LOUISIANA COASTAL WETLANDS RESTORATION PLAN

TECHE/VERMILION BASIN
APPENDIX G

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LOUISIANA COASTAL WETLANDS CONSERVATION AND RESTORATION TASK FORCE

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TECHE/VERMILION BASIN PLAN

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INTRODUCTION

STUDY AREA

The Teche/Vermilion Basin contains roughly 243,000 acres of wetlands in Vermilion, Iberia, and St. Mary parishes. The basin extends westward from Point Chevreuil through East and West Cote Blanche Bays, and includes Marsh Island and Vermilion Bay. The basin is bordered on the east by the West Atchafalaya Basin Protection Levee, on the west by Freshwater Bayou Canal and Louisiana Highway 82, on the north by the Lafayette/Vermilion and St. Martin/Iberia Parish lines, and on the south by the Gulf of Mexico (Figure 1). The marshes are primarily privately owned, but some extensive areas are managed as wildlife refuges by the State of Louisiana and the Audubon Society. Collectively, the Louisiana State Wildlife Refuge, Marsh Island Wildlife Refuge, and the National Audubon Society's Paul J. Rainey Wildlife Refuge encompass over 139,000 acres of marsh and associated bayous, ponds, and lakes. These refuges contain about 30 percent of the marsh in the basin.

EXISTING PROJECTS

U.S. ARMY CORPS OF ENGINEERS

The Vermilion River has 51 miles of authorized navigation channel improvements from Vermilion Bay to Lafayette. Bayou Teche has about 106 miles of modifications from its mouth to Amaudville. These modifications include a lock, dam, regulating works, and flood gates. The Gulf Intracoastal Waterway (GIWW) traverses the basin from east to west through marshes. A pumping station on the Atchafalaya River above Krotz Springs diverts water when needed into Bayou Teche and the Vermilion River through the West Atchafalaya Basin levee borrow pit and Bayou Courtableau. The diverted water is used by industries, municipalities, and agriculture.

U.S.D.A. SOIL CONSERVATION SERVICE

The Soil Conservation Service has an active marsh conservation planning program with landowners in the Teche/Vermilion Basin, particularly near Shark Island and the East Cote Blanche area.

STATE OF LOUISIANA

The state of Louisiana created the Wetlands Conservation and Restoration Authority in 1989 to conserve, develop, restore, and enhance the state's coastal wetland resources (State of Louisiana 1990). The Wetlands Conservation and Restoration Fund was also created at that time to fund activities of this authority, which acted through the Department of Natural Resources and the Governor's Office. The Department of Natural Resources used these monies to implement two projects in the Teche/Vermilion Basin. The Hammock Lake Christmas tree Project used discarded Christmas trees to trap sediments where a natural marsh barrier separating Hammock Lake and West Cote Blanch Bay was eroding (State of Louisiana 1990). The Yellow Bayou Wetland Project prevented breaching of another marsh boundary between East Cote Blanche Bay and an interior pond system near Yellow Bayou (State of Louisiana 1991). This project used coarse material and vegetative planting to stabilize this shoreline.

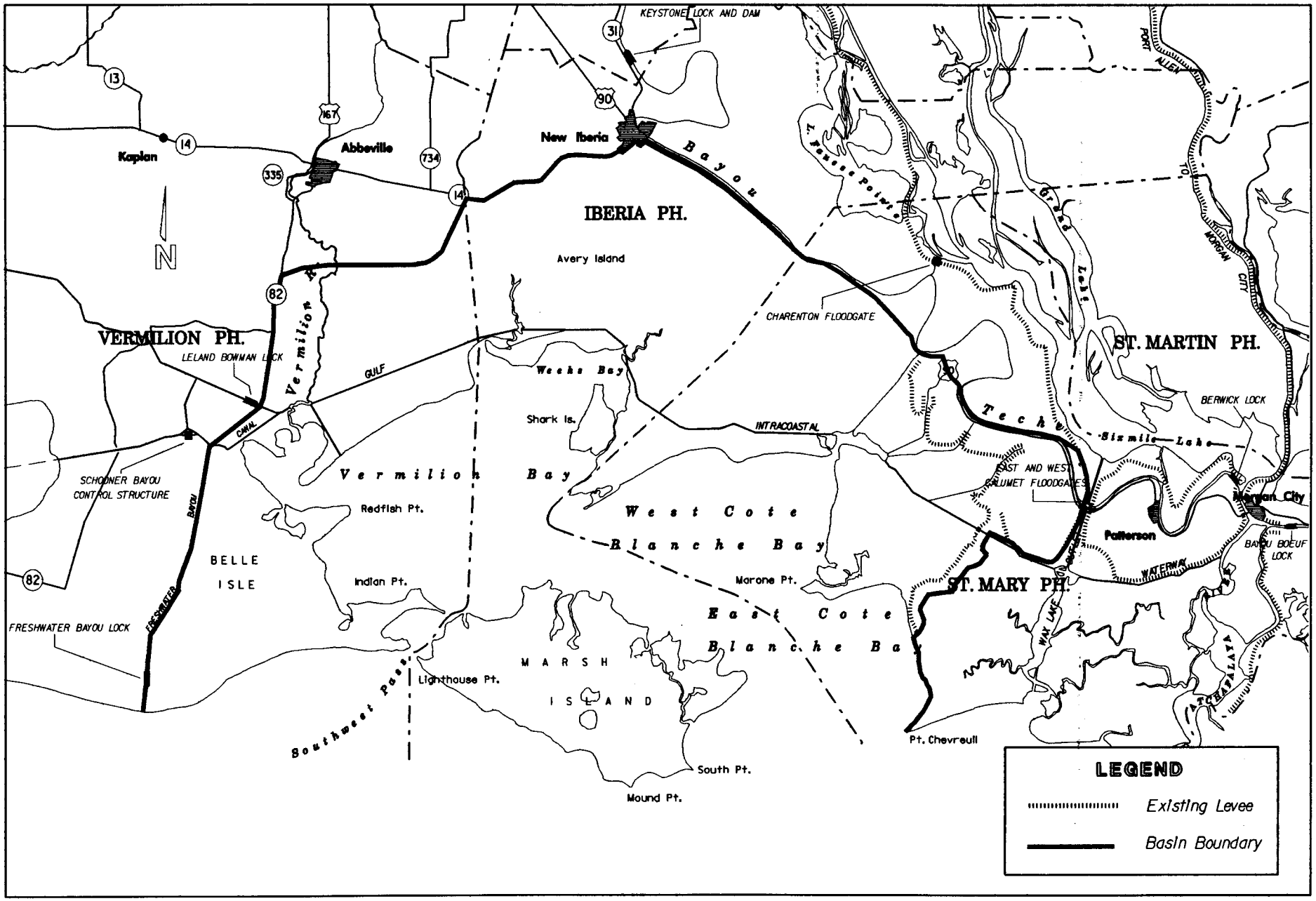

Figure 1. Teche/Vermilion Basin, Basin Boundaries.

Two state owned wildlife refuges lie in the basin. The largest is Marsh Island (Russell Sage) Wildlife Refuge and Game Preserve. This refuge entirely occupies an 87,000-acre island that separates the Gulf of Mexico from Vermilion, West Cote Blanche and East Cote Blanche Bays. The Louisiana State Wildlife Refuge and Game Preserve, which lies just west of Marsh Island on the mainland, occupies 26,000 acres of marsh and associated ponds, bayous, and lakes.

NATIONAL AUDUBON SOCIETY

The Paul J. Rainey Wildlife Refuge and Game Reserve, owned by the Audubon Society, is adjacent to the Louisiana State Wildlife Refuge and also occupies 26,000 acres of marsh and associated ponds, bayous and lakes.

PRIVATE

Many private landowners have initiated wetland protection measures on their property. Some of the larger landowners in this basin with a long history of wetland protection are the Miami Corporation and the Vermilion Corporation. Their holdings are near Shark Island and Freshwater Bayou, respectively.

EXISTING CONDITIONS

GEOMORPHOLOGY AND HYDROLOGY

In the Teche/Vermilion basin, abandoned delta lobes of the Mississippi River are near the endpoint of their natural deterioration (Coleman and Gagliano 1964). The last depositional lobe in the basin, the Teche, became inactive about 2,700 B.C. Much of this lobe deteriorated centuries ago. The remaining marshes lie over areas that are geologically stable.

The basin is experiencing increased riverine conditions because of fresh water and sediment flow from the Atchafalaya River (DeLaune et al. 1987). The Old River Control Structure, completed in 1963, ensures that the Atchafalaya River carries 30 percent of the combined flows of the Mississippi and Red Rivers. Water and sediments from the Atchafalaya River enter the basin from the east and flow westward and dominate hydrological conditions in East and West Cote Blanche Bays. These sediments are filling the bay system very gradually. Numerous live and relic oyster reefs southeast of Marsh Island buffer water exchange between the big bays and the Gulf of Mexico. Wetlands in this basin are relatively stable, and wetland stress tends to be localized as opposed to basins further east where large regions are sediment starved and rapidly subsiding.

The principal hydrologic features of the basin include the Vermilion River, Charenton Canal, the GIWW, the natural levee ridges of the Vermilion River and Bayou Teche, East and West Cote Blanche Bays, and Vermilion Bay. The Vermilion River has an average discharge of 1,016 cubic feet per second (cfs), and provides a moderate amount of sediment to the bays. The amount of fresh water and sediments flowing down the Vermilion River is greatly influenced by rice farming. Water from Bayou Teche and the Lake Fausse Pointe area enters the bays via Charenton Canal. The GIWW brings fresh water, sediment and nutrients into the basin from the Atchafalaya River system. East and West Cote Blanche Bays are less than 10 feet deep and partially sheltered from the Gulf of Mexico by Marsh Island and the Atchafalaya River's extensive underwater delta. Fresh water, nutrients and sediments enter these bays and some even reach Vermilion Bay via westward transport from Atchafalaya Bay. Vermilion Bay is less than 10 feet in depth and is sheltered from the gulf by Marsh Island. However, significant water exchange occurs between Vermilion Bay and the gulf through Southwest Pass.

The bays of the Teche/Vermilion Basin are dominated by Atchafalaya River discharge that has a relatively high suspended sediment load. Fresh water from the Atchafalaya River system enters the Teche/Vermilion Basin in four ways: westward movement through Atchafalaya Bay, westward movement through the GIWW, the diversion into Bayou Teche and the Vermilion River through Bayou Courtableau, and from Fausse Point Basin through Charenton Canal. A limited flow of fresh water, sediments, and nutrients from the Mermentau Basin enters the Teche/Vermilion Basin through the Leland Bowman Lock and Schooner Bayou Control Structure on the GIWW. Table 1 shows the minimum and maximum freshwater and suspended sediment loads entering and potentially available to the basin.

Table 1. Water and Sediment Discharges, Averaged Over 1982-1991.

	Water (cubic feet per second)		Suspended Sediment (tons per day)	
	Max	Min	Max	Min
Lower Atchafalaya, Morgan City	274,200	55,190	349,500	16,300
Wax Lake Outlet, Calurnet	158,400	31,450	203,990	8,332
Vermilion River, Perry*	7,974	536		
Bayou Teche, St. Marfinville	1,969	137		

* 7-year averages, 1985-1991

Tides along the Teche/Vermilion coast are generally semi-diurnal, with two highs and two lows per day. The tidal range is about 2 feet on the gulf side of Southwest Pass and 1.6 feet on the bay side. Wind greatly affects water levels and movement, especially during the passage of cold fronts from November through April. Strong northerly winds force water out of the shallow bays, depressing water levels for an average of 5-8 days following the passage of each cold front.

Salinities in the Teche/Vermilion Basin vary greatly, primarily because of freshwater inputs from the Atchafalaya River during the spring. The average salinity in Vermilion Bay is 4.2 parts per thousand (ppt), although Southwest Pass allows the entry of salt water from the gulf that can create a steep salinity gradient in Vermilion Bay in the summer and fall. The average salinity in West Cote Blanche Bay is 2.7 ppt, and the average salinity in East Cote Blanche Bay is less than 1 ppt.

VEGETATION AND SOILS

Table 2 and Plate 1 indicate habitat types in the basin. Bald cypress/tupelo gum swamp, defined as coastal wetlands, comprise approximately 5 percent of the basin. Fresh marsh, consisting predominantly of maidencane, water hyacinth, pickerelweed, alligatorweed, bulltongue, and pennywort, makes up 14 percent of the basin. Fresh marsh salinities usually range from 0.1 to 3.4 ppt, with a mean salinity of 1.5 ppt. Intermediate marsh, consisting of wiregrass, bulltongue, deer pea, wild millet, bullwhip, and sawgrass, makes up 11 percent of the basin. Salinity levels in intermediate marshes range from 0.5 to 8.3 ppt (mean of 3.3 ppt) with some tidal influence. Brackish marsh, consisting of wiregrass, seashore saltgrass, three-cornered grass, coco, and widgeongrass, accounts for 36 percent of the basin. Salinities range from 1.0 to 18.4 ppt (mean 8.0 ppt) with daily tidal influences. Saline marsh, consisting of smooth cordgrass, seashore saltgrass, and black rush, accounts for less than 3 percent of the basin. Salinities range from 8 to 29 ppt (mean of 16.0 ppt), with daily tidal fluctuations.

Marsh soils are generally highly organic peats. New soil continually forms on the marsh surface; otherwise the marshes would gradually drown because of subsidence and sea level rise. Marsh soil formation in Louisiana depends directly on plant production to produce peat, and indirectly on mineral sediment that promotes plant growth (Nyman et al. 1993).

Table 2. Habitat Distribution in the Teche/Vermilion Basin.

Habitat Type	Cote Blanche Bays (acres)	Vermilion Bay (acres)	Marsh Island (acres)	Total (acres)
Fresh Marsh	45,621	8,419	0	54,040
Intermediate Marsh	3,072	37,605	0	40,677
Brackish Marsh	0	86342	51,538	137,880
Saline Marsh	0	2.675	7.695	10.370
Subtotal Marsh	48,693	135,041	59,233	242,967
Cypress Swamp	12,483	6,715	0	19,198
Other Land	20311	48,211	477	68,999
Water	7,640	29391	13,592	50,623
Total Area	89,127	219,358	73,302	381,787

U.S. Fish and Wildlife Service GIS Data Base

FISH AND WILDLIFE RESOURCES

Over 400,000 waterfowl winter in the Teche/Vermilion Basin; about 87 percent utilize the fresh marshes. Waterfowl hunting, as well as the harvest of alligators, muskrat, and nutria, contribute to the local and state economy. Threatened and endangered species include the Louisiana black bear, bald eagle, Arctic peregrine falcon, brown pelican, piping plover, and several species of sea turtles.

Fisheries resources are a vital component of the economy of the area. In fresh and low-salinity areas, catfishes, gars, and freshwater drum are commercially harvested. Those areas also support a recreation fishery for largemouth bass, sac-a-lait, other sunfishes, and catfish. The basin marshes provide valuable nursery and foraging habitat for blue crabs, shrimp, and many economically-important finfish species such as gulf menhaden, red drum, Atlantic croaker, spotted and sand seatrout, and southern flounder. Oyster harvesting is becoming limited because of burial by muds from the Atchafalaya River as well as contamination from point and nonpoint sources. Oysters are currently harvested from Southwest Pass.

ECONOMIC RESOURCES

Five ports contribute significantly to the economy of the Teche/Vermilion Basin Intracoastal City, Abbeville, Delcambre, Port of West St. Mary and Port of New Iberia. Intracoastal City, Port of Iberia, and Port of West St. Mary, in particular, service a substantial oil and gas industry and commercial fishing industry.

Fishing, both commercial and recreational, is an important economic endeavor in this basin. This basin contains some of the most important commercial fishery ports in the nation, which helps make Louisiana the most important of the lower 48 states in commercial fishery landings (NMFS 1992:4). Averages of 1979 through 1989 commercial landings for the Teche/Vermilion Basin and Atchafalaya Bay are: brown shrimp $24,750,000, white shrimp $17,400,000, oysters $4,200,000, and menhaden $14,850,000. The commercial fishing port at Intracoastal City averaged 197.2 million pounds per year from 1989 through 1991, which ranks it sixth in the nation (NMFS 1992:5). The commercial fishing port at Delcombe averaged $15,000,000 per year during the same period, which ranks it thirty-third in the entire nation (NMFS 19925). These

activities depend upon wetlands to provide food and habitat for fish during part of their life cycle (e.g. Deegan et al. 1990).

COASTAL WETLANDS PROBLEMS

The Teche/Vermilion Basin is a relatively stable area because it is at the endpoint of delta evolution and the more delicate wetlands deteriorated centuries ago (Coleman and Gagliano 1964). The growth of the Atchafalaya River Delta is also gradually freshening this basin, and Chabreck and Linscombe (1982) found that saltwater intrusion was not common here. However, geomorphologic and hydrologic conditions were altered by navigation and petroleum access canals and spoil banks and levees.

The effects of canals, spoil banks, and levees varies greatly from place to place, but generally they have created artificial barriers between wetlands and wetland maintenance processes, or removed natural barriers between wetlands and wetland decay processes. Interior marshes were traditionally maintained by annual spring flooding with fresh water and might deteriorate when exposed to increasing marine conditions (e.g. Sasser et al. 1986). This deterioration might occur only in marshes with low soil mineral matter (Nyman et al 1990). However, marshes near the gulf benefit from linkage with the gulf because winter storms deliver sediments to those marshes (Reed 1989). Many landowners have responded to these large scale alterations by managing hydrologic conditions on a small scale with marsh management. It is possible that some of these management efforts are not beneficial, particularly older ones; marsh management is an actively evolving field.

Some wetland loss might also be related to herbivory. Moderate herbivory alone is not believed to cause permanent wetland loss, but it may be the "straw that brakes the camel's back" in marshes experiencing additional stresses such as flooding or saltwater intrusion.

Wetland loss occurs primarily as either shoreline erosion or in isolated hotspots. Hotspots are defined as areas that experience rapid loss relative to other marshes within this basin. These hotspots are presumed to originate from hydrologic changes that alter the balance between the marsh maintenance and deterioration processes, but the specific causes vary from place to place. Although the bays are relatively sediment-rich, canals and spoil banks have increased tidal energy in some areas and impounded other areas. Thus, some areas have become isolated from sediment input whereas tidal exchange removes more sediments and soil material than is introduced in other areas. Accidental impoundment also causes some areas to flood excessively. The hotspots include the south central marshes of Marsh Island, interior marshes on Point Marone, marshes northwest of Vermilion Bay and marshes on the State Refuge and Paul J. Rainey Wildlife Refuges (Figure 2).

Shoreline erosion on the large bays is mainly caused by natural wave energy. Wave energy has gradually increased over the centuries because the bays are naturally getting deeper because of the very slight but constant subsidence and global sea-level rise. Wave energy is also believed to have been greatly accelerated in this century because humans reduced the size of the barrier oyster reefs that shielded the large bays from wave and tidal energy in the Gulf of Mexico. Severe shoreline erosion occurs on Marone and Redfish Points, Shark Island and on the shore of Weeks Bay. However, the bays are beginning to gradually fill with sediments originating from the Atchafalaya River as the delta lobe cycle enters the wetland creation phase (Coleman and Gagliano 1964). Erosion along the GIWW and other navigation canals also causes wetland loss. It

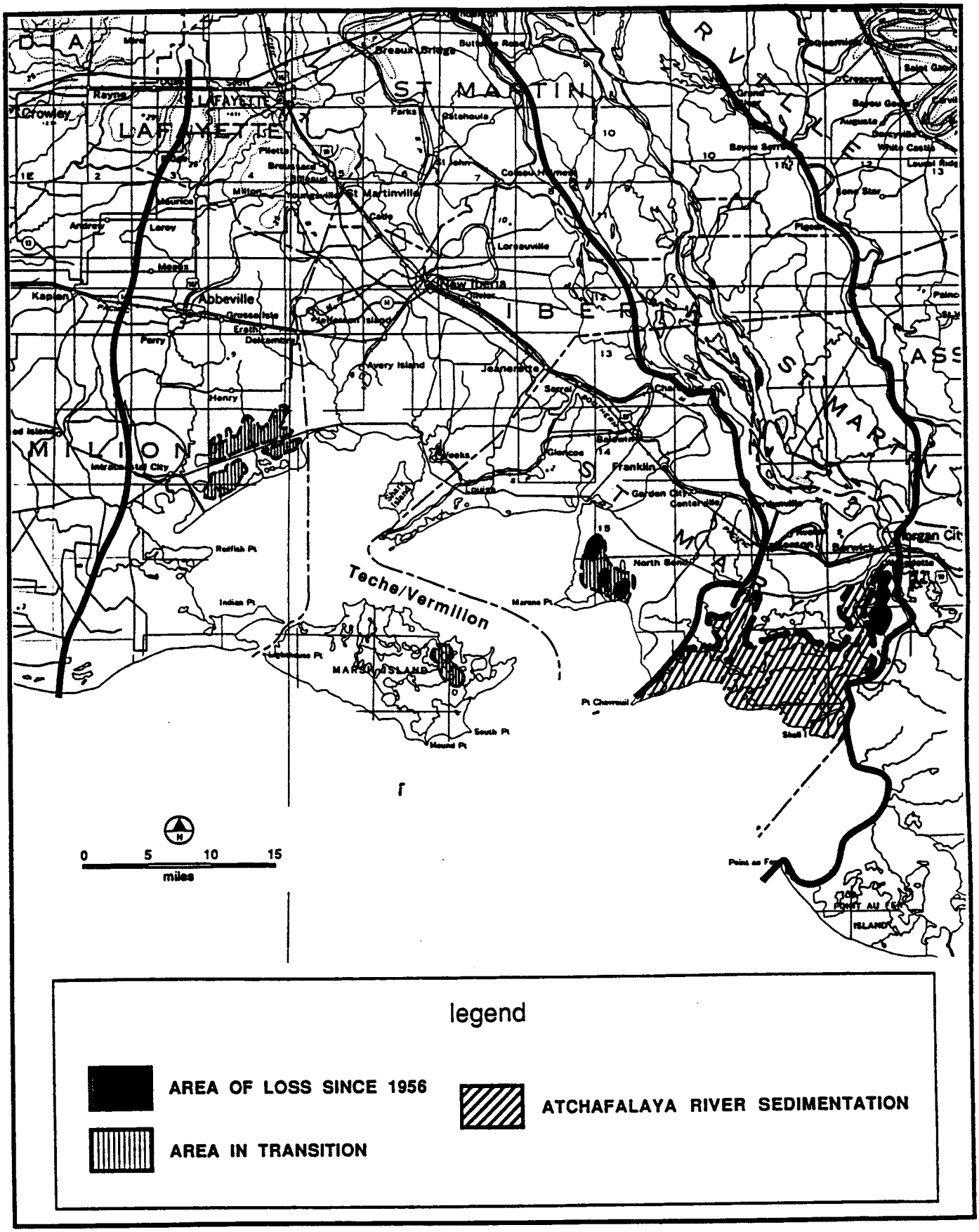

Figure 2. Primary areas of wetland habitat change in the Teche/Vermilion Basin

is caused by boat wakes and water surges associated with the passage of large vessels.

Despite the fact that the bays are slowly filling and that shoreline erosion will likely slow someday stop, some erosion can greatly affect marsh loss. Some shorelines form natural barriers between dynamic water bodies, such as bays and navigation channels, and the relatively isolated marsh ponds and bayous of the marsh interior. In other areas, shoreline erosion is rapid enough to cause the direct loss of significant wetlands. These two situations indicate critical shorelines.

The Teche/Vermilion Basin lost 42,293 acres of marsh since 1932. Nearly half of this loss occurred between 1951 and 1974. Dunbar et al. (1992, p. 27) stated that "...natural land loss rates will probably continue to decrease slowly until a background rate is reached. The land loss rate for the 1930's to 1950's time period (approximately 0.17 percent per year land loss) may be representative of the natural background rate because it reflects the land loss rate in the coastal area prior to the major impacts from man's activities." However, the actual land loss rate will be somewhat higher because of human alterations since the 1930's. Discrete areas are still in need of immediate attention. For example, the shoreline of Vermilion Bay from Mud Point to Point Champlain is retreating as much as 15 feet per year and wetlands losses are occurring in the Cote Blanche area due to manmade disruptions in hydrological conditions.

FUTURE WITHOUT-PROJECT CONDITIONS

WETLAND CHANGES

Over the next 20 years, 14,700 acres or four percent of the marsh (based on 1988 marsh acres) will be lost unless preventative measures are taken (Table 3). Within the next 50 years, 36,750 acres or an additional 10 percent of the marsh will be lost. By this time almost a quarter of the wetlands in the basin will have converted to shallow open water (Table 3). In 50 years, shoreline erosion will remove portions of Marone and Redfish Points. Shark Island will be reduced in size, and Weeks Bay will be larger. The interior marshes on Marone Point, those north and south of the GIWW between the Vermilion River Cutoff and Tigre Lagoon, the south central marshes on Marsh Island, and marshes on State and Rainey refuges will become shallow ponds.

Table 3. Projected Marsh Loss in the Teche/Vermilion Basin.

Measured Loss 1932-1990	Projected Loss in 20 years		Projected Loss in 50 years	
	(Acre)	(Percent)	(Acre)	(Percent)
42,293	14,700	6.1	36,750	15.1

FISH AND WILDLIFE RESOURCES

Wetland loss is currently causing an export of organic matter which sustains a very high biological productivity. Productivity will decline further as vegetated wetlands are lost and organic matter production decreases below the threshold needed to sustain such high productivity. Thus, wildlife and fisheries habitat will decrease, which will cause decreases in wildlife and fisheries populations.

ECONOMIC RESOURCES

As shorelines retreat and wetlands are lost, flooding problems will increasingly impact economic activities throughout the basin. The eventual loss of wetlands and commensurate decrease in biological productivity will reduce commercial and recreational fisheries because approximately 95 percent of the fishery landings in the northern Gulf of Mexico, by value, are composed of estuarine-dependent species. As noted, this basin contains two of the most active commercial fishery landing ports in the nation.

PLAN FORMULATION

PLANNING OBTECTIVES FOR THE BASIN

Objectives were developed based on problems, needs, opportunities and concerns of public, state, and local interests. New wetlands will be created when possible, but there are few creation opportunities in this basin and they depend largely on the amount of fresh water and sediments originating from the Atchafalaya River. Fortunately, the stable nature of the basin facilitates wetland protection. Protecting wetlands will require that three key objectives are established.

One key objective is to maximize the flooding of marshes with flowing, fresh, sediment-rich water. This will protect existing wetlands against saltwater intrusion and introduce mineral nutrients that promote plant growth. Vigorous plant growth helps bind existing soils and creates new soil on the existing marsh surface, which counters subsidence and sea level rise (Nyman et al. 1993). Flooding each spring with shallow flowing fresh water should also flush out salts that had accumulated during the previous summer when water salinity was greater.

Another key objective is to slow, stop, or reverse marsh loss in hot spots. Hot spots should be addressed as quickly as possible because it will generally be more expensive to restore lost marshes than to protect existing marshes.

A third key objective is to protect critical shorelines. As noted, critical shorelines are those that are eroding relatively rapidly or that form natural barriers between interior marsh ponds and dynamic water bodies such as bays and navigation channels. A fourth objective is to reduce the moderate but widespread shoreline erosion in the basin.

STRATEGIES CONSIDERED

STRATEGY 1

This long-term strategy will increase spring flooding and sedimentation on a regional scale. This involves diverting more freshwater and sediments from the Atchafalaya River into this basin via Bayou Teche, the Vermilion River, and GIWW. Increased sediment delivery to the Wax Lake Delta in the Atchafalaya Basin should also contribute to this strategy because sediment delivery would likely increase in East Cote Blanche Bay and eventually cause new wetlands to be created. Increasing fresh water and sediment introduction to the Teche/Vermilion Basin would greatly benefit from increased discharge into the Atchafalaya River at Old River Control, but does not depend on it. It might be necessary to modify or remove some water control structures in the marsh that currently prevent salt water entry during summer so that they can also allow marsh flooding with fresh water during the spring.

STRATEGY 2

This strategy will increase spring flooding and sedimentation on a local scale. Specific actions will vary depending on local conditions, but this will primarily require that marshes are not completely surrounded by levees too high to be topped by spring floods. This technique may be most effective where spring flooding depths are generally greater than summer high tide depths. Lowering spoil banks rather than gapping them may allow spring floods and winter storm water widespread access to some interior marshes, and still prevent significant tidal flooding with saltier water during the summers. Some saltwater entry could be tolerated because the marshes would be flushed with fresh water the following spring.

Innovative techniques are needed to combine this strategy with marsh management. For example, flap-gated control structures without encircling levees may allow flooding of the marsh by spring floods and winter storms, but restrict salt-water entry during the summer. This type of management was recently implemented by the Louisiana Department of Wildlife and Fisheries and the Louisiana Department of Natural Resources at the Marsh Island Wildlife Refuge as part of the CWCR for 1992-1993 (PTV-6).

Enhancing sediment accumulation in shallow water areas to create new marshes may also be possible on a local scale. -New marsh creation in bays might also benefit adjacent marshes because the new wetlands may reduce wave energy and shoreline erosion of adjacent marshes.

STRATEGY 3

Marsh loss in hot spots will be slowed, stopped or reversed. Addressing hot spots will require site specific techniques in different areas because causes of wetland loss and the availability of different counter measures vary throughout the basin. Detailed planning to determine the cause of marsh loss and available remedies at each specific hot spots would therefore be an important part of this strategy. Tools to reduce loss in hot spots include sediment trapping, hydrologic restoration, and freshwater diversion.

STRATEGY 4

Critical shorelines will be stabilized. As noted, even moderate shoreline erosion can have dramatic effects on wetland loss when it allows relatively isolated marsh drainage systems to artificially link up with dynamic water bodies such as navigation canals and the large bays. Preventing erosion on these shorelines and those where erosion is particularly rapid requires a variety of methods and independent projects. Beach nourishment, beneficial use of dredged material, and sediment trapping would be the preferable techniques, but it may be necessary to use hard structures in some cases. One examples that has worked are brush fences, which have trapped sediment in various basins. Another example is limestone dikes, which prevented erosion and promoted sediment accumulation at Blind Lake in the Mermentau Basin. It may also be beneficial to investigate innovative techniques to find more cost-effective methods.

RATIONALE FOR SELECTED PLAN

All strategies were adopted as part of the basin plan because all strategies were found to be complementary (Figure 3A). However, no projects utilizing Strategy 1 are currently included in the plan because detailed planning and coordination with the Atchafalaya Basin is required before any realistic projects can be proposed. This is an important goal because introducing additional water and sediments from the Atchafalaya River on a regional scale may be the most cost effective, beneficial action possible in terms of marsh protection as well as marsh creation. Demonstration and pilot projects that evaluate components of this strategy are high priority, short term goals. One of the first steps will be completing the sediment budget of the Atchafalaya River.

Although no projects addressing Strategy 1 are currently proposed, there are many opportunities to restore more natural hydrologic conditions on local scale, i.e., Strategy 2. One example is the Little Vermilion Bay Sedimentation Project (XIV-19) that speeds sediment accumulation. Another example is the Cote Blanche Hydrologic Restoration (TV-4), which slows shoreline erosion, restores hydrologic barriers between interior

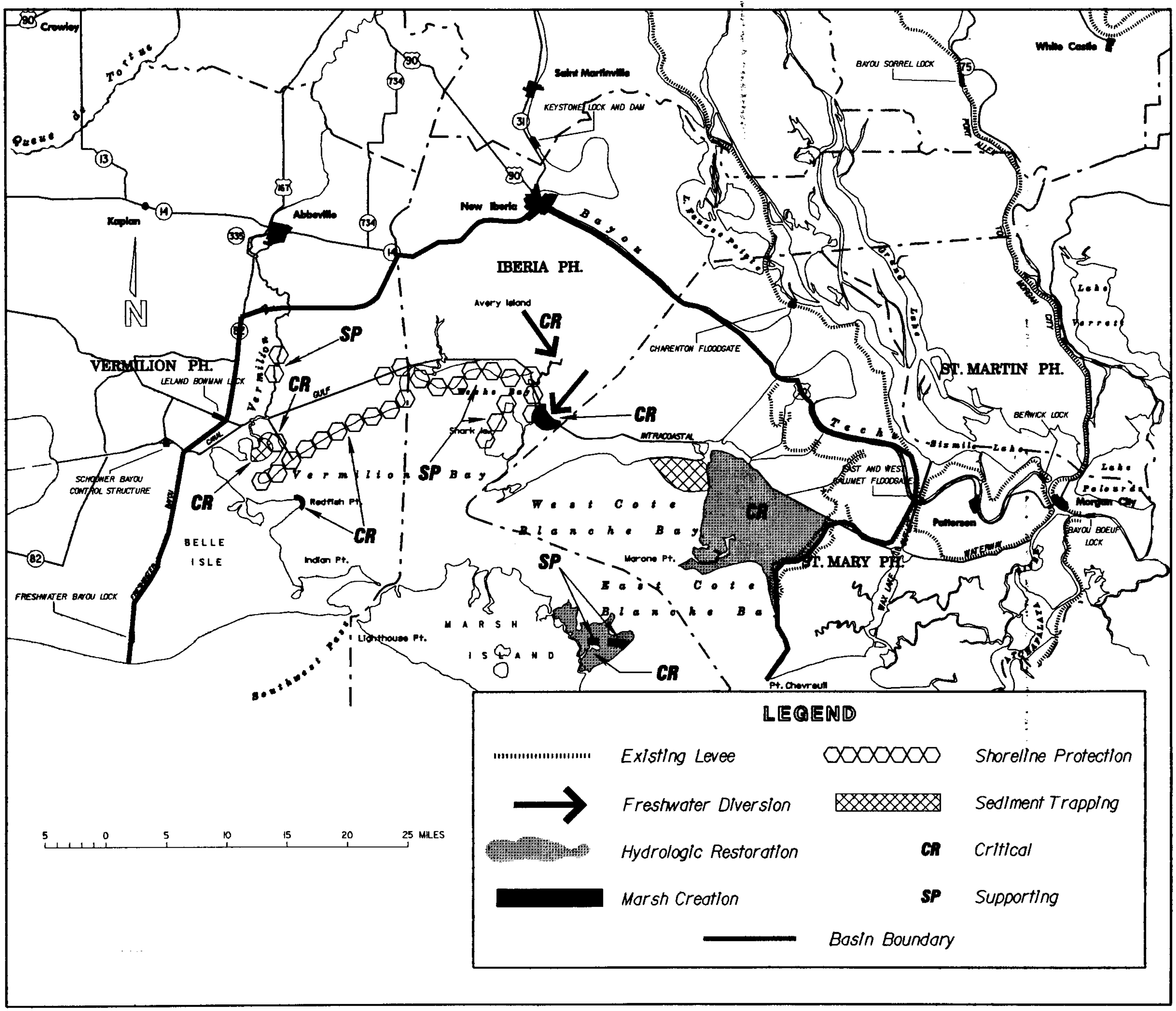

Figure 3A. Teche/Vermilion Basin, Strategy Map.

marshes and the bays, and controls water exchange between the GIWW and the project area, but is not completely surrounded by levees. The net result is that this marsh is protected from artificial water exchange and shoreline erosion, but can still flood during spring floods and winter storms.

Maximizing spring flooding with fresh, sediment rich waters on a regional scale (Strategy 1) may someday reverse marsh loss in hot spots. But it is important to begin protecting these areas from marsh loss now, i.e., Strategy 3, because if they convert to ponds, then they will have to be restored and that is much more expensive. Specific causes of wetland loss must be determined in each hot spot first, as in PTV-13, PTV-14, and PTV-21.

Despite the fact that the bays are gradually filling and that shoreline erosion will someday stop, there are substantial benefits to protecting some current shorelines. Therefore, several projects addressing Strategy 4 were included in the plan. This strategy is the primary focus of projects such as the Marsh Island Canal Filling, Shoreline Stabilization, and Hydrologic Restoration

Projects that maximize spring flooding or that address hot spots and critical shorelines were classified as critical because it is more cost effective to prevent future loss than to restore previous loss. Projects addressing the moderate but widespread shoreline erosion were classified as supporting. It will be necessary to quantify shoreline erosion rates in the basin to determine what rates are normal and what rates are above normal. Projects may be reclassified once this information is available.

COMPONENT PROTECTS

Projects included in the Teche/Vermilion Basin Plan to date are listed in Table 4. Additional projects can be recommended in the future and incorporated into the plan if they address one of the basin strategies or respond to increased understanding of the processes operating in the basin or changing problems and opportunities. The projects in the plan are briefly listed below and described in the project description section of this appendix. Their approximate locations are given in Figure 3B.

DEVELOPMENT OF BENEFITS AND COSTS

The benefits for most projects should be considered preliminary because they were estimated according to a modified rapid-assessment Wetland Value Assessment (WVA) protocol. Furthermore, some preliminary estimates may be more accurate than others because the accuracy and amount of information available for the assessment varied among projects. More accurate estimates should become available as planning proceeds on different projects. Generally, information regarding shoreline erosion and marsh creation may be most accurate. Benefits resulting from hydrologic restoration and marsh management are more difficult to assess.

Cost estimates for all projects were done according to a generic CWPPRA cost formula that included the construction costs plus 12.5 percent for planning, engineering and design, 11.5 percent for supervision and administration, and 25 percent for contingencies, plus monitoring and operation/maintenance for 20 years. Estimates are only preliminary for some projects.

Projects that have already advanced from the basin plan to one of the first three Priority Lists have had complete, in-depth WVA analyses and a more rigorous and detailed estimation of construction, operation, and maintenance costs.

PRIORITY LIST PROTECTS

The first priority list contained the Vermilion River Cutoff Erosion Protection project (TV-3). This project is located on the northern shore of Vermilion Bay in Vermilion Parish and protects a critical shoreline and 65 acres of marshes.

The second priority list contained the Vermilion Bay/Boston Canal Shoreline Stabilization project (PTV-18/TV-9). This project will reduce shoreline erosion on the northwest shoreline of Vermilion Bay from Tigre Lagoon to Mud Point in Vermilion and Iberville Parishes and protect 378 acres of wetlands.

The third priority list contained the Cote Blanche Hydrologic Restoration project (TV-4). The objective of the project is to reduce shoreline erosion, excessive tidal fluctuation, and rapid tidal exchange to prevent the loss of interior marsh, develop a hydrologic regime conducive to sediment and nutrient deposition, and reestablish vegetation in eroded areas. The project will prevent the loss of 2,231 acres over its 20 year project life.

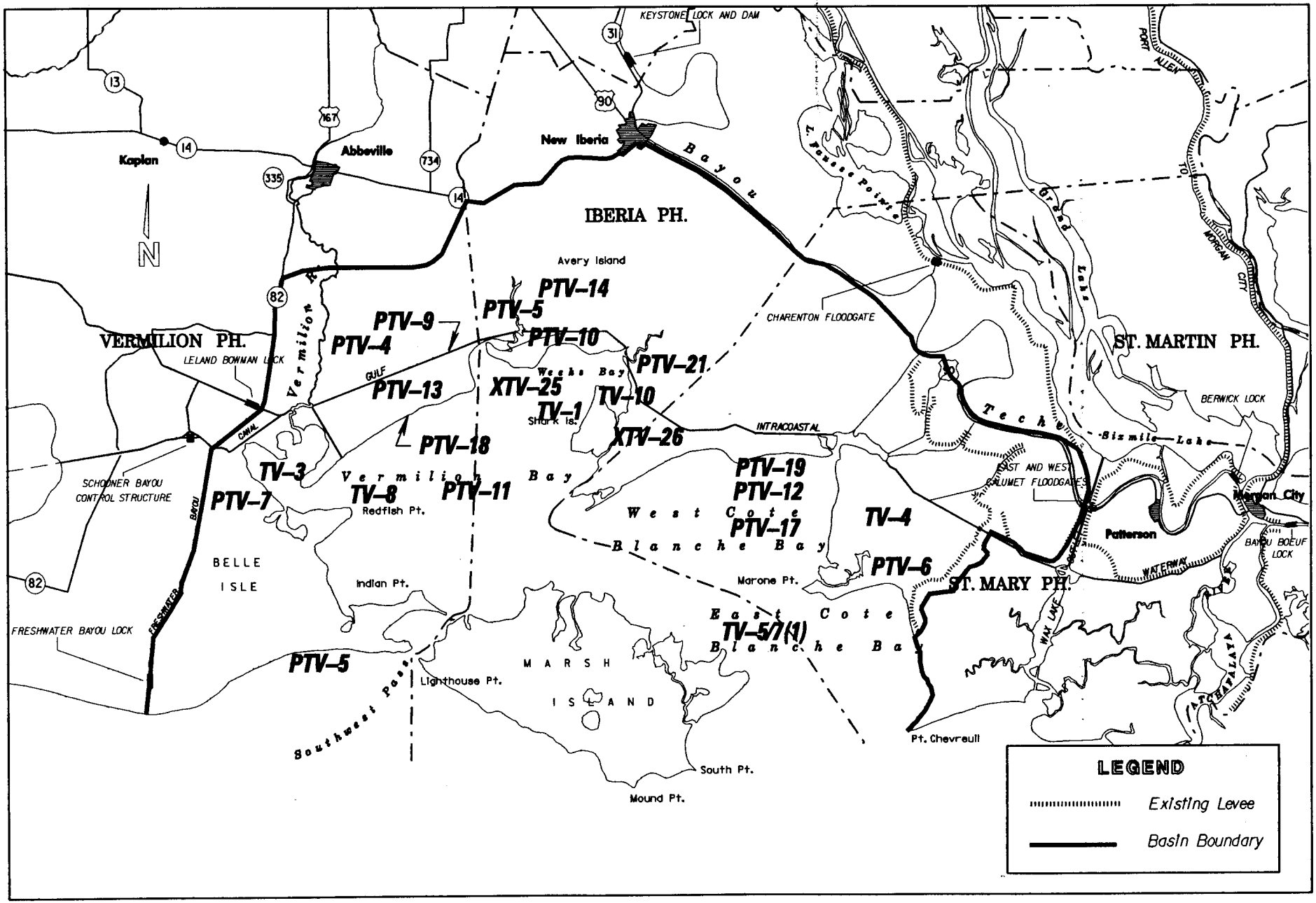

Figure 3B. Teche/Vermilion Basin, Project Locations.

Table 4. Summary of the Teche/Vermilion Basin Projects

Project No.	Project Name	Project Type	Priority List	Acres Created Restored, or Protected	Net Benefited Acres	Estimated Cost ($)	Cost Per Benefited Acre ($/Ac)
Critical Projects, Short-Term							
TV-1	Shark Island Shoreline Protect/Hyd. Restoration	SP/HR		457	591	7,559,000	12,800
TV-3	Vermilion River Cutoff Erosion Protection	SP	PPL 1	65	107	1,342,000	12,500
TV-4	Cote Blanche Hyd. Restoration	SP/HR	PPL 3	2,231	4,744	4,359,000	900
TV-5/7a	Marsh Island Canal Fill/Shore Stab./Hyd. Res.	SP/HR		512	1,090	2,328,000	2,100
TV-8	Redfish Point Shore. Prot./ Hyd. Res.	SP/HR		58	95	530,000	5,600
TV-10	Weeks Bay/GIWW Shore. Prot. /Hyd. Res.	SP/HR		406	1,422	4,993,000	3,500
PTV-19	Cote Blanche (Jaws)/Little Vermilion Bay Sed.	ST		27	505	600,000	1,200
XTV-26	Two Mouth Bayou Freshwater Diversion	FD		87	162	438,000	2,700
Subtotal: Critical Projects, Short-Term				3,840	8,720	22,149,000	
Critical Projects, Long-Term							
PTV-9	GIWW Shoreline Protection	SP					
PTV-10	Avery Canal Shoreline Protection	SP					
PTV-11	Restore Pipeline Plugs in Vermilion Bay	HR					
PTV-13	Marshes S. of GIWW, Vermilion River to Weeks Island	UK					
PTV-14	Marshes N. of GIWW, Vermilion River to Comm. Canal	UK					
PTV-17	Cote Blanche Outfall Management	HR					
PTV-21	Forested Area East of Weeks Island	UK					

Table 4. Summary of the Teche/Vermilion Basin Projects (Continued)

Project No.	Project Name	Project Type	Priority List	Acres Created Restored, or Protected	Net Benefited Acres	Estimated Cost ($)	Cost Per Benefited Acre ($/Ac)
Supporting Projects, Short-Term							
PTV-4	Vermilion River Shore. Prot., Live Oak	SP		7	70	300,000	4,300
PTV-8	Avery Canal/Weeks Isl. Veg. Plantings	VP		128	173	242,000	1,400
PTV-18/TV-9	Vermilion Bay/Boston Canal Shore. Protection	SP/ST/VP	PPL 2	378	397	829,000	2,100
XTV-11	Freshwater Bayou Bank Stab	SP		63	63	2,012,000	31,900
XTV-25	Oaks Canal Shoreline Protection	SP		120	125	1,069,000	8,600
XTV-27	Freshwater Bayou Bank Stab	SP		61	61	1,925,000	31,600
XTV-28	Freshwater Bayou Bank Stab	SP		91	91	2,888,000	31,700
XTV-29	Freshwater Bayou Bank Stab	SP		83	83	2,625,000	31,600
Subtotal: Supporting Projects, Short-Term				930	1,060	11,890,000	
Supporting Projects, Long-Term							
PTV-6	Bayou Carlin Bank Protection	SP					
PTV-7	Little Vermilion Lake Shoreline Protection	SP					
PTV-12	East/West Cote Blanche Bays Vegetative Plantings	VP					
Demonstration							
PTV-5	Cheniere au Tigre Shoreline Protection	SP					
Total Teche/Vermilion Basin *				4,770	9,780	34,039,000	

FD Freshwater Diversion
HR Hydrologic Restoration
SP Shore or Bank Projection
ST Sediment Trapping
VP Vegetative Planting
UK Unknown
* Total cost and benefits for the selected plan include only Critical Short-Term and Supporting Short-Term projects.

CRITICAL SHORT-TERM PROTECTS

Projects that maximize spring flooding, address hot spots, or preserve shorelines that serve as barriers between interior marsh drainage systems and dynamic water bodies such as bays and navigation channels were classified as critical short term. These projects are:

TV-1 Shark Island Shoreline Protection/Hydrologic Restoration
TV-3 Vermilion River Cutoff Erosion Protection
TV-4 Cote Blanche Hydrologic Restoration
TV-5/7 Marsh Island Canal Filling/Shoreline Erosion/Hydrologic Restoration
TV-8 Redfish Point Shoreline Protection/Hydrologic Restoration
TV-10 Weeks Bay/GIWW Shoreline Protection/Hydrologic Restoration
TV-13 Marshes South of GIWW, Vermilion River to Weeks Island
TV-14 Marshes North of GIWW, Vermilion River to Comm. Canal
TV-19 Cote Blanche (Jaws)/Little Vermilion Bay Sedimentation
TV-21 Forested Area East of Weeks Island
XTV-26 Two Mouths Bayou Freshwater Diversion

CRITICAL LONG-TERM PROJECTS

Critical long-term projects address relatively rapid shoreline erosion and seek to restore more natural hydrologic conditions in areas where hot spots are anticipated but have not yet developed. These projects are:

PTV-9 GIWW Shoreline Protection
PTV-10 Avery Canal Shoreline Protection
PTV-11 Restore Pipeline Plugs in Vermilion Bay
PTV-17 Cote Blanche Outfall Management

SUPPORTING SHORT-TERM PROTECTS

Supporting short-term projects address widespread shoreline erosion in areas where the erosion rate is typical for the basin or where interior marsh ponds and bayous are not in imminent danger of establishing new connections with navigation canals or large bays. These projects are:

PTV-8 Avery Canal/ Weeks Island Vegetative Plantings
PTV-18/Vermilion Bay/Boston Canal Shoreline Protection
TV-9
PTV-4 Vermilion River Shoreline Protection near Live Oak Plantation
XIV-11 Freshwater Bayou Bank Stabilization 1
XIV-25 Oaks Canal Shoreline Protection
XTV-26 Freshwater Bayou Bank Stabilization 2
XIV-27 Freshwater Bayou Bank Stabilization 3
XIV-28 Freshwater Bayou Bank Stabilization 4

SUPPORTING LONG-TERM PROJECTS

Supporting long-term projects also address widespread shoreline erosion in non-critical areas but are believed to have slower rates of erosion than short-term projects. These projects are:

PTV-6 Bayou Bank Protection
PTV-7 Little Vermilion Lake Shoreline Protection
PTV-12 East/West Cote Blanche Bays Vegetative Plantings

DEMONSTRATION PROJECTS

Demonstration projects illustrate new tools for achieving basin strategies. Only one demonstration project has been proposed; the purpose of the Cheniere au Tigre Shoreline Protection project (MV-5) is to determine the most effective method of enhancing the natural accretion of sediments in shallow water areas.

COST AND BENEFITS OF THE SELECTED PLAN

The predicted marsh loss for the Teche/Vermilion Basin over the next 20 years is 14,700 acres. Sixteen of the short-term projects proposed in the selected plan are expected to protect or create 4,770 acres of marsh which would prevent 32 percent of the predicted loss at a cost of $34,039,000 (Table 5). In addition, 9,780 acres of marsh and submerged aquatic vegetation will be enhanced. Costs and benefits of the other three short-term critical projects cannot be determined until the site-specific causes of marsh loss can be determined in each hot spot. The long-term projects could protect an additional 20 to 30 percent of the basin at a cost of another 25 to 30 million dollars.

Table 5. Estimated Benefits and Costs of the Selected Plan in the Teche/Vermilion Basin.

Project Classification	Net Acres Protected Restored	Percent Loss Prevented	Total Benefited Acres	Total cost ($)
Critical Short-Term	3840	26	8,720	21,149,000
Supporting Short-Term	930	6	1,060	11,890,000

Less than half of the marsh loss predicted to occur in this basin can be prevented with the projects listed in the plan. Additional efforts will therefore be needed to achieve no net loss of wetlands. Substantial gains may be possible by addressing marsh loss in the hot spots. However, the most beneficial action is likely to be maximizing spring flooding on a regional scale. In addition to slowing marsh loss processes of saltwater intrusion and sediment starvation, this would likely promote the creation of new wetlands. This is one of the few basins with substantial potential for wetlands creation, and every avenue to maximizing spring flooding should be explored.

KEY ISSUES

Several of the projects in the Teche/Vermilion Basin may negatively affect drainage, marine fisheries ingress and egress, and navigation. Sediment management is complicated and will require careful planning and monitoring to minimize negative impacts on other important activities in the basin. Marsh management and hydrologic restoration projects must be carefully developed, implemented and monitored. Although they may reduce marsh loss rates, they might also disrupt navigation or even increase ponding if not properly planned. Furthermore, they might impair fisheries access and production even when properly planned and otherwise successful. Innovative designs will be needed to prevent the marsh deterioration processes while at the same time allowing the marsh maintenance processes to function.

Shoreline protection along navigation channels should be undertaken where necessary. But there is some concern regarding widespread shoreline protection in the large bays. Landowners are understandably sensitive to all wetland losses, but widespread shoreline protection in the large bays may not be the most efficient use of resources because of the diffuse nature of the problem, the generally slow rate of erosion, and because there is much energy to overcome to slow this natural erosion. Furthermore, shore line erosion will likely slow as the large bays fill with Atchafalaya River sediments. It is therefore anticipated that stopping or slowing typical shoreline erosion will not generally be part of the basin plan.

CRITICAL SHORT TERM PROJECTS

TV-l SHARK ISLAND SHORELINE PROTECTION / HYDROLOGIC RESTORATION

Location.

Shark Island lies east of Vermilion Bay and its northern end is a peninsula between Weeks and Vermilion Bays in Iberia Parish (Figure 3B). The project area is 2,181 acre brackish marsh bordered on three sides by Weeks Bay and Vermilion Bay (Figure 4).

Problems and Opportunities.

Shark Island is experiencing serious erosion along its western shoreline and also along the eastern shoreline of the narrow dissected northern tip. Tidal scour and breakup of interior marsh adjacent to tidal streams is also evident. Along with supporting healthy brackish marsh, the island provides protection for Weeks Island and Cypremort Point by breaking up the long fetch across Vermilion Bay. Restoration features are designed to halt shoreline erosion, reduce ponding and accumulation of salts in the interior marsh east of Blue Point, and prevent the formation of a cut between the long access canal and Pirre Bayou.

Description of Project Features.

Approximately 20,900 linear feet of rock breakwaters with gaps and tie-backs at major streams and inlets along the west shore of Shark Island from Blue Point to Mud Point, timber pylons along 5,000 feet of the northeastern shoreline, an armored plug at the mouth of an access canal, excavation of four, 50-foot wide gaps in the spoil bank along the south side of the long access canal adjacent to an impounded marsh, two riprap plugs on a pipeline canal, a culvert with a fixed crest weir on the canal end and a flapgate on the bayou between the long access canal and Pirre Bayou.

Benefits and Cost.

The project is estimated to cost $7559,000 The project will create about 6 acres of new marsh and protect about 457 acres. Submereged aquatic vegetation (SAV) will cover an additional 50 acres and 84 acres will be enhanced for a total benefited acreage of 593. The cost per benefited acre is $12,800.

Effects and Kev Issues.

The project may impact fish production. The project must be designed to ensure adequate drainage. Navigation also is an issue.

Status.

The project is presently a conceptial state Coastal Wetlands Conservation and Restoration Program projects.

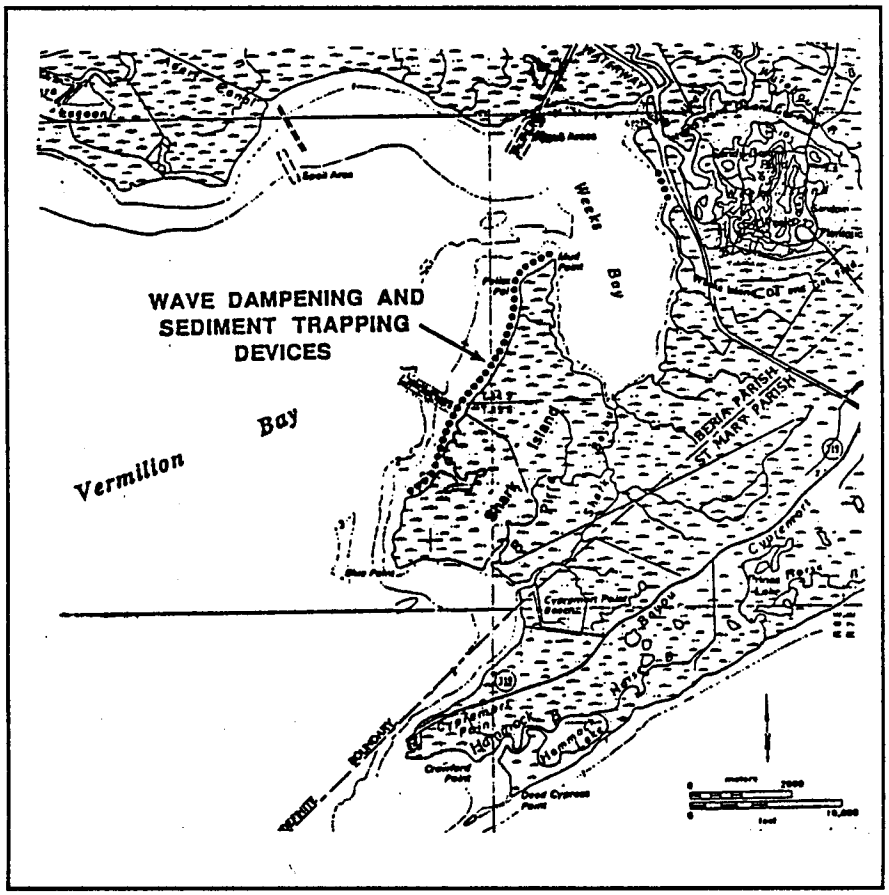

Figure 4. Features of the Shark Island Shoreline Protection/Hydrologic Restoration project (TV-1).

TV-2A HAMMOCK LAKE

Location.

The project area lies along the shore of West Cote Blanche Bay near Cypremort Point in St. Mary Parish in the eastern portion of the basin (Figure 3B).

Problems and Opportunities.

The shoreline that separates Hammock Lake from West Cote Blanche Bay has breached in 2 areas, allowing greater wave energy in Hammock Lake, which will likely increase shoreline erosion over a wide area (Figure 5).

Description of Features.

This project used discarded Christmas Trees to prevent trap sediments and prevent erosion of adjacent marshes.

Benefits and Cost.

Two hundred acres of wetlands are expected to benefit from the project.

Effects and Key Issues.

None.

Status.

This project was completed as part of the state Coastal Wetlands Conservation and Restoration Program.

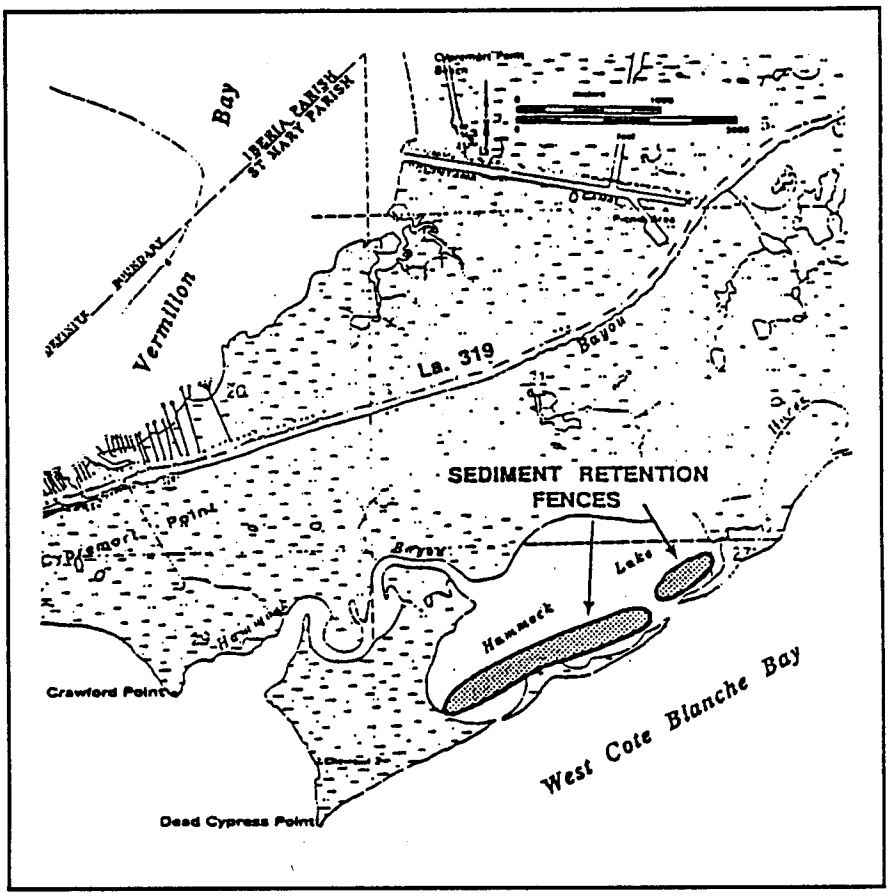

Figure 5. Features of the Hammock Lake project (TV-2A).

TV-2B YELLOW BAYOU WETLAND

Location.

The project area lies along the shore of East Cote Blanche Bay near Yellow Bayou in St. Mary Parish in the eastern portion of the basin (Figure 3B).

Problems and Opportunities.

This shoreline separates an interior marsh drainage system from East Cote Blanche Bay. Allowing this shoreline to retreat much further would increase the influence of the more dynamic bay waters on the more isolated interior marsh water way (Figure 6).

Description of Features.

This project prevents erosion. Course material is deposited in front of the shoreline to reduce wave energy and promote sediment accumulation. Vegetation is planted on the shoreline to further stabilize the shoreline.

Benefits and Cost.

The project is estimated to cost $1,523,000. Two thousand acres of wetlands are expected to benefit from the project.

Effects and Kev Issues.

None.

Status.

This project was completed as part of the state Coastal Wetlands Conservation and Restoration Program.

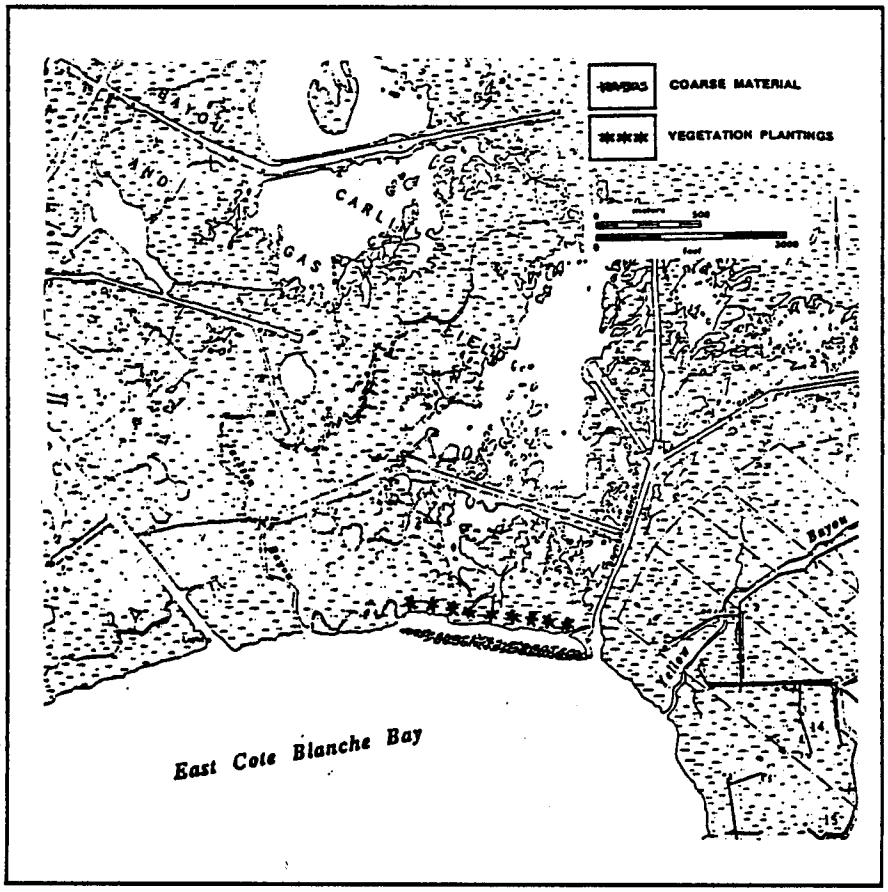

Figure 6. Features of the Yellow Bayou Wetland project (TV-2B).

TV-3 VERMILION RIVER CUTOFF EROSION PROTECTION

Location.

The project area lies along the Vermilion River Cutoff on the northern shore of Vermilion Bay in Vermilion Parish in the western portion of the basin (Figure 3B). The Vermilion River Cutoff is a 3-mile long navigation canal that connects the GIWW to Vermilion Bay (Figure 7).

Problems and Opportunities.

The bank of the Vermilion River Cutoff is rapidly eroding. This would increase the influence of the more dynamic navigation canal on the relatively more isolated Little Vermilion Bay and perhaps create a more direct hydrologic linkage between the cutoff and navigation canal noted at the western end of Figure 8.

The project will also take advantage of the opportunity offered by sediments during the spring flood season. Recent design changes will encourage sediment deposition in Little Vermilion Bay.

Description of Features.

This project prevents erosion but still allows sediment deposition during the spring flood. A rock dike will be placed along about 6,000 feet of the Cutoff. Most of this will be placed on the eastern bank. Only the junctions of the Cutoff with Vermilion Bay will be armored on the western bank. This is less armoring than originally proposed, but subsequent investigations have found that this erosion is primarily related to boat traffic rather than wind action. Furthermore, sediments are entering Vermilion Bay from the cutoff here. The modified plan will protect existing marsh against boat wakes, but still allow excess water to enter Vermilion Bay from the cutoff and deposit sediments there.

Benefits and Cost.

The estimated project first cost is $1342,000. Fifty-four acres of marsh will be protected from erosion. Eleven acres of marsh are expected to be created by vegetative plantings and subsequent sediment trapping. Submerged aquatic vegetation (SAV) are expected to establish on an additional 34 acres. Also, 8 acres would be enhanced for a total of 107 benefited acres. The cost per benefited acre is $12,500.

Effects and Kev Issues.

None.

Status.

This project was on the CWPPRA First Priority Project List. All the necessary environmental documentation has been optained except from the State Historic Protection Office, which is expected soon. Real estate actions should begin shortly. Construction should begin by the end of 1994.

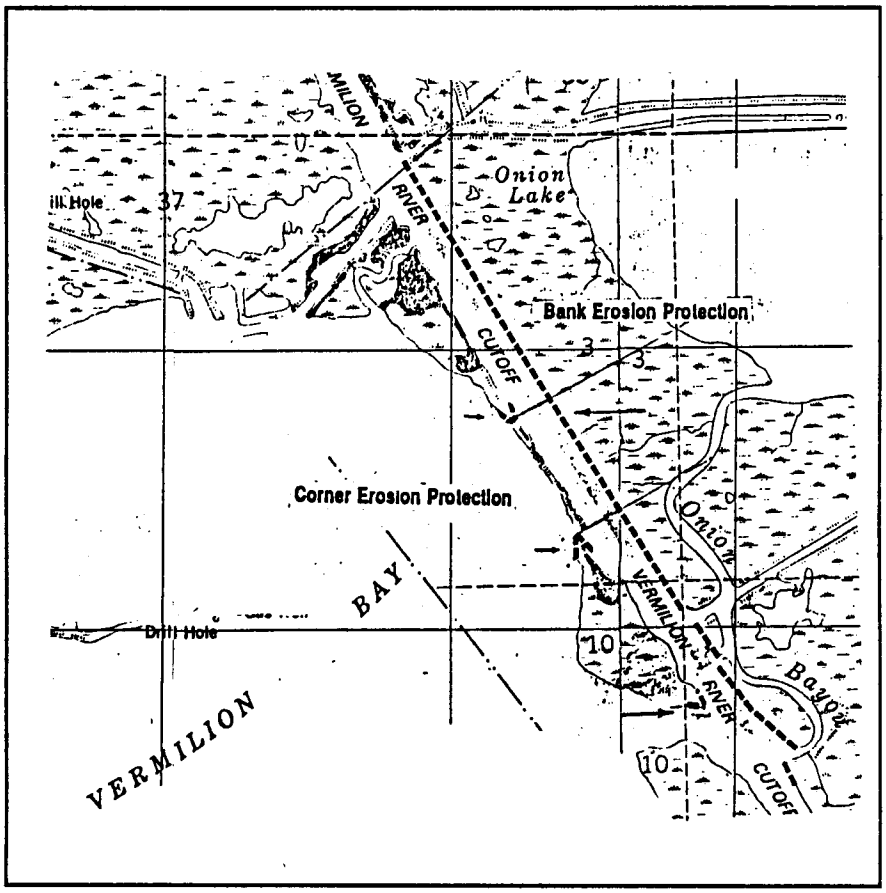

Figure 7. Features of the Vermilion River Cutoff Erosion Protection project (TV-3).

TV-4 COTE BLANCHE HYDROLOGIC RESTORATION

Location.

This project is located in the central part of the basin on West Cote Blanche Bay (Figure 3B). The project will affect 30,000 acres of marsh that are bounded by the GIWW on the north, Hwy. 317 on the east, and East and West Cote Blanche bays on the south and west (Figure 8).

Problems and Opportunities.

Increased tidal exchange between East and West Cote Blanche Bays and the interior marshes of the Cote Blanche wetlands because of construction of the GIWW and the numerous oilfield canals in the area has caused interior marsh loss. The southern shoreline of the area is eroding at the rate of 15 ft/yr. However, increasing amounts of freshwater are entering the area from the Atchafalaya River via the GIWW. As a result, marshes in the area have converted from brackish/saline in 1949 to fresh by 1988.

The primary objectives of the project are to 1) reduce future shoreline loss from wave erosion, 2) restore natural barriers between interior marsh ponds and dynamic water ways in canals and bays 3) develop a hydrologic regime conducive to sediment and nutrient deposition, and 4) reestablish vegetation in eroded areas.

Description of Project Features.

Major project features include 10,000 feet of marsh-level rock bulkhead along the East Cote Blanche Bay shoreline to halt erosion, low level rock weirs on major openings into East and West Cote Blanche Bays to moderate tidal exchange, and one way, flapgated water control structures between two major oil field canals and the GIWW to allow control of sediment and nutrient introduction.

Benefits and Cost.

The project is estimated to cost $4,359,000. The project would protect about 2,231 acres, submerged aquatic vegetation (SAV) would cover an additional 1,184 acres and 1,329 acres would be enhanced over a 20-year period for a total benefited acreage of 4,744 acres. The cost per benefited acre is $900.

Effects and Kev Issues.

There is disagreement as to whether interior wetland loss is caused by rapid water exchange or is primarily the result of subsidence. Furthermore, there is concern that restricting inflow of freshwater and sediments from the GIWW is the wrong way to decrease ponding. Restricting inflow reduces the amount of fresh water and sediments flowing throughout the affected wetlands during spring floods. The project will have to be on the cutting edge of marsh management technologies to insure that restricting tidal exchange in the second half of the year does not interfere with spring flooding in the first half of the year.

This project may impact or decrease marine fisheries production in wetlands within its boundaries. The project would have to be designed to allow navigation

(crew boat and barge traffic) to active oil well sites. The project should provide adequate water exchange capability to avoid ponding water in the interior wetlands.

Status.

This project is on the 3rd Priority Project List.

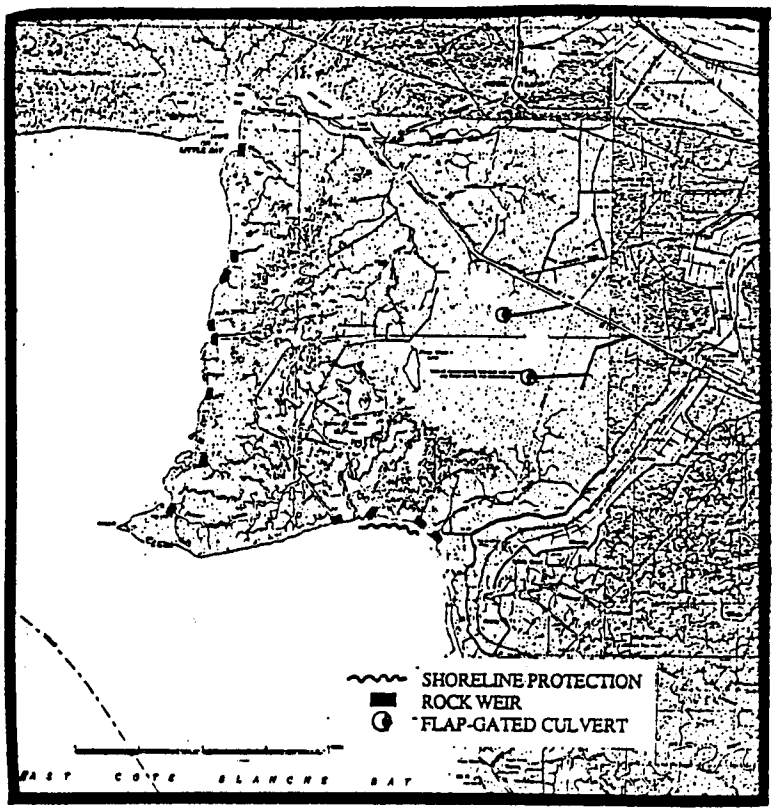

Figure 8. Features of the Cote Blanche Hydrologic Restoration project (TV-4).

TV-5/7 MARSH ISLAND CANAL PLUGGING, SHORELINE STABILIZATION, AND HYDROLOGIC RESTORATION

Location.

The project area encompasses approximately 6,697 acres of brackish marsh east of Bayou Blanc on the northeast tip of Marsh Island, which is located between Vermilion and West Cote Blanche bays and the Gulf of Mexico in Iberia Parish (Figure 3B). The project is primarily directed at Lake Sand and canals the lie in the surrounding marsh (Figure 9).

Problems and Opportunities.

Natural erosion and subsidence along the northeast Marsh Island shoreline have led to an almost complete loss of the north rim of Lake Sand, which is less than 20 feet wide along approximately 1,000 feet of shoreline. There is one major and two minor breaches that could easily develop into major openings into west Cote Blanche Bay during a single major coastal event. Lake Sand and a number of the other interior lakes on the north side of the island have historically supported a significant growth of SAV. Today these lakes are almost devoid of SAV due to the effects of increased tidal exchange and turbidity.

Breaches in the subsided spoil banks along nine oil field canals are allowing additional tidal exchange and tidal scouring to deteriorate the marsh around Lake Sand.

Shoreline erosion, tidal scour, and marsh breakup are evident east of Lake Sand, where the shoreline erosion rate is estimated to be 15-25 ft/yr.

Description of Project Features.

The primary objectives of this project are 1) to stabilize the northeastern shoreline of Marsh Island, including the north rim of Lake Sand, 2) to restore the historical hydrology of the area, and 3) protect the marshes around Lake Sand.

Major project features include plugging of the nine oil field canals and gapping the spoil banks around them to partially restore the historical hydrology, rebuilding the northern shoreline of Lake Sand using retaining dikes and suction dredged sediments from the adjacent bay to create marsh, and armoring the restored shoreline along the north rim of Lake Sand and the shoreline between Hawkins Bayou and East Pass with limestone revetment to halt erosion.

Benefits and Cost.

The project is estimated to cost $2328,000. The project would protect about 512 acres, SAV would cover an increased 283 acres, and 295 acres would be enhanced over a 20-year period for a total benefited acreage of 1,090 acres. The cost per benefited acre is $2,100.

Effects and Kev Issues.

A concern was raised that this project is only an attempt to impound marsh to improve wildlife habitat and thereby place barriers between the affected marsh and marsh maintenance processes. However, there will be no levees or water control

structures in the project area. Thus, marsh flooding with sediment rich waters will occur as will marsh drainage even after the project is completed.

TV-5/7 (Increment 1) will achieve many of the objectives of the more expensive TV-5/7, but will not create new brackish marsh. However, it is more cost effective in terms of cost per benefited acre.

Status.

This project will be a candidate for future CWPPRA Priority Lists and is part of the Restoration Plan.

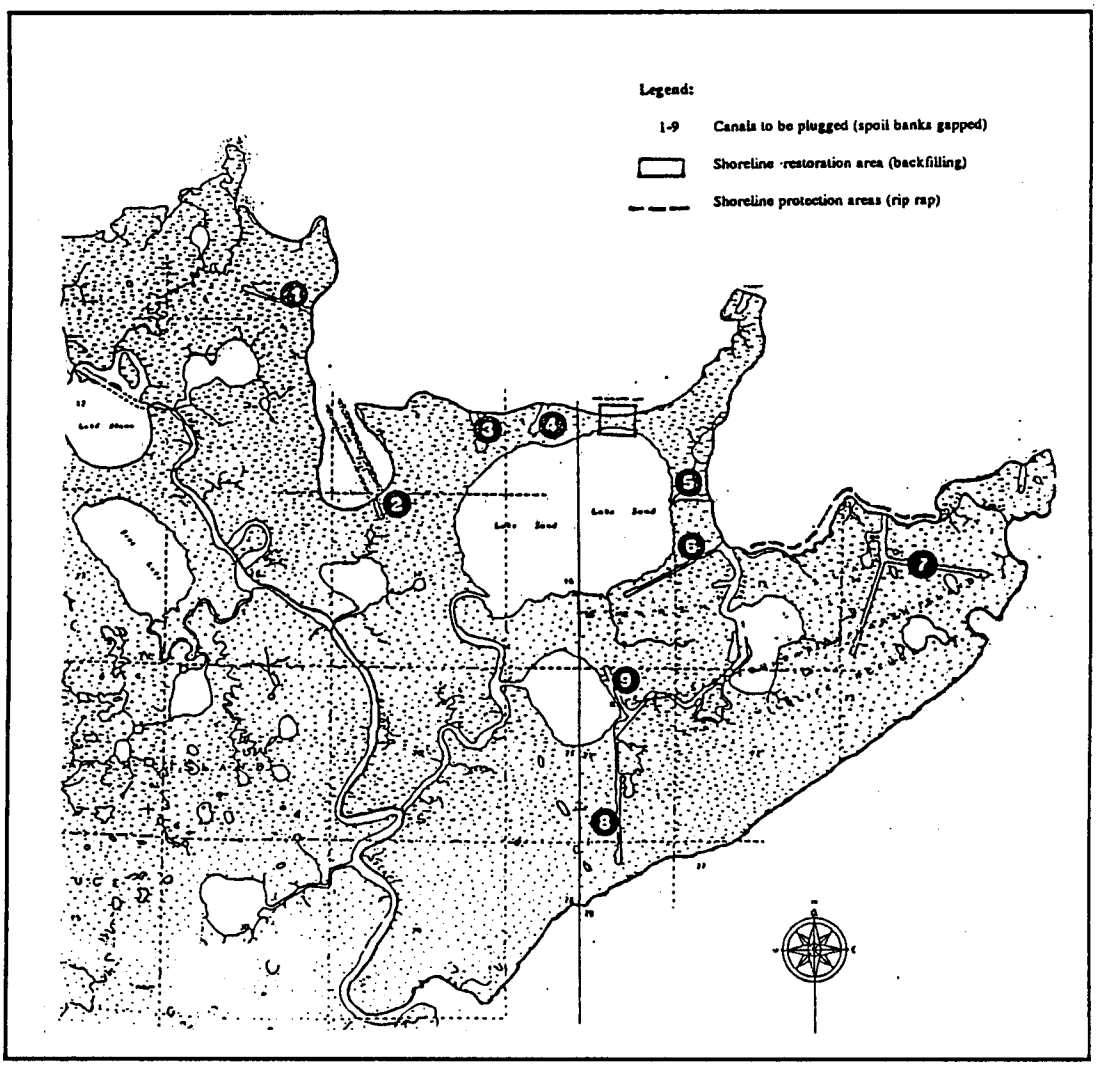

Figure 9. Features of the Marsh Island Canal Plugging, Shoreline Stabilization, and Hydrologic Restoration project (TV-5/7).

TV-8 REDFISH POINT SHORE PROTECTION AND HYDROLOGIC RESTORATION

Location.

Redfish Point is located at the tip of a peninsular of brackish marsh on the western shoreline of Vermilion Bay on the Louisiana State Wildlife Refuge and Game Preserve (Figure 3B). Approximately a half mile of shoreline will be protected at the most exposed portion of Redfish Point (Figure 11). An old weir prevents artificial water exchange between Vermilion Bay and interior marsh ponds via canals (Figure 10).

Problems and Opportunities.

The shoreline in the vicinity of Redfish Point has experienced erosion rates of 5-25 feet per year between 1974 and 1990. Shoreline erosion is threatening to consume the narrow strip of marsh remaining between the bay and a small unnamed lake, which would then become part of the bay, jeopardizing the area's hydrologic management system. A faulty weir located on a small canal near its confluence with Vermilion Bay has reduced water control capability in the adjacent marsh. The objectives of this project are to halt shoreline erosion and restore and maintain the water management capabilities on the Redfish Point marsh.

Description of Project Features.

Approximately 1.3 miles of rock breakwater will be installed along the Vermilion Bay shore from north of Redfish Point southward to just past the small un-named lake. The faulty weir on the small canal near the point will be replaced with a variable crest slotted weir.

Benefits and Cost.

The project is estimated to cost $530,000. The project would protect about 58 acres, SAV would cover an additional 10 acres and 27 acres would be enhanced over a 20-year period for a total benefited acreage of 95 acres. The cost per benefited acre is $5,600.

Effects and Key Issues.

None.

Status.

This project will be a candidate for future Priority Lists and is part of the state Coastal Wetlands Conservation and Restoration Program.

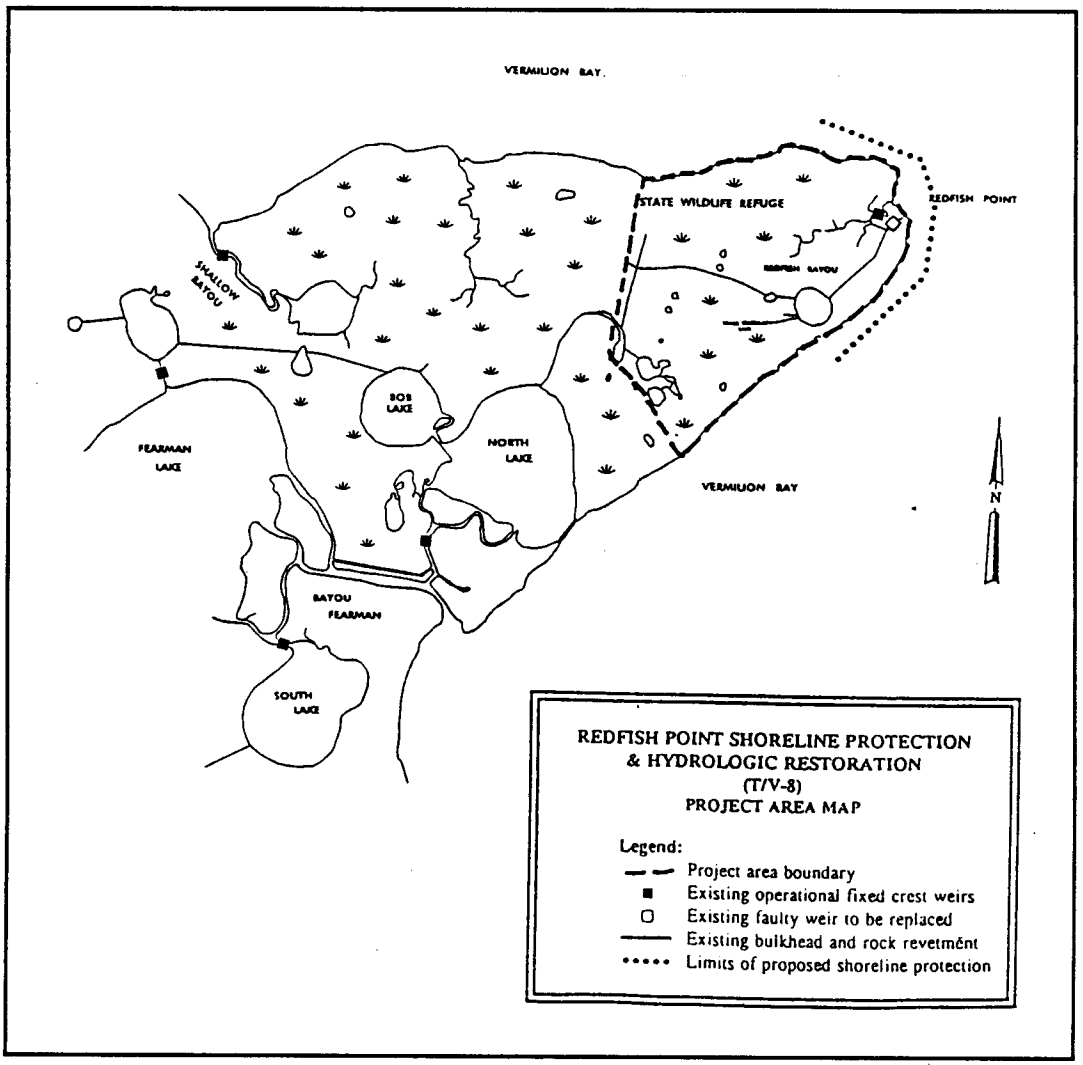

Figure 10. Features of the Redfish Point Shore Protection and Hydrologic Restoration project (TV-8).

TV-10 WEEKS BAY SHORE PROTECTION

Location.

Weeks Bay is located on the northeast side of Vermilion Bay, just west of the Weeks Island salt dome (Figure 3B). A narrow isthmus of deteriorated fresh/intermediate marsh will be protected that forms the eastern shore of Weeks Bay and the west bank of the GIWW just west of the Weeks Island salt dome in Iberia Parish (Figure 11).

Problems and Opportunities.

The eastern shoreline of Weeks Bay, which is comprised of a narrow isthmus of deteriorated marsh separating the bay from the GIWW, has experienced severe shoreline erosion along both its east and west sides. Continuing breakup of the marshes and erosion of the spoil banks that rim the GIWW side of this isthmus will ultimately result in the loss of all the remaining land barriers between Weeks Bay and Weeks Island. The result will be further erosion on the west side of Weeks Island and along adjacent marshes to its north and south. Increased tidal scour would also cause break up of the interior marshes adjacent to the island. The project objective is to restore the isthmus of marsh back to the 1,921 shoreline position and to prevent future erosion.

Description of Project Features.

The project will consist of about 15,600 feet of retention levee at the 1921 shoreline of Weeks Bay and 1,500 feet of retention levee as a back levee on the GIWW. The levee will be constructed of earthen material overlain with a synthetic liner and an erosion-resistant matting material. Approximately 600,000 cubic yards of fill material will be required to fill the 89-acre reclaimed area to 6 inches above mean sea level. All the shallow ponds on the reclaimed area will be connected with small canals to allow fisheries access and prevent impoundment. Planting efforts for vegetation propagation will be conducted to complement natural revegetation. Three earthen plugs will be placed in canals. Approximately 9,750 feet of rock revetment will be placed on the edges of seven small marsh islands to prevent erosion.

Benefits and Cost.

The project is estimated to cost $4,993,000. About 33 acres of marsh will be created, 373 acres protected, SAV will cover an additional 906 acres and 110 acres enhanced over 20 years for a total of 1,422 acres benefited. The cost per benefited acre is $3,500.

Effects and Key Issues.

A large impoundment will be created that may prevent spring flooding with sediments and fresh water.

Status.

This project will be a candidate for future Priority Lists and is part of the Restoration Plan.

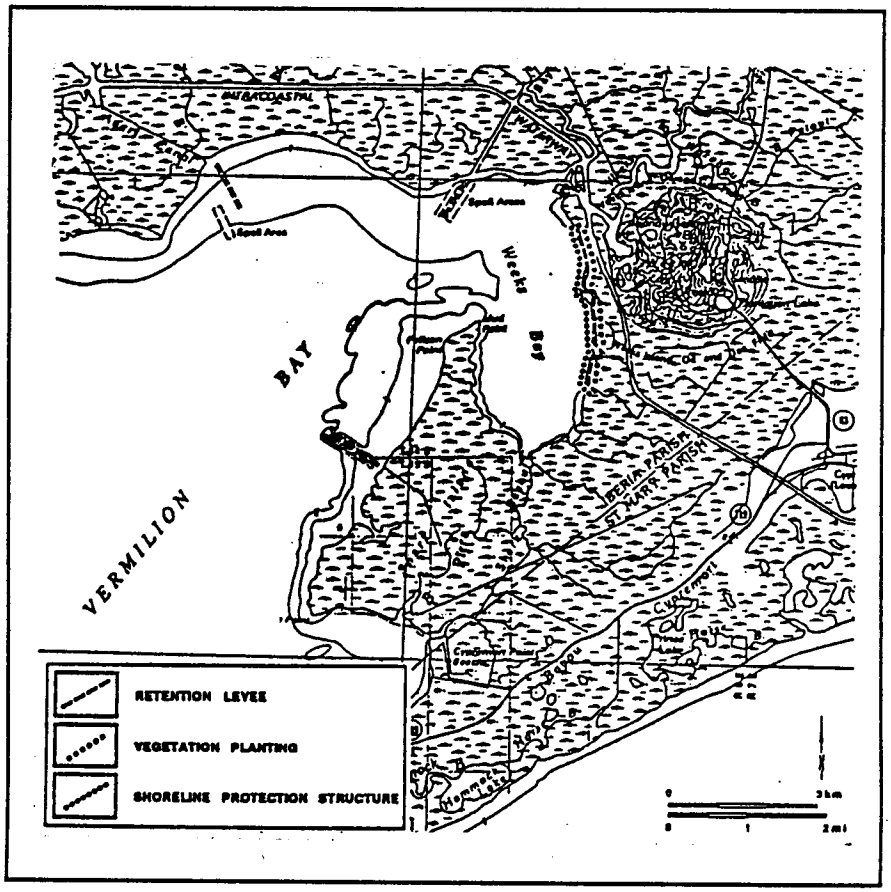

Figure 11. Features of the Weeks Bay Shore Protection project (TV-10).

PTV-19 LITTLE VERMILION BAY SEDIMENT TRAPPING

Location.

This project will be located in Little Vermilion Bay in Vermilion Parish (Figure 3B). The project will be located in shallow water where navigation channels link the GIWW to Little Vermilion Bay (Figure 12).

Problems and Opportunities.

Little Vermilion Bay (located in the northwestern corner of Vermilion Bay) receives sediments from the Atchafalaya River via the GIWW and has shallowed 2-3 feet in the last 30 years. If the impacts of wave fetch could be reduced, then it may be possible to accelerate this natural process and establish a large area of marsh where there is currently only open water. This would trap additional sediments and halt shoreline erosion in the area affected.

Description of Project Features.

Several distributary channels would be dredged through the shallow subaqueous channel banks adjacent to existing navigation channels in Little Vermilion Bay. The approximately 300,000 cubic yards of sediment that would result from the dredging of these channels would be placed to create 14,000 square feet of emergent terraces at an average elevation of 2 ft above mean water levels. The creation of the distributary channels would improve sedimentation on the shallow water bottoms adjacent to the channels and the emergent terraces would reduce waver erosion. Vegetation would be planted on the shores of little Vermilion Bay and at the bases of all emergent terraces. It may also incorporate innovative trapping techniques such as artificial seaweed and offshore bars. This project might benefit from a review of satellite imagery to determine predominant sediment pathways.

Benefits and Cost.

The project is estimated to cost $600,000. This project would create 27 acres of emergent marsh, 304 acres of SAV would be established, and 194 acres enhanced. The cost per benefited acre would be $1,200.

Effects and Key Issues.

PTV-19 is designed to avoid impacts to navigation through Bayou Chene and Schooner Bayou. The cross-sectional area of the openings from Freshwater Bayou should be sufficient to allow adequate drainage from Freshwater Bayou into Little Vermilion Bay.

Status.

This project was a candidate for the 3rd Priority Project List and is part of the Restoration Plan.

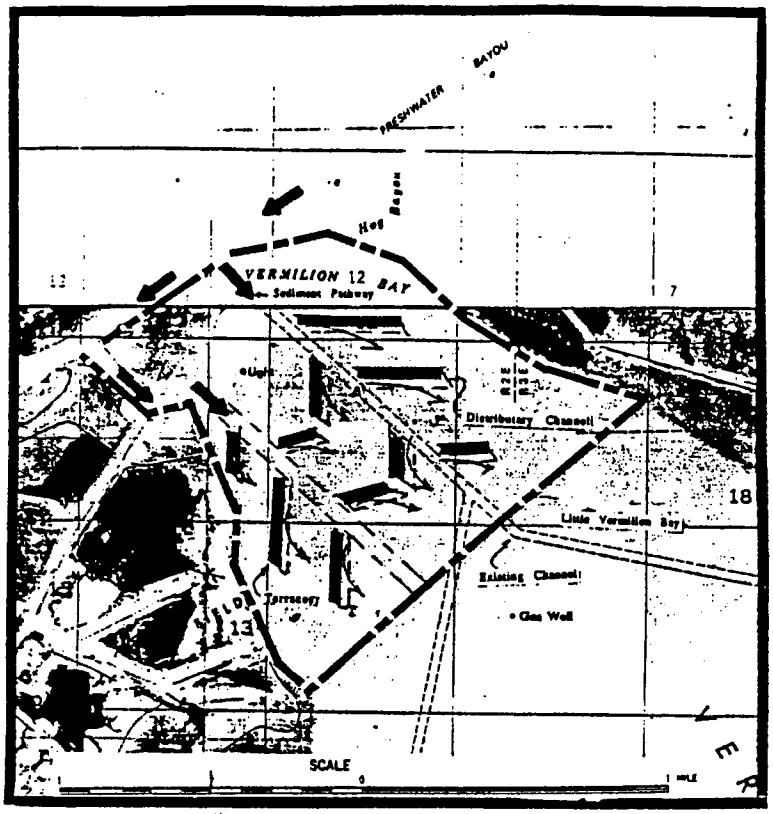

Figure 12. Features of the Little Vermilion Bay Sediment Trapping project (PTV-19).

XTV-26 TWO MOUTHS BAYOU FRESHWATER DIVERSION

Location.

This project lies in the central portion of the basin on the eastern shore of Vermilion Bay (Figure 3B). The project area is approximately 1,600 acres of intermediate marsh that is bounded on the north by the GIWW, on the east by a pipeline canal, on the south by Sheephead Bayou, and on the west by Weeks Bay (Figure 13).

Problems and Opportunities.

The GIWW provides an excellent source of freshwater during high Atchafalaya River stages. Freshwater introduction would provide sediments and nutrients for optimum plant growth.

Description of Project Features.

The project will include a multiple, fixed-crest weir structure with flap-gated culverts to allow freshwater flow into the project area. This structure will be installed at the mouth of a plugged oilfield canal on the GIWW. During high river stages, water will flow over the crests and into the project area through breaches in the end of the canal.

Benefits and Cost.

The project is estimated to cost $438,000. The project will protect 87 acres, SAV would cover an additional 31 acres and 44 acres would be enhanced for a total of 162 benefited acres over 20 years. The cost per benefited acre is $2,700. This is a new project, and benefits may be revised after additional study by the Wetlands Value Assessment process.

Effects and Key Issues.

Action taken to provide sediment and nutrients to interior marsh is a critical issue in this basin.

Status.

Preliminary planning is complete. This project was a candidate for the 3rd Priority Project List and will be part of the Restoration Plan.

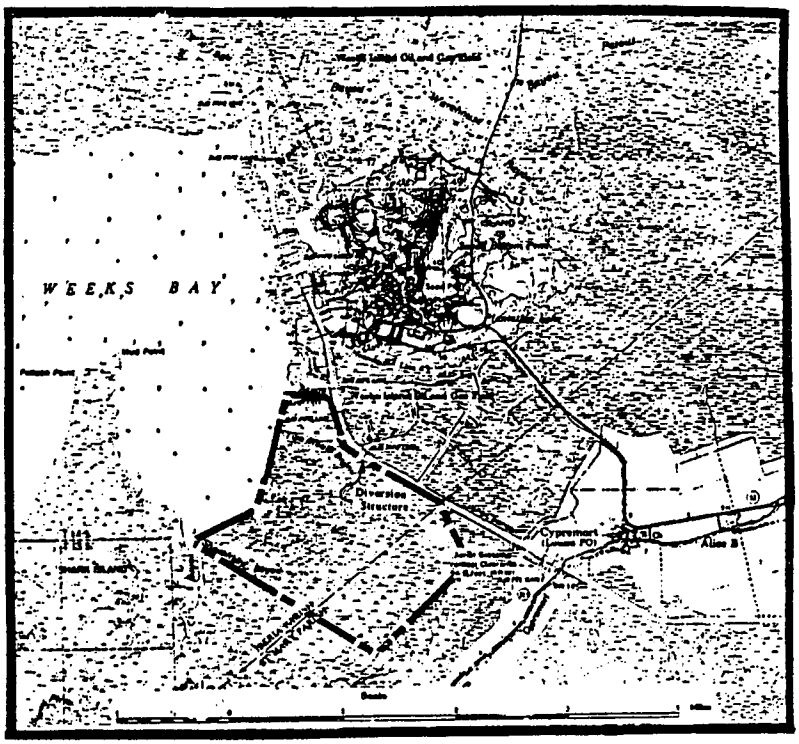

Figure 13. Features of the Two Mouths Bayou Freshwater Diversion project (XTV-26).

CRITICAL LONG TERM PROJECTS

There are eleven long-term critical projects. Critical long term projects include many suggested at the 1991 Scoping Meetings that deal with shoreline erosion or use of sediments and freshwater. Most of those are conceptual now and further information must be developed as to the exact problems, proposed solutions, and costs and benefits.

PTV-9 GIWW SHORELINE PROTECTION

Location.

This project will stretch across the basin along the shoreline of the GIWW (Figure 3B).

Problems and Opportunities.

Bank erosion of the GIWW is a coastwide problem that will be addressed in the Restoration Plan.

Description of Features.

A variety of hard structures and dredged material will be used.

Benefits and Costs.

Benefits and costs cannot be determined until erosion rates are determined for specific locations along the GIWW.

Effects and Kev Issues.

Very costly protection may be required because of the severity of the waves. Erosion rates must be determined site by site so that critical areas can be identified.

Status.

This project has not proceeded beyond the conceptual stage at this time. It is a candidate for future lists.

PTV-10 AVERY CANAL SHORELINE PROTECTION

Location.

This project is proposed for the banks of the Avery canal in Iberia Parish (Figure 3B).

Problems and Opportunities.

Bank erosion is occurring along this canal.

Description of Features.

A variety of hard structures and dredged material will be used.

Benefits and Costs.

Benefits and costs cannot be determined until erosion rates are determined for specific locations.

Effects and Kev Issues.

Erosion rates must be determined site by site so that critical areas can be identified.

Status.

This project has not proceeded beyond the conceptual stage at this time. It is a candidate for future lists.

PTV-11 RESTORE PIPELINE PLUGS AROUND VERMILION BAY

Location.

This project is proposed to addressed pipeline canals throughout Vermilion Bay (Figure 3B).

Problems and Opportunities.

Pipeline canals around Vermilion Bay are allowing increased tidal exchange and subsequent wetland loss. Low sills need to be installed on these canals to prevent salt water from entering the canals during the summer when salinity is high. The pipelines should not be simply plugged however, because they may allow high water to **enter** the marsh during spring floods and winter storms.

Description of Features.

The most likely structures are slotted weirs and rock weirs, but other types of structures may be more appropriate at some locations.

Benefits and Costs.

Benefits and costs have not yet been determined.

Effects and Key Issues.

The specific sites have not yet been identified. The structures constructed as part of this project could restrict fisheries access to the affected pipelines.

Status.

This project is a candidate for future lists.

PTV-13 MARSHES SOUTH OF GIWW, VERMILION RIVER TO WEEKS BAY.

Location.

This project is proposed for the interior marshes of Vermilion Parish between the GIWW and Vermilion Bay between the Vermilion River and Weeks Bay (Figure 3B).

Problems and Opportunities.

These marshes are being lost at one of the highest rates in the basin. These marshes should be protected from further losses as quickly as possible because protection is less expensive than restoration.

Description of Features.

A study needs to determine the cause of marsh loss. Once the problem has been documented, then the appropriate actions can be implemented.

Benefits and Costs.

Benefits and costs cannot be determined until preliminary investigation determines the extent of the loss, the cause of the loss, and the feasibility of preventing additional loss.

Effects and Key Issues.

This project should be implemented as soon as possible because of the rapid marsh loss occurring in this area. The project should proceed in two phases. The first phase would determine the cause of marsh loss and the feasibility of preventing future marsh loss. The second phase would implement the appropriate strategy determined in the first phase if there was a high probability of success. It is possible that the second phase would never be implemented if there was little likelihood of success.

Status.

This project is a candidate for future lists. The inability to estimated costs and benefits before this project is implemented are a key problem for prioritization.

PTV-14 MARSHES NORTH OF GIWW, VERMILION RIVER TO COMMERCIAL CANAL

Location.

This project is proposed for the interior marshes of Vermilion Parish just north of the GIWW and Vermilion Bay between the Vermilion River and Weeks Bay (Figure 3B).

Problems and Opportunities.

These marshes are being lost at one of the highest rates in the basin. These marshes should be protected from further losses as quickly as possible because protection is less expensive than restoration.

Description of Features.

A study needs to determine the cause of marsh loss. Once the problem has been documented, then the appropriate actions can be implemented.

Benefits and Costs.

Benefits and costs cannot be determined until preliminary investigation determines the extent of the loss, the cause of the loss, and the feasibility of preventing additional loss.

Effects and Key Issues.

This project should be implemented as soon as possible because of the rapid marsh loss occurring in this area. The project should proceed in two phases. The first phase would determine the cause of marsh loss and the feasibility of preventing future marsh loss. The second phase would implement the appropriate strategy determined in the first phase if there was a high probability of success. It is possible that the second phase would never be implemented if there was little likelihood of success.

Status.

This project is a candidate for future lists. The inability to estimated costs and benefits before this project is implemented are a key problem for prioritization.

PTV-17 COTE BLANCHE OUTFALL MANAGEMENT

Location.

This project is proposed for marshes around West Cote Blanche Bay in St. Mary Parish near TV-4 (Figure 3B).

Problems and Opportunities.

There are abundant fresh water and sediments available in this area during the spring. It would be beneficial to reroute some of this water from the GIWW into the interior marshes near East and West Cote Blanche Bays.

Description of Features.

No features have been proposed that would implement this concept.

Benefits and Costs.

Costs and benefits cannot be determined until a specific course of action is decided upon.

Effects and Key Issues.

It may be possible to take advantage of the abundant fresh water and sediments.

Status.

This project has not proceeded beyond the conceptual stage at this time.

PTV-21 FORESTED AREA EAST OF WEEKS ISLAND

Location.

This project is proposed for the interior marshes of Iberia Parish just north of the GIWW near the eastern shore of Weeks Bay (Figure 3B).

Problems and Opportunities.

These marshes are being lost at one of the highest rates in the basin. These marshes should be protected from further losses as quickly as possible because protection is less expensive than restoration.

Description of Features.

A study needs to determine the cause of marsh loss. Once the problem has been documented, then the appropriate actions can be implemented.

Benefits and Costs.

Benefits and costs cannot be determined until preliminary investigation determines the extent of the loss, the cause of the loss, and the feasibility of preventing additional loss.

Effects and Key Issues.

This project should be implemented as soon as possible because of the rapid marsh loss occurring in this area. This project should proceed in two phases. The first phase would determine the cause of marsh loss and the feasibility of preventing future marsh loss. The second phase would implement the appropriate strategy determined in the first phase if there was a high probability of success. It is possible that the second phase would never be implemented if there was little likelihood of success.

Status.

This project is a candidate for future lists. The inability to estimated costs and benefits before this project is implemented are a key problem for prioritization.

SUPPORTING SHORT TERM PROTECTS

PTV-4 VERMILION RIVER SHORELINE PROTECTION

Location.

The east bank of the lower Vermilion River near Live Oak Plantation, in Vermilion Parish (Figure 3B).

Problems and Opportunities.

The banks of the lower Vermilion River have isolated areas of erosion.

Description.

The project area includes about 400 acres, of which about 50 acres are water. Bank stabilization would protect adjacent marshes.

Benefits and Cost.

The project is estimated to cost $300,000. Approximately 7 acres would be protected, 34 acres would have increased SAV coverage and 24 acres would be enhanced for a total of 70 benefited acres. The cost per benefited acre is $4,300.

Effects and Kev Issues.

None.

Status.

Project PTV-4 was submitted during public hearings, and is in a conceptual phase. A short feasibility study needs to be conducted to determine the exact erosion rate, length of bank affected, and area benefited. It will be a candidate for future priority lists and is part of the Restoration Plan.

PTV-8 AVERY CANAL TO WEEKS ISLAND VEGETATIVE PLANTINGS

Location.

The north shore of Vermilion Bay in Iberia Parish from Avery Canal to Weeks Island.

Problems and Opportunities.

Shoreline retreat, which is as much as 6-7 ft/yr along the north shore of Vermilion Bay, is a critical problem in the basin.

Description of Project Features.

This project requires vegetative plantings along 62,000 feet of shoreline to slow or halt shoreline retreat. Originally proposed at a public meeting to extend from Mud Point to Cypremort Point, this project has been restricted to avoid overlap with PTV-18.

Benefits and Cost.

The project is estimated to cost $242,000. The project will protect 128 acres, SAV will cover an increased two acres and 43 acres will be enhanced for a total of 173 benefited acres. The cost per benefited acre is $1,400.

Effects and Key Issue.

Shoreline protection enjoys widespread public support, but it's effectiveness requires monitoring.

Status.

PTV-8 is conceptual; a short feasibility study must be done to more accurately determine costs and effectiveness. The project will be a candidate for future Priority Lists and is part of the Restoration Plan.

PTV-18 AND TV-9 VERMILION BAY/BOSTON CANAL SHORELINE STABILIZATION

Location.

This project is located on the northwest shoreline of Vermilion Bay (Figure 3B). Canal bank and bay shorelines will be protected from Tigre Lagoon to Mud Point in Vermilion and Iberia parishes (Figure 14).

Problems and Opportunities.

The shoreline in this area of Vermilion Bay is eroding at a rate of 7.4 ft/ yr. Erosion is particularly severe at the entrance to Boston Canal because of boat wakes and interior marsh ponds may soon become linked to Boston Canal. The project will exploit opportunities provided by the availability of Atchafalaya River sediments.

Description of Project Features.

Canal bank erosion will be addressed primarily with armoring. Bay shore erosion will be addressed primarily with measures that promote sediment deposition in shallow water along the shore and by planting vegetation. About 6,000 tons of rock will stabilize the entrance to Boston Canal. The project will create a protective strip approximately 25 feet wide by 15 miles long, planted with single stem plants (smooth marsh cordgrass) at 3 foot spacings. Roughly 1,700 feet of sediment fencing will then be installed to encourage sediment accretion.

Benefits and Cost.

The project estimated first cost is $829,000. It is estimated that 378 acres would be protected, submerged aquatic vegetation (SAV) would occur on an additional 4 acres, and 14 acres would be enhanced for a total of 397 benefited acres. The cost per benefited acre is $2,100

Effects and Kev Issues.

Shoreline protection has widespread public support. Navigation into Boston Canal will not be impacted by this project.

Status.

This project is part of the 2nd Priority Project List and part of the Restoration Plan.

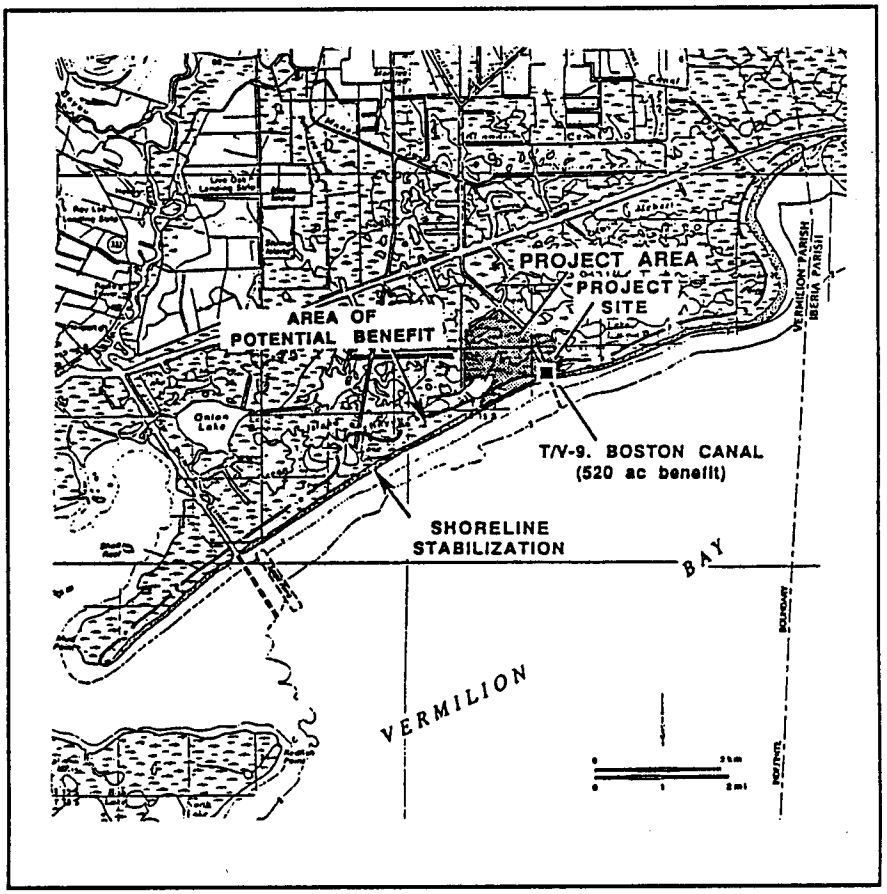

Figure 14. Features of the Vermilion Bay/Boston Canal Shore Protection project (TV-18/9).

XTV-11 FRESHWATER BAYOU BANK STABILIZATION 1

Location.

The project area lies along the shoreline of Freshwater Bayou Channel in the western portion of the basin in interior marshes in Vermilion Parish. (Figure 3B).

Problems and Opportunities.

This part of the shoreline separates Freshwater Bayou from numerous small interior marsh water bodies and is breaching (Figure 15). Preventing this from occurring should prevent rapid marsh loss in the future.

Description of Features.

This project will protect 20,000 ft of shoreline.

Benefits and Cost.

The project is estimated to cost $2,012,000. The project will protect 63 acres of wetlands from being lost.

Effects and Kev Issues.

This project is only one of several projects in this basin and the adjacent Mermentau Basin that addresses erosion on this important navigation channel. This project was given priority because it protected critical shorelines that separated interior marsh drainage systems from the energetic water movements in Freshwater Bayou Channel.

Status.

The project is conceptual in nature, but is one of many bank protection projects along Freshwater Bayou.

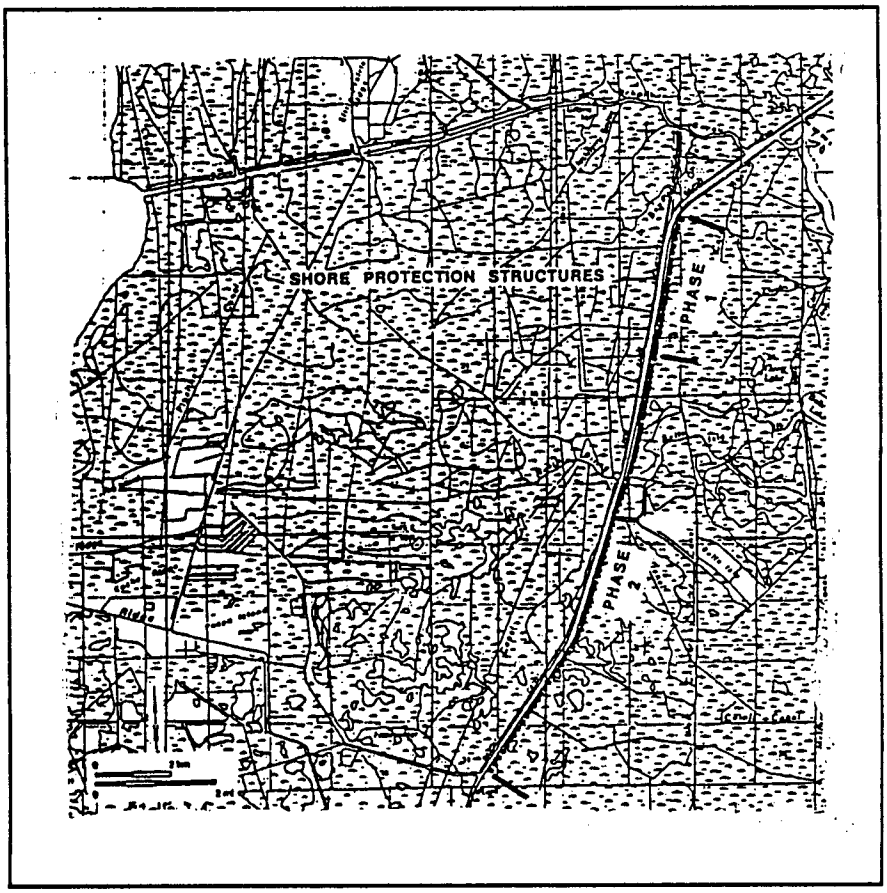

Figure 15. Features of the Freshwater Bayou Bank Protection (TV-11).

XTV-25 OAKS CANAL TO AVERY CANAL SHORELINE PROTECTION

Location.

The project is located in the central part of the basin, near the northeastern end of Vermilion Bay (Figure 3B). The project addresses shoreline erosion in Vermilion Bay and the GIWW near Tigre Lagoon and Oaks Canal (Figure 16).

Problems and Opportunities.

Shoreline erosion is occurring along the northern shore of Vermilion Bay between Oaks Canal and Avery Canal. In addition, the GIWW is threatening to breach into Tigre lagoon, exposing interior marshes to the rapid water exchange rates of the GIWW.

Description of Project Features.

Rock bulkheads will be installed parallel to the banks of Oaks Canal on both sides of the channel from the existing shoreline at the mouth of the canal and extending for some distance into the bay. Sediment fences will be installed behind each bulkhead to encourage sedimentation and land accretion, and to provide greater protection of the remaining shoreline on both sides of the canal. Appropriate vegetation will be planted for stabilization on land that builds up between the bulkheads and the existing shoreline at the mouth of Oaks Canal. Wave-stilling fences will be installed along 4,000 feet of the south bank of the GIWW north of Tigre Lagoon to prevent breaching. Vegetative plantings will also be incorporated along 32,000 feet of the Vermilion Bay shoreline from Oaks Canal to Avery Canal.

Benefits and Cost.

The project is estimated to cost $1,069,000. About 120 acres will be protected, SAV will cover an additional 4 acres and 1 acre will be enhanced over 20 years for a total of 125 benefited acres. The cost per benefited acre is $8,600.

Effects and Key Issues.

This project will complement the Vermilion Bay/Boston Canal (PTV/-18/TV9 project.

Status.

Preliminary planning is complete. This project was a candidate for the 3rd Priority Project List and is part of the Restoration Plan.

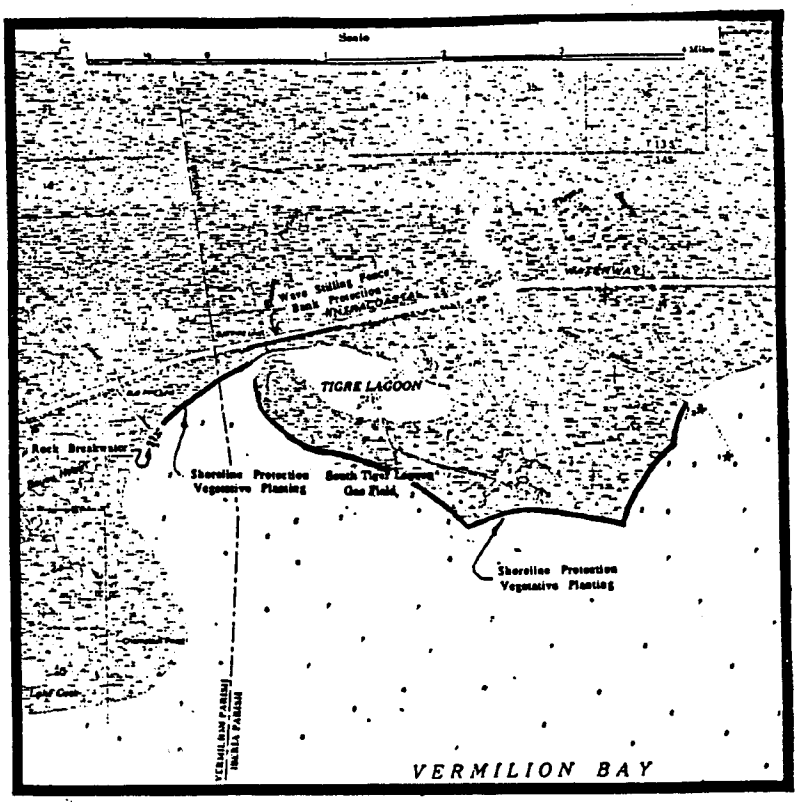

Figure 16. Features of the Oaks Canal to Avery Island Shoreline Protection project (XTV-25).

XTV-27 FRESHWATER BAYOU BANK STABILIZATION 2

Location.

This project is located in Vermilion Parish near Little Vermilion Bay along Freshwater Bayou Channel, which is a major navigation route. This project addresses erosion starting near Belle Isle Bayou and proceeding southward roughly halfway to the Gulf of Mexico.

Problems and Opportunities.

This bayou was channelized and is now roughly 300 feet wide. Increased tidal exchange, wave action, and boat wakes cause accelerated erosion along the banks of this bayou. This has caused the spoil banks to completely erode away which has almost doubled the width of the channel in some areas. Armoring this section of the bayou would protect fresh marsh from erosion.

Description of Features.

The eastern shoreline will be armored along a 22,000 foot section of the bayou beginning near Belle Isle Bayou and proceeding southward roughly halfway to the Gulf of Mexico.

Benefits and Costs.

Assuming an erosion rate of 12 feet per year, a Wetland Value Assessment indicate that this project will protect 61 acres of marsh at a cost of $1,925,000.

Effects and Key Issues.

This project will act jointly with projects XME-29 and XME-31 in the Mermentau Basin, which armor the western shore of this reach of Freshwater Bayou. Less expensive forms of protection and would improve the cost per benefit acre of this project. Detailed estimates of benefits as well as erosion rates are not yet available because this project is only conceptual.

Status.

This project is a candidate for future lists but has not progressed beyond the conceptual stage.

XTV-28 FRESHWATER BAYOU BANK STABILIZATION 3

Location.

This project is located in Vermilion Parish near Little Vermilion Bay along the southern reaches of the Freshwater Bayou Channel, which is a major navigation channel.

Problems and Opportunities.

This bayou was channelized and is now roughly 300 feet wide. Increased tidal exchange, wave action, and boat wakes cause accelerated erosion along the banks of this bayou. This has caused the spoil banks to completely erode away which has almost doubled the width of the channel in some areas. Armoring this section of the bayou would protect brackish marsh from erosion.

Description of Features.

The eastern shoreline will be armored along a 30,000 foot section of the bayou beginning near the gulf and proceeding northward.

Benefits and Costs.

Assuming an erosion rate of 12 feet per year, a Wetland Value Assessment indicate that this project will protect 91 acres of marsh at a cost of $2,888,000.

Effects and Kev Issues.

This project will act jointly with projects XME-29 and XME-30 in the Mermentau Basin, which armor the western shore of this reach of Freshwater Bayou. Less expensive forms of protection and would improve the cost per benefit acre of this project. Detailed estimates of benefits as well as erosion rates are not yet available because this project is only conceptual.

Status.

This project is a candidate for future lists but has not progressed beyond the conceptual stage yet.

XTV-29 FRESHWATER BAYOU BANK STABILIZATION 4

Location.

This project is located in Vermilion Parish near Little Vermilion Bay along the northern reaches of the Freshwater Bayou Channel, which is a major navigation channel.

Problems and Opportunities.

This bayou was channelized and is now roughly 300 feet wide. Increased tidal exchange, wave action, and boat wakes cause accelerated erosion along the banks of this bayou. This has caused the spoil banks to completely erode away which has almost doubled the width of the channel in some areas.

Description of Features.

The eastern shoreline will be armored along a 33,000 foot section of the bayou beginning at the junction with the GIWW.

Benefits and Costs.

Assuming an erosion rate of 12 feet per year, a Wetland Value Assessment indicate that this project will protect 83 acres of marsh at a cost of $2,625,000.

Effects and Key Issues.

This project will act jointly with projects XME-28, XME-32, and XME-33 in the Mermentau Basin, which armor the western shore of this reach of Freshwater Bayou. Less expensive forms of protection and would improve the cost per benefit acre of this project. Detailed estimates of benefits as well as erosion rates are not yet available because this project is only conceptual.

Status.

This project is a candidate for future lists but has not progressed beyond the conceptual stage yet.

SUPPORTING LONG TERM PROTECTS

Supporting long term projects address widespread erosion in non-critical areas but are believed to have slower rates of erosion than supporting short-term projects. Projects may be reclassified if better estimates of site specific and basin wide erosion rates become available.

PTV-6 BAYOU CARLIN BANK PROTECTION

Location.

This project is located in the Cote Blanche wetlands of St. Mary Parish, along the eroding banks of Bayou Carlin (Figure 3B).

Problems and Opportunities.

The shoreline of Bayou Carlin is eroding.

Description of Features.

Vegetative plantings are proposed to slow the bank erosion.

Benefits and Costs.

Benefits and costs are unknown.

Effects and Key Issues.

Erosion rates must be estimated so that it can be determined if this is a critical shoreline and to provide a basis for estimating benefits.

Status.

This project is a candidate for future lists but has not progressed beyond the conceptual stage yet.

PTV-7 LITTLE VERMILION LAKE SHORELINE PROTECTION

Location.

This project will be located in Little Vermilion Bay in Vermilion Parish (Figure 3B). The project will be located along the shoreline of Little Vermilion Bay near the junction of the GIWW.

Problems and Opportunities.

The shoreline of Little Vermilion Bay in Vermilion Parish is eroding.

Description of Features.

Shoreline protection is proposed.

Benefits and Costs.

Benefits and costs have not been determined.

Effects and Key Issues.

This project will complement the sediment trapping in the same area (PTV-19).

Status.

This project has not proceeded beyond the conceptual stage at this time. It is a candidate for future lists.

PTV-12 EAST AND WEST COTE BLANCHE BAYS VEGETATIVE PLANTINGS

Location.

This project is proposed for the shorelines of East and West Cote Blanche Bays in St. Mary Parish between Cypremort Point and Point Chevreuil (Figure 3B).

Problems and Opportunities.

Shoreline erosion occurs along this 30 miles of coastline.

Description of Features.

Vegetative plantings are proposed to reduce the erosion.

Benefits and Costs.

Benefits and costs cannot be determined until erosion rates are determined for specific locations.

Effects and Key Issues.

The project may interact with TV4.

Status.

This project has not proceeded beyond the conceptual stage at this time. It is a candidate for future lists.

DEMONSTRATION PROTECTS

Demonstration projects illustrate new tools for achieving basin strategies. Only one demonstration project has been proposed to date.

PTV-5 CHENIERE AU TIGRE SHORELINE PROTECTION

Location.

The location is a 1/2 mile section of shoreline on the Gulf of Mexico in Vermilion Parish just east of the settlement of Cheniere au Tigre (Figure 3B).

Problems and Opportunities.

Sediments, originating from the Atchafalaya River, are accumulating in the shallow waters in front of the gulf shoreline in some locations. In other locations however, shoreline erosion still occurs.

It may be possible to slow the shoreline erosion either with hard structures to dissipate wave energy, or by promoting sediment accumulation in areas currently eroding. However, but further information is needed concerning the effectiveness of different techniques. The objective of the proposed project is to test different shore protection methods, including an oyster reef.

Description of Features.

This is still only a concept and there specific structures have not been decided upon yet. One proposed structure is an oyster reef because oyster reefs historically played a major role in reducing wave energy in this basin.

Benefits and Costs.

Benefits and costs are unknown because this project has not moved beyond the conceptual stage at the time of this report.

Effects and Key Issues.

The rapid sediment accumulation that is occurring along this coastline provides much potential for enhancing sediment accretion where it is needed the most. However, the oyster reef idea may not be effective because muds from the Atchafalaya River are one of the primary reasons that the large oyster reefs in this basin have been buried and killed. It is not likely that oysters would be able to avoid being buried by muds.

Status.

This project is still in the conceptual stage and specific courses of action need to be decided. It is a candidate for consideration of future priority lists.

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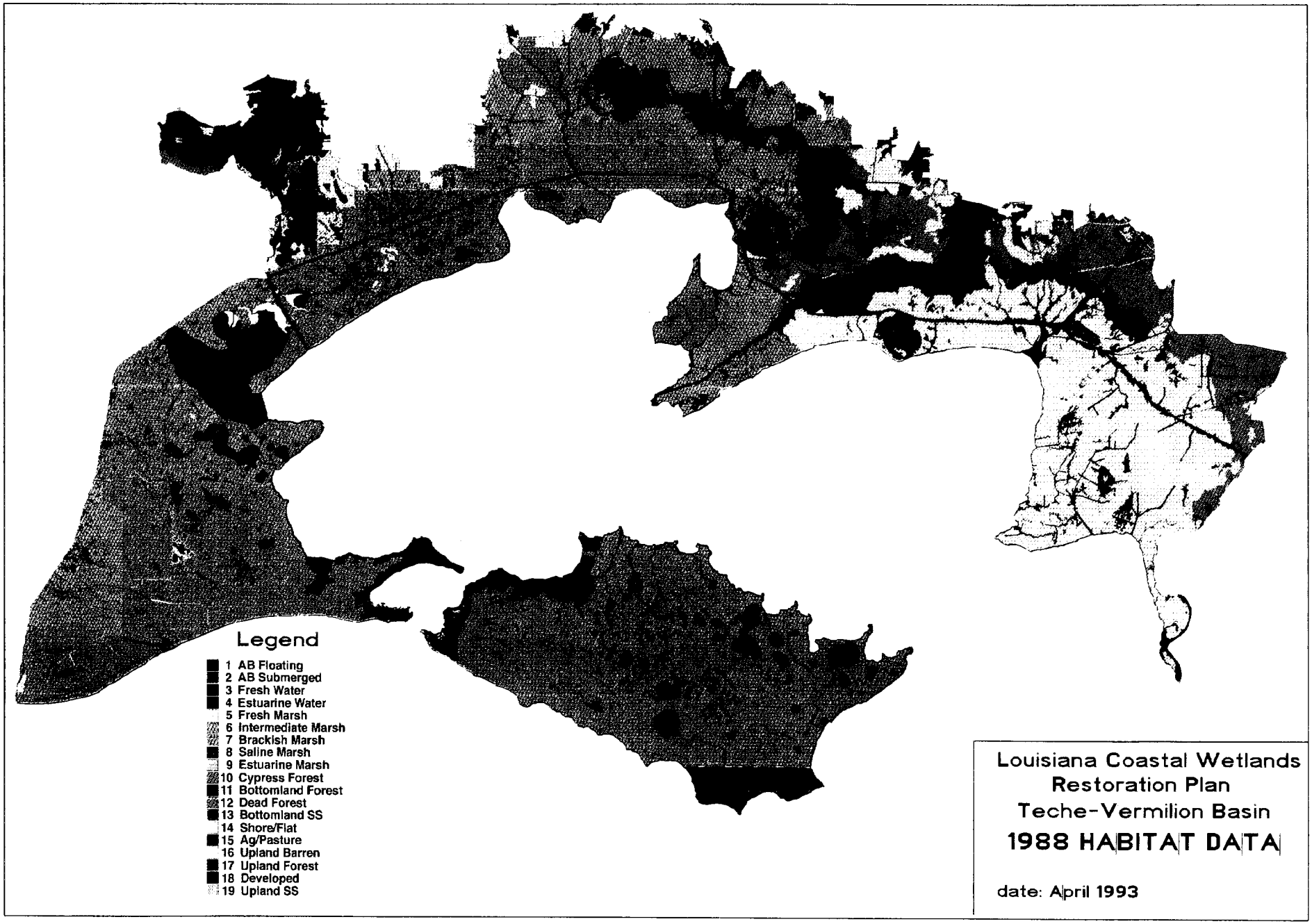

Louisiana Coastal Wetlands
Restoration Plan
Teche-Vermilion Basin
1988 HABITAT DATA

date: April 1993

PLATE 1