the Louisiana Commercial Fisherman's Association of Dulac and /or the Terrebonne Fisherman's Association and/or members of the Terrebonne Parish Council.

3) A member representing the commercial fishing (shrimping) industry chosen and ratified by the Terrebonne Parish Council from at least two nominations submitted from the Louisiana Commercial Fisherman's Association of Dulac and/or the Terrebonne Fisherman's Association and/or members of the Terrebonne Parish Council.

4) A member representing the recreational fishing industry chosen and ratified by the Terrebonne Parish Council from at least two nominations submitted from the Terrebonne Black Bass Club and/or the Terrebonne Sportsman's League and/or members of the Terrebonne Parish Council.

5) A member representing the property owners of Terrebonne Parish chosen and ratified by the Terrebonne Parish Council from at least two nominations submitted by the Louisiana Land Owner's Association and/or the Chamber of Commerce and/or members of the Terrebonne Parish Council.

6) A member representing the property developers of Terrebonne Parish chosen and ratified by the Terrebonne Parish Council from at least two nominations submitted by the Bayou Board of Realtors and/or members of the Terrebonne Parish Council.

7) A member representing the oil industry of Terrebonne Parish chosen and ratified by the Terrebonne Parish Council from at least two nominations submitted by the Chamber of Commerce and/or members of the Terrebonne Parish Council.

8) A member representing the marine navigation industry of Terrebonne Parish chosen and ratified by the Terrebonne Parish Council from at least two nominations submitted by the Chamber of Commerce and/or members of the Terrebonne Parish Council.

9) A members representing flood protection for Terrebonne Parish chosen and ratified by the Terrebonne Parish Council from at least two nominations submitted by the North Terrebonne Drainage and Conservation District and/or the South Terrebonne Tidewater Management and Conservation District and/or members of the Terrebonne Parish's Council.

10) A member representing the Port of Terrebonne Parish chosen and ratified by the Terrebonne Parish Council from at least two nominations submitted by the Terrebonne Parish Port Commission and/or members of the Terrebonne Parish Council.

11) An at-large member chosen and ratified by the Terrebonne Parish Council from at least two nominations submitted by members of the Terrebonne Parish Council.

12) An at-large member chosen and ratified by the Terrebonne Parish Council from at least two nominations submitted by members of the Terrebonne Parish Council.

13) An at-large member chosen and appointed by the Terrebonne Parish President.

14) A member representing flood protection for Terrebonne Parish chosen and appointed by the Terrebonne Parish President.

15) A member representing economic development for Terrebonne Parish chosen and appointed by the Terrebonne Parish President.

SECTION III - Terms of Committee Members

Members of the Terrebonne Parish Coastal Zone Management Advisory Committee shall be appointed for a two-year term. Odd numbered committee members shall be replaced in odd numbered calendar years. Except for its first year, even numbered committee members shall be replaced in even numbered calendar years. The first even numbered committee members shall have a three-year term. Any member of the Terrebonne Parish Coastal Zone Management Advisory Committee may be removed at any time by a vote of the Terrebonne Parish Council, where at least six of the Council Members vote for removal of the Terrebonne Parish Coastal Zone Management Advisory Committee member.

SECTION IV - Rules of Conduct for the Terrebonne Parish Coastal Zone Management Advisory Committee

The Terrebonne Parish Coastal Zone Management Advisory Committee shall follow Robert's Rules of Order. The Terrebonne Parish Coastal Zone Management Advisory Committee shall elect a Chairman and Vice Chairman to conduct meetings. The Chairman of the Terrebonne Parish Coastal Zone Management Advisory Committee shall have the authority to appoint Sub-Committees of both Terrebonne Parish Coastal Zone Management Advisory Committee members and non-members to help in the conduct of the Terrebonne Parish Coastal Zone Management Advisory Committee's business.

SECTION V - Severability

If any word, clause, phrase, section or other portion of this ordinance shall be declared null, void, invalid, illegal or unconstitutional, the remaining words, clauses, phrases, sections or other portions of this ordinance shall remain in effect.

This ordinance, having been introduced and laid on the table for two weeks, was voted upon as follows:

THERE WAS RECORDED:

YEAS: J.B. Breaux, H. Lapeyre, C. Chauvin, D. Henry, P. Gabriel, Sr., W. Thibodeaux, R. Boudreaux, Jr. and C. Duplantis.

NAYS: None.

NOT VOTING: None.

ABSENT: C. Rogers.

The Chairman declared the ordinance adopted this 10th day of September, 1997.

J.B. BREAUX, CHAIRMAN
TERREBONNE PARISH COUNCIL

PAUL A. LABAT, COUNCIL CLERK
TERREBONNE PARISH COUNCIL

* * * * * * * * * * *

Date and Time
Delivered to Parish President

9-11-97 9:15 am PAL

Approved/Vetoed:

Barry P. Bonvillain, Parish President
Terrebonne Parish Consolidated
Government

Date and Time
Received from Parish President

9-12-97 1:30 pm PAL

* * * * * * * * * * *

I, PAUL A. LABAT, Clerk of the Terrebonne Parish Council, do hereby certify that the foregoing is a true and correct copy of an ordinance adopted by the Assembled Council in Regular Session on September 10, 1997 at which meeting a quorum was present.

GIVEN UNDER MY OFFICIAL SIGNATURE AND SEAL OF OFFICE THIS 12th DAY OF September, 1997.

PAUL A. LABAT, COUNCIL CLERK
TERREBONNE PARISH COUNCIL

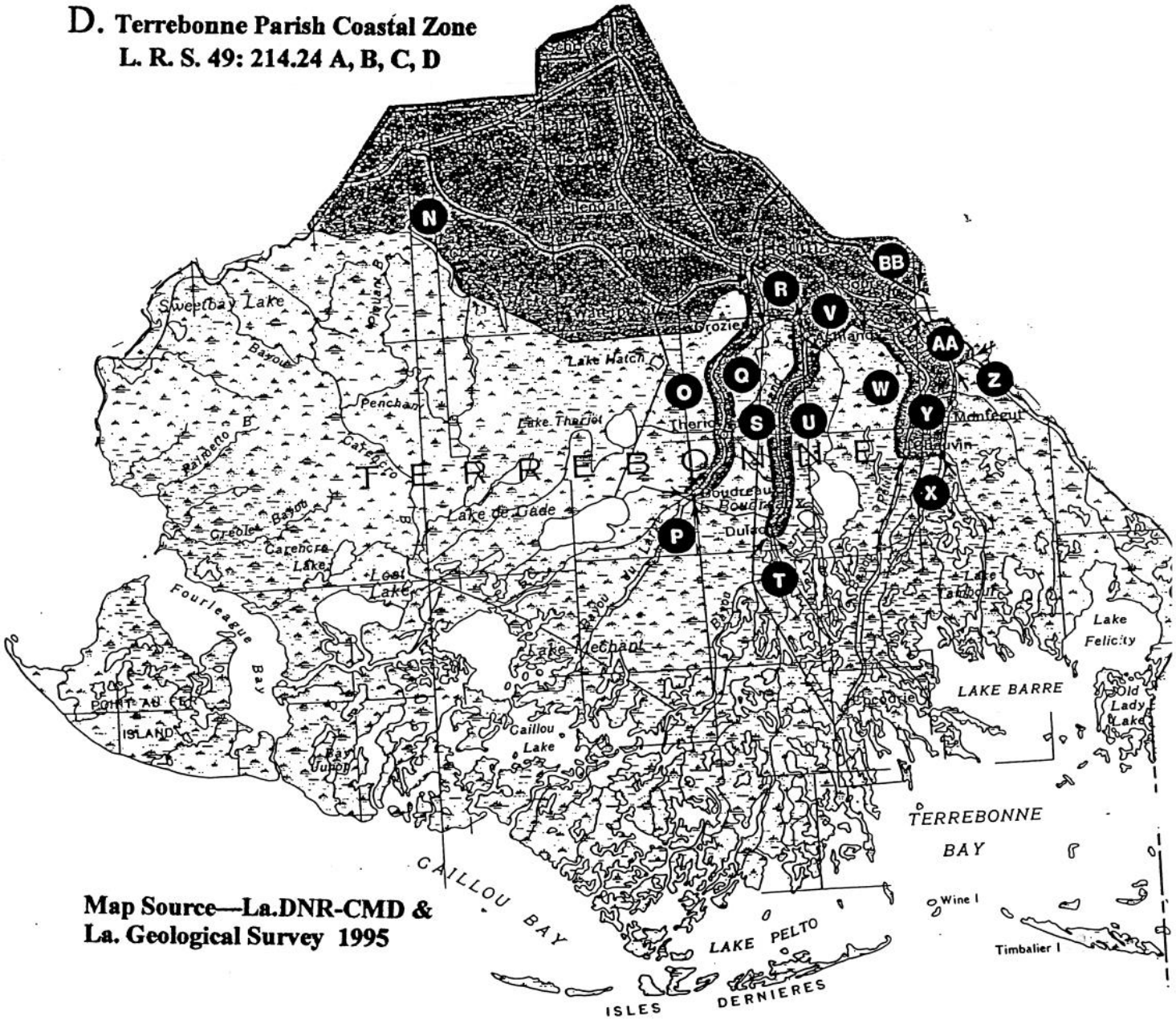
C. La. DNR Data Available for Terrebonne Parish's Local CZM Program

1. Satellite Images
   a. 30 meter resolution
   b. 1.5 meter resolution
   c. 10 meter resolution
2. USGS Quads
3. Ecological Management Units (EMU) (polygons)
4. Habitat Maps (polygons)
5. Permits
   a. Post 1996 (polygons)
   b. Pre 1996 (point)
6. Violations/Enforcement (point)
7. Consistency (point)
8. Oyster Leases (lines/polygon)
9. Mitigation Areas (polygon)
10. Mitigation Projects (polygon)
11. Wildlife Management Areas (polygon)
12. National Wildlife Refuges (polygon)
13. CWPPRA
14. Parish Boundaries (polygon)
15. LA Names (point)
16. Hydrologic Basins (polygon)

Incomplete Data Sets

1. Oyster Seed Grounds
2. Oyster Reefs
3. Oil Spill Pit Study

D. Terrebonne Parish Coastal Zone
L. R. S. 49: 214.24 A, B, C, D



Map Source—La.DNR-CMD & La. Geological Survey 1995

thence following the boundary of the corporate limits of the city of Morgan City to where it intersects with the northern bank of the Gulf Intracoastal Waterway, thence along the northern bank of the Gulf Intracoastal Waterway to the vicinity of the Bayou du Large Ridge, thence proceeding southerly along the western edge of the Bayou du Large Ridge to the intersection of the Falgout Canal, thence proceeding easterly along the north bank of the Falgout Canal to the eastern edge of the Bayou du Large Ridge, thence proceeding northerly along the eastern edge of the Bayou du Large Ridge to the vicinity of Crozier, thence proceeding easterly to the western edge of the Grand Caillou Ridge, thence proceeding southerly along the western edge of the Grand Caillou Ridge to the vicinity of Dulac, thence proceeding easterly to the eastern edge of the Grand Caillou Ridge, thence proceeding northerly along the eastern edge of the Grand Caillou Ridge to the northern bank of the St. Louis Canal, thence proceeding easterly along the northern bank of the St. Louis Canal to the western edge of the Petit Caillou Ridge, thence proceeding southerly along the western edge of the Petit Caillou Ridge to the vicinity of Chauvin, thence proceeding easterly to Highway 55, thence proceeding northerly along Highway 55 to its intersection with Highway 665, thence easterly along Highway 665 to Bayou Pointe au Chien, thence northerly along Bayou Pointe au Chien to Highway 55, thence northerly along Highway 55 to Highway 24, thence easterly along Highway 24