

WATER MARKS

**WRDA Funding:
A Crucial Step In
Saving Louisiana's
Coast**

**Proposed
Restoration
Measures:
Barrier Shoreline
Restoration**

**Proposed
Restoration
Measures:
Wetlands Creation
and Restoration**

**The Cost of
Doing Nothing**



SPECIAL ISSUE

Louisiana Coastal Area Feasibility Study

WATER MARKS

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WaterMarks is published quarterly by the Louisiana Coastal Wetlands Conservation and Restoration Task Force to communicate news and issues of interest related to the Coastal Wetlands Planning, Protection and Restoration Act of 1990. This legislation funds wetlands enhancement projects nationwide, designating approximately \$35 million annually for work in Louisiana. The state contributes 15 percent of the cost of project construction.



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Louisiana Coastal Wetlands Planning, Protection and Restoration News

SPECIAL ISSUE
Louisiana Coastal Area
Feasibility Study

In This Issue...

The Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) and the Coast 2050 planning project have established the framework for what will be a crucial phase in the effort to save Louisiana's coastal wetlands. Essential to this effort will be the Louisiana Coastal Area Feasibility Study, the focus of this special issue of *WaterMarks*.

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For more information about Louisiana's coastal wetlands and the efforts planned and under way to ensure their survival, check out these sites on the World Wide Web:

www.lacoast.gov

www.savelawetlands.org

www.btnep.org

www.crcl.org

www.coast2050.gov

For current meetings, events, and other news concerning Louisiana's coastal wetlands, subscribe to the Breaux Act Newsflash, our e-mail newsletter, at:
www.lacoast.gov/newsletter.htm

WRDA Funding: A Crucial Step In Saving Louisiana's Coast

For nearly 70 years Louisiana's complex system of coastal marshes, waterways, lakes and barrier islands has been radically changed by the influence of man and industry. While land subsidence and sea level rise have taken their toll, the development of oil and gas resources, the shipping industry and flood control levees have exacted a price as well. Countless channels and canals have been carved through protective reefs and deep into freshwater wetlands, redirecting flows and providing avenues for salt-bearing tides. Spoil banks and levees have isolated marshes from their

natural supplies of fresh water, sediment and nutrients, causing vegetation to fail and exposing a weakened environment to erosion. As a result, this remarkable ecosystem is being converted to open water at the rate of 25 to 35 square miles a year—the equivalent of a football field every 30 minutes—putting southern Louisiana on track to lose 1,000 additional square miles of coastal wetlands by the year 2050.

As disheartening as those figures are, the story of Louisiana's disappearing coast goes beyond the loss of land. It's about an American environment that's vanishing at a catastrophic rate. It's about communities, industry, infrastructure, wildlife habitat, fisheries and economies at

risk. And, most important, it's about the loss of the national treasure found in coastal Louisiana's unique culture.

Faced with this grim reality, Congress responded in 1990 with the passage of the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA). Over the next ten years, this crucial piece of legislation provided up to \$53 million per year in federal funding to



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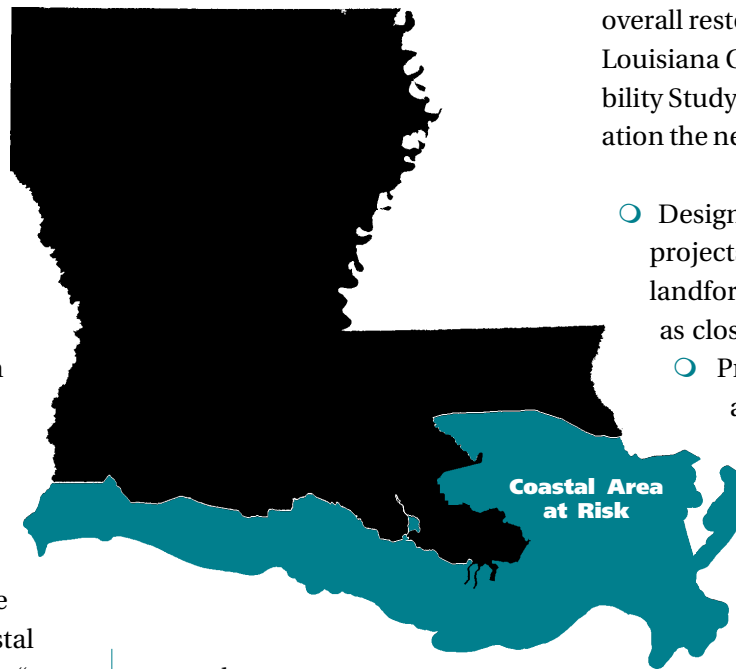
Louisiana Office of Tourism Photo

protect and restore coastal wetlands in Louisiana. More than 100 projects of varying size were started or completed with others identified, evaluated and recommended for implementation. These projects are expected to protect 86,000 acres of wetlands in nine hydrologic regions across Louisiana's coastal zone.

With the CWPPRA effort well under way, private citizens, local governments, state and federal agency personnel and the scientific community began the massive task of developing a comprehensive, ecosystem-based plan to address coastal wetland loss throughout southern Louisiana. In December 1998, this group completed *Coast 2050: Towards a Sustainable Coastal Louisiana*, in which they referenced the Coalition to Restore Coastal Louisiana (1998) in saying “. . . restoration requires a single coastal plan with a clear, overarching strategic vision; a process for ensuring effective public input to restoration planning; and integration of restoration projects into the overall coastal management system.” *Coast 2050* successfully achieved each of those objectives. From lessons and data gathered from CWPPRA,

from new quantitative techniques for projecting land-loss patterns and the first coast-wide assessment of subsidence rates, the plan outlined a conceptual framework that clearly articulates the future course of coastal restoration.

It was, however, beyond the scope of *Coast 2050* to produce the technical analysis to put projects on the ground. Conse-



quently, the U.S. Army Corps of Engineers and the Louisiana Department of Natural Resources began to develop the Louisiana Coastal Area Feasibility Study. This study, which will contain the engineering and technical work absent from *Coast 2050*, is a key step in securing funding under the Water Resources Development Act 2002

(WRDA)—the nation's single largest source of water-project dollars. Because WRDA is so crucial and the feasibility study plays such an important role in the funding justification, this special issue of *WaterMarks* will introduce and highlight some of its essential components.

The Thrust of the Study

As an integral step in the overall restoration plan, the Louisiana Coastal Area Feasibility Study takes into consideration the need to:

- Design restoration projects to mimic natural landforms and processes as closely as possible;
- Protect communities and infrastructures such as highways, pipelines, wells and ports;
- Proceed from the perimeter to the interior of a basin, building the framework for landforms that will facilitate interior restoration;
- Develop a computer model to give insight into water movements, allowing better project planning.

Over the next 10 years, the Louisiana Coastal Area Feasibility Study will cover the nine

hydrologic basins that represent the Louisiana coast. The first phase of this coast-wide effort focuses on the Barataria Basin.

The Barataria Basin was chosen as the starting point because it is experiencing the highest rate of land loss in the Louisiana coastal area—estimated at 11 square miles per year. From 1932 to 1990, 35 percent of its marsh was converted to open water—a land loss approaching 360,000 acres. A “best estimate” predicts that an additional 19 percent of the remaining marsh, including 32 percent of the saline marsh, will be lost by 2050. As the marshes vanish, the protective barrier islands on the basin’s coast are disappearing as well—succumbing to some of the highest shoreline erosion rates in the nation.

It is expected that without increased restoration efforts, the barrier islands within the

study area will be gone by 2050, and the headland will continue to retreat at an average rate of 44 feet per year.

The Barataria study will develop project plans to restore the fringe of the basin and develop a hydrologic and hydrodynamic computer model that will enable a basin-wide assessment of other ecosystem restoration strategies. The study is divided into three closely inter-related components:

- 1) Barrier Shoreline Restoration,
- 2) Wetlands Creation and Restoration and
- 3) Hydrologic and Hydrodynamic Model Development.

The first component, Barrier Shoreline Restoration, will develop projects that sustain the ecological attributes of the basin, including a unique arrangement of habitats such as shallow intertidal zones, beaches, dunes, back-marshes, bays and passes. The barrier shoreline is the first line of defense against the Gulf of Mexico’s waves and salinity, providing protec-



Louisiana Office of Tourism Photo

tion to the remaining marsh and aquatic habitats behind the islands. The second component, Wetlands Creation and Restoration, will develop projects to create and restore the basin’s marshes on the southwestern fringe, as well as wooded stop-over habitat for neotropical migratory birds. The third component, Hydrologic Model Development, will build a basin-wide hydrologic and hydrodynamic computer model of the water circulation and salinity patterns within the entire basin. This model will be used as the operations and planning guide for both existing and future projects, and freshwater diversions.

Scientists and engineers will learn a great deal during the first phase of their work in the Barataria Basin. For example, the hydrologic and hydrodynamic computer model will be used extensively as projects planned for the basin interior are evaluated, constructed and

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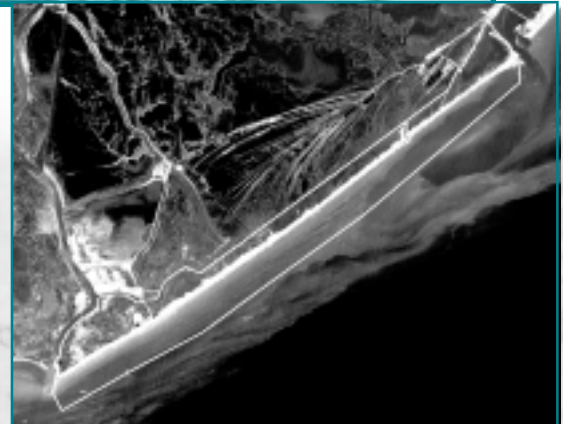
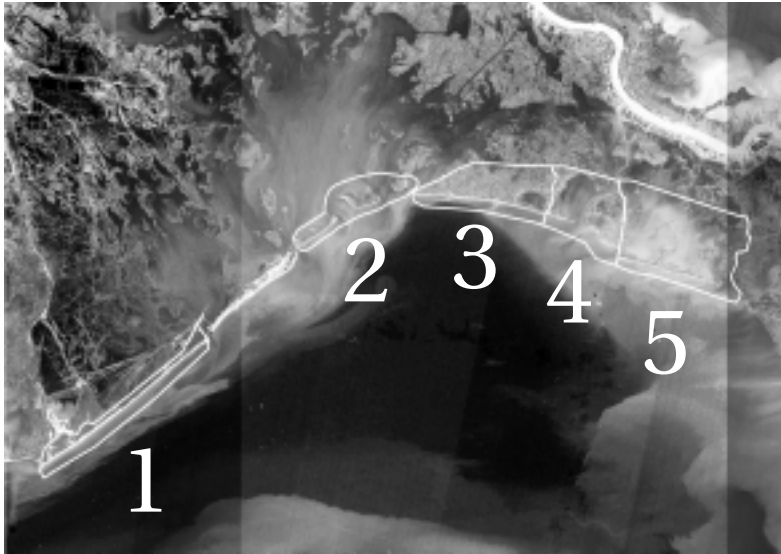
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Public Meeting with the Corps of Engineers

Proposed Restoration Measures: Barrier Shoreline Restoration

USGS-National Wetlands Research Center



USGS-National Wetlands Research Center

Barrier Shoreline Restoration Measures

Barrier shoreline restoration will target areas along the southern edge of the Barataria Basin. Back-barrier marsh and wooded habitats will be included in the restoration plans. The goal of the projects is to increase the natural ability of the barrier shoreline system to sustain itself while restoring, protecting and increasing the quality and quantity of its habitat. Measures being considered include those described in letters "A" through "L."

- (A) Nourish Shoreline
- (B) Build Dunes
- (C) Create/Nourish Marsh
- (D) Fill Pipeline Canals
- (E) Remove Existing Breakwaters

(A) Nourish Shoreline

Shoreline nourishment will be accomplished by introducing sand into the near-shore zone to halt or minimize shoreline retreat in areas with some of the highest erosion rates in the country. Introduced sand will be placed directly on the shoreline or established in feeder berms in the nearshore area. Sand fencing and vegetative plantings will be included where appropriate.

(B) Build Dunes

Dunes will be built through sand placement and possibly sculpting in areas where the dunes are very small or non-existent. Sand fencing and vegetative plantings will be included where appropriate.

(C) Create/Nourish Marsh

Marsh will be created through traditional dredge and fill methods or nourished with a diluted slurry or spray dredge, and will include vegetative plantings of multiple native species where required. Marsh nourishment will be used in areas of broken marsh to avoid covering existing vegetation, whereas traditional fill methods will be used in areas of open water. In open areas, dredge and fill without containment could nourish adjacent marsh. Aquatic organism access and interspersions of tidal creeks and ponds would be maintained.

(D) Fill Pipeline Canals

Numerous canals cutting through the islands or shoreline create weak points that are likely to increase erosion and breaching. Loss of sediment occurs when storms cause the washover of shoreline material into shore-parallel canals that are close to the gulf shoreline. Selected canals will be filled and planted to create marsh or filled to higher elevations (ridges) and planted with woody vegetation. On the headland, the LOOP and BP pipeline canals are conduits that have altered the hydrology and salinity of the back marshes in their vicinity. These will be filled or plugged at strategic locations.

(E) Remove Existing Breakwaters

A series of breakwaters constructed of sunken barges are located near the western portion of the headland and will be removed if they prove to be an impediment to a beach nourishment project.

(F) Restore Maritime Forest

The relic beach ridges that supported the maritime forest on Cheniere Ronquille have almost eroded away. The remaining fragment will be expanded either through back-dune construction, to mimic relic beach ridges and provide the elevation needed for maritime forest species, or by planting other woody species.

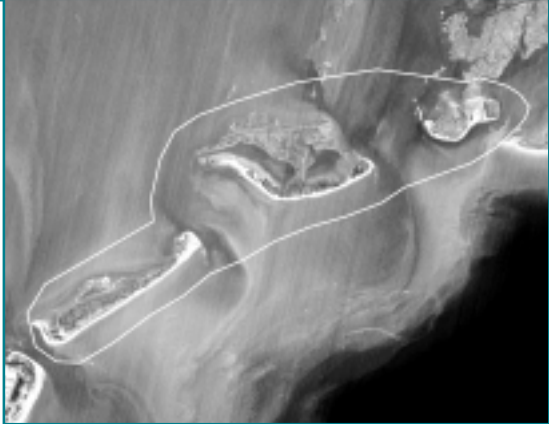
(G) Construct Terminal Structure at Barataria Pass

West Grand Terre Island is on the downdrift end of a littoral cell and sediment is currently being lost into the channel or to the Barataria ebb tidal shoal. This measure proposes that a terminal structure (armoring, t-groin, etc.) be used both to prevent the loss of material from the western end of West Grand Terre Island and to protect Fort Livingston, a historical resource.

(H) Protect Bay-side Shoreline

This measure will provide shoreline protection (segmented breakwaters, artificial reefs/islands, armoring) on the bay side of the Grand Terre islands to decrease bayside marsh erosion, with the added benefit of protecting cultural resources on West Grand Terre Island.

2 Grand Terre Reach



USGS-National Wetlands Research Center

- (A) Nourish Shoreline
- (B) Build Dunes
- (C) Create/Nourish Marsh
- (E) Fill Pipeline Canals
- (G) Construct Terminal Structure at Barataria Pass
- (H) Protect Bayside Shoreline

3 Cheniere Ronquille Reach



USGS-National Wetlands Research Center

- (A) Nourish Shoreline
- (B) Build Dunes
- (C) Create/Nourish Marsh
- (D) Fill Pipeline Canals
- (F) Restore Maritime Forest

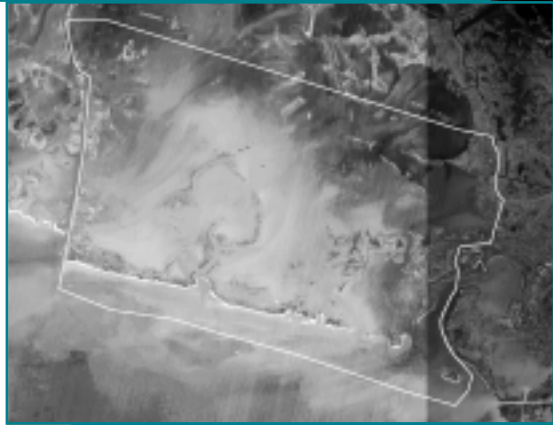
4 Shell Island Reach



USGS-National Wetlands Research Center

- (I) Restore Shell Island
- (J) Modify the Empire Jetties
- (L) Create Artificial Ridges/Reefs

5 Scofield Reach



USGS-National Wetlands Research Center

- (A) Nourish Shoreline
- (B) Build Dunes
- (C) Create/Nourish Marsh
- (D) Fill Pipeline Canals
- (K) Restore/Reconnect Sandy Point

(I) Restore Shell Island

This measure will rebuild the island with dredged material to restore shoreline integrity and provide protection to back-barrier areas, and includes construction of beach, dune and back-marsh habitats.

(J) Modify the Empire Jetties

Modifications will be made to the Empire Jetties to improve longshore sediment transport.

(K) Restore/Reconnect Sandy Point

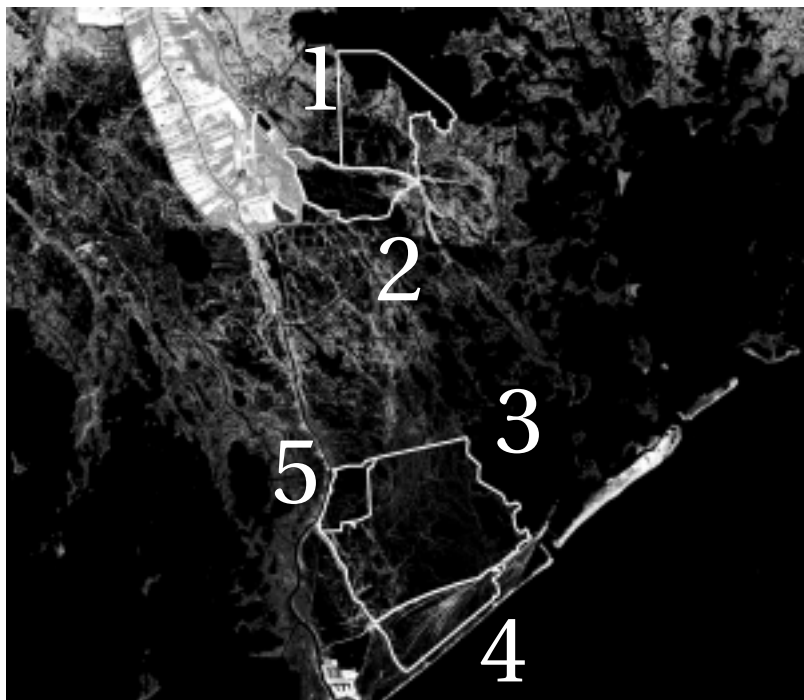
The island will be enlarged using dredged sediments to reconnect to the nearby western shoreline and increase shoreline integrity.

(L) Create Artificial Ridges/Reefs

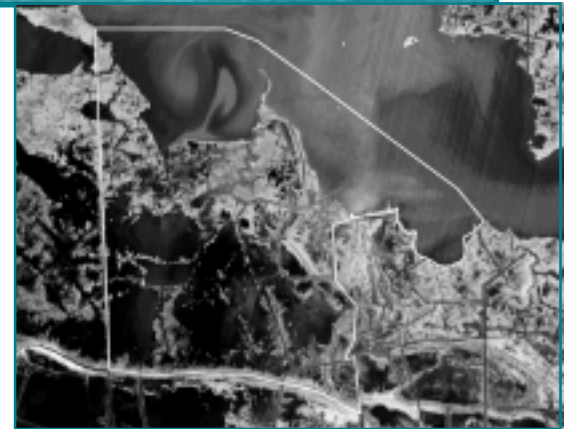
Instead of, or in addition to, Shell Island reconstruction, recycled oyster shells or other hard material will be used to create storm ridges and reefs. These ridges and reefs will provide additional habitat types and reduce the impact of waves along the back-barrier areas.

Proposed Restoration Measures: Wetlands Creation and Restoration

USGS-National Wetlands Research Center



1 Bayou L'Ours North Unit



USGS-National Wetlands Research Center

(C) Create/Nourish Marshes
(I) Protect Shoreline

Wetlands Creation and Restoration Measures

This component of the feasibility study will develop projects to restore and create wetlands in the southwestern Barataria Basin. The goal of the projects is to protect and sustain ecological functions, including wetlands and wooded ridge habitat. Measures being considered include those described letters "A" through "I."

(A) Buy Land/Obtain Conservation Easement

Listed as imperiled to critically imperiled, the maritime forest habitat in the Chenier Unit is some of the last remaining in Louisiana. Where commercial development is likely, an option to acquire control of the land will be considered. Placing the land under state control will prevent both unwanted development and land rights issues from hampering future conservation efforts.

(B) Restore Ridges

Expanding the chenier ridges that support maritime forest habitat includes rebuilding subsided ridges, replanting native woody species and creating marsh between ridges, as well as pairing with marsh creation to offset any habitat conversions. Material will be obtained off-site or from degrading impoundment levees and spoil banks.

(C) Create/Nourish Marshes

This measure, which also addresses land-bridge restoration, uses fill material from off-site. There are two main placement areas: open water with little or no existing marsh remaining, and broken marsh with few spoil banks.

(D) Create and Enhance Wooded Habitat

Existing spoil banks and other features with higher elevations will be used as a framework to create wooded habitat. Additionally, the steep sides typical of spoil banks will be reduced and a vegetation and elevation gradient created—with woody species on higher elevations, grading down to marsh vegetation at lower elevations—providing an ecological link from the upland habitat to the marshes. The higher areas will stabilize adjacent marshes and be constructed primarily of material from spoil banks as they are breached for hydrologic restoration.

(E) Fill, Plug and Isolate Canals

Where canals act as a conduit for tidal flow into areas that historically had much slower or non-existent tidal currents, filling, plugging or isolating the canals will restore the hydrology to more natural conditions.

(F) Develop Educational/Recreational Area Next to Highway 1 in Chenier Unit

Because of the proximity of LA Highway 1 to maritime forest habitat, the opportunity exists to create a facility for bird watching and fishing. This will consist of a parking area with access to a boardwalk and observation tower.

(G) Degrade Impoundment Levee in Chenier Unit

Degradation of portions of the mariculture impoundment levee would restore a more natural hydrology to the impounded area, allow natural sediment introduction and reduce the land-loss rate. Material from the levee will be used to fill borrow pits used for its construction, restore ridges or create additional wooded habitat.

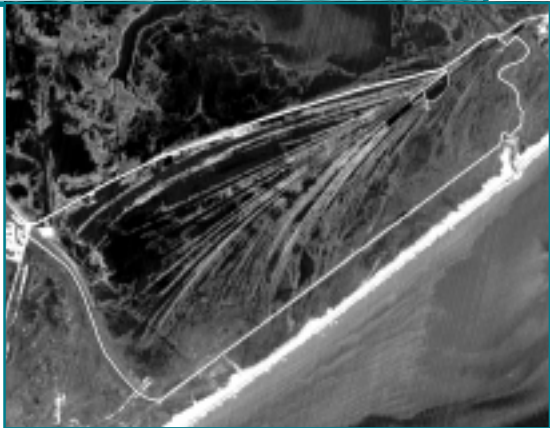
2 Bayou L'Ours South Unit



USGS-National Wetlands Research Center

- (C) Create/Nourish Marshes
- (E) Fill, Plug and Isolate Canals

4 Chenier Unit



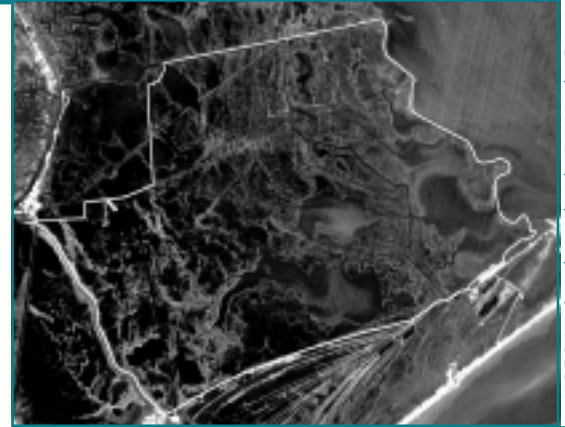
USGS-National Wetlands Research Center

- (A) Buy Land/Obtain Conservation Easement
- (B) Restore Ridges
- (C) Create/Nourish Marshes
- (D) Create and Enhance Wooded Habitat
- (E) Fill, Plug and Isolate Canals
- (F) Develop Educational/Recreational Area Next to LA Highway 1 in Chenier Unit
- (G) Degrade Impoundment Levee in Chenier Unit
- (H) Terrace Open Areas

(H) Terrace Open Areas

Terracing, while creating some marsh, primarily protects existing marsh habitat by preventing erosion and trapping the limited sediment supply. Sediments in this area are particularly suited for terracing. Material will be dug from adjacent water bottoms where appropriate.

3 Caminada Unit



USGS-National Wetlands Research Center

- (C) Create/Nourish Marshes
- (I) Protect Shoreline

5 Leeville Unit



USGS-National Wetlands Research Center

- (C) Create/Nourish Marshes
- (D) Create and Enhance Wooded Habitat
- (E) Fill, Plug and Isolate Canals

(I) Protect Shoreline

Shoreline protection will consist of offset, segmented, foreshore dikes. These dikes will protect marshes from erosion in areas of rapid shoreline retreat. Material used will be imported, as the adjacent sediments would be unsuitable.

WRDA Funding: A Crucial Step In Saving Louisiana's Coast

continued from page 5...

placed in operation. The model and the lessons learned will then be exported for use in other basins of the coastal zone.

Public Involvement

Consistent with the approach in developing the Coast 2050 Plan, public comment on the feasibility study has been instrumental in establishing concepts, goals and strategies. During the early stages of planning, project managers held a series of public meetings.

- In March and May 2000, the public was provided information and asked for general guidance during two informal meetings in Thibodaux. Additionally, two presentations made to the Barataria-Terrebonne National Estuary Program Management Conference were attended by many stakeholders from business and industry, federal and state agencies and non-profit organizations.
- In June 2000, two formal public scoping meetings were held during the formation of the study's

environmental impact statement for the Barrier Shoreline Restoration and Wetland Creation and Restoration components. Comments in these meetings formed the basis for much of the planning that guided development of the restoration measures.

- In February and March 2001, as restoration project plans were formulated, formal public meetings were held in Baton Rouge, Larose and Belle Chasse.

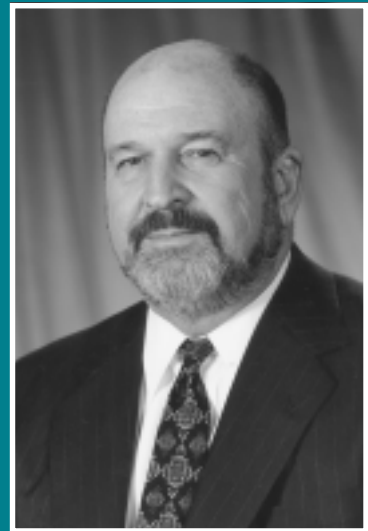
Project managers provided information about study areas and objectives, and solicited information on alternate locations and methods.

Two additional series of public meetings will be held. The first will seek comment before finalizing a recommended plan. The second will be held when the plan is completed, prior to its submission to Congress. For more information on the Feasibility Study, see www.coast2050.gov. WATER MARKS

Governor Calls for Coastal Transition Team

"Reaching to the Future" was the theme of Governor M. J. "Mike" Foster's 2001 Coastal Summit that took place August 15 in Baton Rouge. The CS2001 was attended by 438 business, industry and government leaders, university scientists and other individuals who support the state's dedication to the coastal restoration process.

Foster reaffirmed his commitment to providing adequate state resources to the current problem while calling for a Coastal Transition Team that would not only breathe life into Coast 2050—the state's blueprint for restoring coastal Louisiana—but also lead the state's effort to secure \$14 billion needed for its implementation. The Coastal Transition Team will develop a business plan utilizing all aspects of the state's business community, its cultural and natural resources and abundant energy sources. The governor and Coastal Transition Team Leader King Milling, president of Whitney Bank, will oversee the work.



The Cost of Doing Nothing

Work of this magnitude has a cost. According to Col. Thomas Julich, New Orleans District Engineer, U.S. Army Corps of Engineers, “Construction of projects for all nine basins could take up to 30 years at a cost of \$14 billion dollars.” Without a doubt, the price is high, but the cost of doing nothing is even higher. In the next 50 years, another 1,000 square miles of America’s most productive wetlands will be lost, threatening the interests not only of Louisiana, but the nation as well.

Shipping

With 500 million tons of waterborne cargo passing through Louisiana’s system of deep-draft ports and navigation channels, the state ranks first in the nation in total shipping tonnage. By tonnage carried, the ports between New Orleans and Baton Rouge are

the largest in the world. If present land-loss rates are allowed to continue, more than 155 miles of waterways and several of the ports will be exposed to open water within 50 years, leaving this key national transport system at risk. According to Ted Falgout, director of Port Fourchon, “Ports are the bridge between water and land. Take away their connection to the land-based

roads, rail and support services, make them islands, and they no longer function.”

Oil and Gas

Rising from the wetlands is an economy vital to the nation—evidenced by the oil and natural gas industries that have a value exceeding \$16 billion a year. Eighteen percent of U.S. oil production and 24 percent of natural gas production originates, is transported through or is processed in Louisiana’s coastal wetlands. These industries have more than 20,000 miles of pipelines offshore and thousands more inland—all of which contact land on the shorelines of Louisiana’s disappearing barrier islands and wetlands. These pipelines and more than

continued on the back cover...



Louisiana Office of Tourism Photo



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The Cost of Doing Nothing

continued from page 11...

30,000 wells within the 20-parish coastal area are at risk as the wetlands and barrier islands convert to open water.

Wildlife

In sharp contrast to the gears, pipes and engines of heavy

industry, the diverse and wild environments of the coastal wetlands provide habitat for numerous resident species of animals and vegetation, along with crucial breeding, wintering and stop-over habitat for migratory birds. The broad estuaries bordering the gulf nurture the production of shrimp, menhaden, crabs,

oysters and many other species of fish, shellfish and crustaceans —contributing to nearly 20 percent of the volume of U.S. fisheries. This loss of wildlife and fisheries would be an ecological tragedy.

When added together and projected into the future, the dollars at risk for the nation are incalculable. Secretary Caldwell puts the value of infrastructure alone at \$150 billion, and other estimates are higher. The future of the critical resources found in Louisiana's coastal wetlands depends on whether the nation acts now and avoids the much greater cost of doing nothing. As Governor M.J. "Mike" Foster Jr. observes, "We're either going to pay now and save the coast or pay later in monstrous dislocations that are going to affect the state and the nation."

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SPECIAL ISSUE

Louisiana Coastal Area Feasibility Study

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