

WATER MARKS

Region One:
The Land and Its People

**The Coastal Crisis
and Louisiana's
Response**

A Case Study:
Bayou La Branche
Wetlands Restoration

**Looking to
the Future**

REGION 1

September 2002 • Number 21

Number Four in a Series of Four

WATER MARKS

September 2002
Number 21

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.



Please address all questions, comments, suggestions and changes of address to:

James D. Addison
WaterMarks Editor
New Orleans District
U.S. Army Corps of Engineers
P.O. Box 60267
New Orleans, LA 70160-0267
(504) 862-2201
E-mail: James.D.Addison@mvn02.usace.army.mil

ABOUT THIS ISSUE'S COVER . . .

The future of Region One's wetlands is intertwined with that of its estuary and the people of New Orleans.

Louisiana Office of Tourism Photo

Louisiana Coastal Wetlands Planning, Protection and Restoration News

In This Issue...

This is the fourth of a four-part series presenting an in-depth look at each of the four regions defined in Coast 2050. Each issue offers a casebook for a single region providing a historical overview, articles on current and future interests, and a detailed look at a regional project. This issue covers Region One.



Contents

Region One: The Land and its People	Page 3
The Coastal Crisis and Louisiana's Response	Page 5
A Case Study: Bayou La Branche Wetlands Restoration	Page 8
Looking to the Future	Page 10
Interview	Page 12

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.btneq.org

www.crcl.org

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

Region One

The Land and Its People



Louisiana Office of Tourism Photo



From a birds-eye view, the wetlands of Region One form a narrow ring around the set of three immense lakes that make up the largest estuarine complex of the Gulf Coast. Stretching between the lakes, like fragile green threads, are the region's remaining marshes and cypress swamps.

Out in the Gulf of Mexico, the thin line of the Chandeleur barrier islands marks the easternmost remnant of this ancient and abandoned delta of the Mississippi, most of

which has subsided beneath the waters. The remaining 483,390 acres of rapidly disappearing wetlands lie behind the barrier islands, line the lakeshores, constitute the land bridges between the lakes and form the upper basin swamps.

Contained within the 1.7-

million-acre Pontchartrain Drainage Basin, Region One is bounded by continental uplands on the north and west, by the Chandeleur Islands on the east and by the Mississippi River and the Mississippi River Gulf Outlet on the south. The region

covers portions of 10 Louisiana parishes: Ascension, Jefferson, Livingston, Orleans, St. Bernard, St. Charles, St. James, St. John the Baptist, St. Tammany and Tangipahoa. Because lakes Maurepas, Pontchartrain and Borgne cover 55 percent of its area, Region One holds the most open water and the least amount of wetlands of all the coastal regions in

US Army Corps of Engineers



South shore of Lake Pontchartrain at the Causeway Bridge in Metairie

southern Louisiana.

Once a wet wilderness between the Mississippi River and the uplands to the north, inhabited solely by the Muskogee group of Native Americans, the area was explored by the French in 1682. Soon after that trade goods were being shipped from the Gulf through the three lakes, laboriously carried up the Amite River and then transported overland to the Mississippi at Baton Rouge. Needing a shorter route to the big river, the French settled New Orleans in 1718, choosing the only “high ground” adjacent to the Mississippi, a mere 14 feet above sea level. Here goods could be unloaded and stored without danger of immediate flooding, and here a fort could be built to protect access to the



Louisiana Office of Tourism Photo

river and the interior of the continent. Since then the city's history has dominated the region, blending a rich culture defined by the diverse French, Spanish, African and English people who came to this land.

When non-native people, however, think of this area, New Orleans jazz, Cajun cooking and Mardi Gras overshadow Region One's tremendous economic importance to the entire nation. The

riverside docks from New Orleans to Baton Rouge constitute the largest port in the nation, handling almost 375 million tons of shipping in the year 2000. The petrochemical and other heavy industries situated along the Mississippi River, the tourism, forestry and agriculture, fishing and trapping are also vital to the economic health of the region. **WATER MARKS**



Louisiana Office of Tourism Photo

The Coastal Crisis and Louisiana's Response



Louisiana Office of Tourism Photo

From the cypress and tupelo swamps in the west to the vulnerable Chandeleur Islands in the east, the fragile wetlands of Region One act to preserve, protect and nurture the wildlife and culture of this unique area. After 300 years of urban development, this region has the least amount of wetland left of any of the Louisiana coastal regions. Nevertheless, it stands to lose an additional 45,000 acres of marsh and over 100,000 acres of swamp by 2050 if nothing is done to restore the wetlands surrounding the Gulf's largest and most vulnerable estuary.

These valuable marshes and swamps are deteriorating, and at least some of the causes are clear:

- Natural subsidence of this ancient part of the Mississippi delta
- Sea level rise
- Lack of fresh water, nutrient and sediment input from the leveed Mississippi River
- Salinity increases

- Large populations of nutria and muskrat
- Hurricane damage (hurricanes Betsy, Camille, Andrew and Georges, in particular)
- Lakeshore erosion
- Draining, ponding and canal building

The marshes and swamps on the land bridges between the large lakes are particularly important because they protect the upper parts of the estuary from the direct influence of the Gulf. Should they be breached or destroyed, the tidal flux, wave energies and saltwater intrusion into the western end of the region would be devastating. The fringe marshes act as nursery

grounds for many forms of wildlife, including commercial and recreational marine species such as redfish, speckled trout, shrimp and blue crab. They also serve to soak up storm waters and filter out pollutants before they can reach the lakes.

If the wetlands are destroyed, New Orleans, squeezed between the leveed shores of Lake Pontchartrain and the levees of the Mississippi River, could lose much more than important species of fish. The petrochemical indus-



Louisiana Department of Wildlife and Fisheries

tries, the seaport, the cultural center and almost two million people are all at risk.

The Mississippi River Gulf Outlet (MRGO) navigational channel, opened in 1963, has provided a forewarning of the sort of disaster that wetlands loss can engender. By breaching La Loutre Ridge, this channel brought salt water from Breton Sound to East New Orleans, increased the salinity of Lake Pontchartrain and caused a large lake-bottom “dead zone” at its outlet. The erosion along its banks from the wave energy of passing ships and the destruction of adjacent freshwater marsh has caused the MRGO channel to widen from 750 feet to more than 2,000 feet in some areas.

Wetlands restoration within Region One requires the coordinated efforts of many concerned groups. A problem



Louisiana Office of Tourism Photo

in any one area can have rapid consequences elsewhere in the estuary complex as the waters in the lakes can circulate brackish water along their shores and into the marshes and swamps. Like falling dominoes, the disappearance of the Biloxi Marshes would threaten the Pontchartrain/Borgne land bridge and eventually the Maurepas/Pontchartrain land bridge as well.

But something is being done to hold these fragile pieces of the ecosystem in place. Even though the Chandeleur Islands are a designated wilderness area (where human alterations are usually prohibited), oyster grass (*Spartina alterniflora*) is being planted to alleviate some of the damage Hurricane Georges caused in 1998. Some marshes surrounding the rest of the estuarine lakes are being

restored by pumping out excess water or by rebuilding fragmented marsh and shallow open-water areas with dredged sediments. A diversion from the Mississippi River is planned for the large swamp southwest of Lake Maurepas, bringing fresh water, nutrients and sediment.

To keep the lakes healthy, bottom shell dredging is now prohibited and successful efforts are underway to control the pollution sources of the shores. Some of the most vulnerable parts of the shorelines have (or will soon have) rock breakwaters to diminish the wave energy eating away at the marshes. In total, half a dozen restoration projects have reclaimed nearly 5,000 acres of wetland and six developing projects are projected to rescue 1,100 more acres. **WATER MARKS**

US Army Corps of Engineers



MRGO

Region One CWPPRA Projects: Construction Status

Project Number	Project Title	Description of Project Work	Net Acres at 20 years	Completion Date	Construction Status
PO-17	Bayou LaBranche Wetland Creation	Dredging and pumping sediments to create vegetated wetlands	203	7-Apr-94	Construction complete; Monitoring in progress
PO-16	Bayou Sauvage Refuge Restoration	Installation of two pumps to remove excess water	1,550	30-May-96	Construction complete; Monitoring in progress
PO-06	Fritchie Marsh Restoration	Installation of culvert and weir; enlargement of channel	1,040	1-Mar-01	Construction complete; Monitoring in progress
PO-18	Bayou Sauvage NWR Hydrologic Restoration	Installation of two pumps to remove excess water	1,280	28-May-97	Construction complete; Monitoring in progress
PO-19	MRGO Disposal Area Marsh Protection	Repair dike breaches south of La Loutre Ridge	755	29-Jan-99	Construction complete; Monitoring in progress
PO-22	Bayou Chevee Shoreline Protection	Construction of two rock dikes with fish dips to provide access to shallow-water coves	75	12-Dec-01	Construction complete; Monitoring in progress
PO-25	Bayou Bienvenue Pump Station Diversion and Terracing	Combination of existing pump stations with the construction of a 2,500-foot long diversion channel, water control structures and earthen terraces planted with cordgrass	442	Unscheduled	Requesting Deauthorization
PO-24	Hopedale Hydrologic Restoration	Replace collapsed culverts installed in the 1950s near Yscloskey	134	Unscheduled	Engineering and Design
PO-27	Chandeleur Islands Marsh Restoration	Vegetative planting	220	Unscheduled	Construction
PO-28	La Branche Wetlands Terracing, Planting and Shoreline Protection	Installation of shoreline protection; vegetative planting; herbivore control	489	Unscheduled	Engineering and Design
PO-26	Opportunistic Use of Bonnet Carré Spillway	Pulling pins to prevent spillage of the Bonnet Carré structure	177	Unscheduled	Engineering and Design
PO-30	Lake Borgne at Shell Beach	Construction of a continuous nearshore rock breakwater along the south rim of Lake Borgne	229	Unscheduled	Engineering and Design
PO-31	Lake Borgne Shoreline Protection at Bayou Dupre	Construction of nearshore rock breakwaters	83	Unscheduled	Engineering and Design
PO-29	Diversion into Maurepas Swamp	Construction of two box culverts, a receiving pond reinforced with riprap and a deep outflow channel to run from the Mississippi River to U.S. Interstate 10	N/A	Unscheduled	Engineering and Design

First Call for Symposia and Workshops on Wetland Stewardship

The 24th Annual Conference of the Society of Wetland Scientists will be held June 8–13, 2003, in New Orleans. Based on the theme *Wetland Stewardship: Changing Landscapes and Interdisciplinary Challenges*, the meeting will address interdisciplinary approaches and technologies

that are currently being applied to sustain wetlands across diverse environments.

Symposia and workshops should combine traditional and applied wetland sciences with ecology, physical science, engineering, economics and/or social science. **The deadline for submission is**

September 30, 2002. For more information, see the conference Web site (www.sws.org/neworleans/) or contact Dr. Robert R. Twilley, University of Louisiana at Lafayette;; e-mail: ceet@louisiana.edu; Phone: 337-262-1776; Fax: 337-262-1866.

A Case Study:

Bayou La Branche Wetlands Restoration

US Army Corps of Engineers



When the powerful forces of prolonged development and natural disaster strike fragile wetlands, the effect is devastating. But today in southeastern Louisiana, man is working to restore what was once lost. Through the Bayou La Branche Wetlands Restoration Project, dredged sediment has been used to restore deteriorated wetlands in a 436-acre, open-water pond in St. Charles Parish.

Located on the southwestern shore of Lake Pontchartrain, this area was once classified as a brackish marsh that served as a nursery ground for commercial and

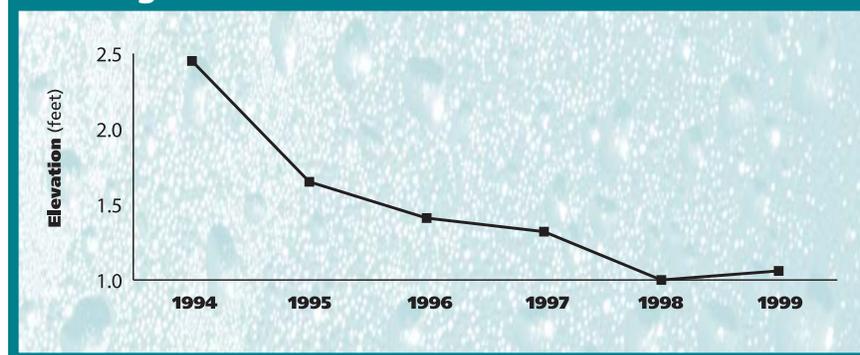
recreational fisheries. However, beginning in the 1800s, a series of events, both man-made and natural, nearly destroyed the entire marsh and converted most of the area to open water. In 1830, construction of the Illinois Central Railroad created a barrier to drainage and sheet flow across the marsh from upland areas. In the early 1900s, the area was leveed and pumped for agriculture and subsequently subsided. A hurricane broke the levee in 1915, leading to the formation of a large, open-water pond. In the 1960s, canals were dug

adjacent to the area during construction of Interstate 10, further altering the distribution of water and causing brackish water to flow from Lake Pontchartrain into the interior marsh.

Finally, nature struck two more blows with Hurricane Betsy in 1965 and Hurricane Camille in 1969, flooding much of the remaining marsh with brackish water from the lake, stressing vegetation and contributing to the loss of marsh. Over the years, erosion and subsidence progressively increased the size of the pond, leaving just a narrow band of marsh along Lake Pontchartrain. Retreat of the lake's shoreline between 1955 and 1972 was estimated to be 9.5 feet per year, threatening to expose the pond to damage from lake waves through a breach in the narrow shoreline.

In recent years the pond's proximity to the lake has provided an ideal opportunity to restore the marsh using

Average Sediment Elevation



dredged sediment. The Bayou La Branche Wetlands Restoration Project was designed to create more than 300 acres of emergent land to encourage the natural establishment of wetland vegetation. The ultimate goal was to reach a ratio of 70 percent emergent marsh to 30 percent open water within five years of project completion.

Authorized by the Coastal Wetlands Planning, Protection and Restoration Act (Breau Act), the project involved pumping nearly 2.7 million cubic yards of sediment from Lake Pontchartrain into the pond. Construction was completed April 6, 1994. Three months later the dredged material was seeded with *Echinochloa crusgalli*, commonly known as Japanese millet, to enhance plant growth. The sediment is expected to settle to an elevation of .65 to 1.62 feet. Once the sediment is completely settled, plans call for planting brackish marsh species.

To measure the project goals, sediment elevation, soil properties, water level and vegetation are being monitored in the project area. Aerial photographs are being taken to compare land-to-water ratios in the project and reference areas. The results so far show that sediment



November 1993



November 1997

elevation and water level variability decreased in the project area from April 1996 to December 1997. As the sediment and water levels changed, the composition of plant species improved. Dry-tolerant species decreased and wetland-specific species increased.

Preliminary reports from recent monitoring show that the Bayou La Branche project has reached or surpassed its target ratio of 70 percent marsh to 30 percent open

water, according to John Troutman, coastal resources scientist supervisor for the Louisiana Department of Natural Resources. Although complete results are not yet available, Troutman reports that elevation in the area has stabilized, and woody vegetation is disappearing and being replaced by wetland-specific plant species. "This is what we want," says Troutman. "This has been a pretty successful project." **WATER MARKS**

USGS Photo

Looking to the FUTURE

In Region One the most significant project authorized by the Breaux Act is the Diversion into Maurepas Swamp (PO-29). A joint effort by the state and federal government and supported by the local community, this \$57.5 million project will revitalize the 36,121-acre swamp by pumping in nutrient-rich fresh water from the Mississippi River. Surveying and design are expected to begin in 2003.

Altogether 13 Breaux Act projects have been completed or are underway in Region One, but more must be done to protect and restore the region's marshes and swamps. "The Breaux Act projects will prevent between 10 and 15 percent of the loss" of wetlands in the Pontchartrain Basin, according to Sue Hawes, project manager for the environment with the New Orleans District, U.S. Army Corps of Engineers. "Even after we implement all of the projects proposed in the Coast 2050 plan, we will prevent only about 74 percent of the loss in the basin."

A major cause of historic wetland loss was the construction of the Mississippi River Gulf Outlet (MRGO). This 70-mile, deep-draft, man-made channel was opened in 1963 to shorten the distance from the Gulf of Mexico to the Port of New Orleans. "Forty miles of it were dredged directly through wetlands," according to Carlton Dufrechou, executive director of the Lake Pontchartrain Basin Foundation.

Originally 750 feet wide, the outlet has eroded to 2,000 feet in width in many places. The MRGO has contributed to the direct loss of more than 20,000 acres of wetlands and caused more than 36,000 acres of marshes and Lake Pontchartrain to become more brackish. Moreover, it increases the region's exposure to potential damage from storms and tidal surges.

To combat this problem, a task force of many government and non-profit agencies has been formed. "For the first time in a decade, we finally have a consensus," says Dufrechou.

"The question now is 'how' and 'when.'"

The Corps of Engineers is currently conducting the MRGO Re-evaluation Study to determine whether it is economically feasible to keep the channel open for deep-draft vessels. Costs for maintaining the MRGO are high — \$13.8 million per year. However, even if the study determines that the MRGO should be closed to deep-draft traffic, the closure won't happen before 2015. That is the anticipated completion date for the Inner Harbor Navigation Canal Lock Replacement — a \$630 million project that will provide a more efficient route for marine vessels traveling between the Mississippi River and the Gulf Intracoastal Waterway.

Until the MRGO is closed to deep-draft traffic, the Basin Foundation is recommending the use of "best management practices": requiring deep-draft vessels to travel as slowly as possible to reduce erosion from wakes; and dredging only when necessary and only to a depth of 36 feet.

"If we are going to be serious about conservation and restoration in the area," says Dufrechou, "we have to start with the Mississippi River Gulf Outlet." **WATER MARKS**

make the connection between wetlands loss and their daily lives. I've spent years talking about this issue to everyone I could, whether it was a conservation group or a Rotary club. Although the reaction has been, "that's terrible," too often people have had no motivation to act because they couldn't see what was at stake for them personally.

 **WaterMarks:** *And how do you make that connection?*

 **Thomas:** One thing that would help is what marketers call "branding" — a way to show people every day how dependent they are on coastal wetlands for everything from shrimp to gasoline. We should have an image or logo on every gas pump that reminds us that the fuel we're pumping arrived through the courtesy of a coastal wetland. Boat shops, tackle shops and grocery stores should all be making a similar point. We need a way to motivate people to do something as simple as write their legislators and say, "I've become aware of how important coastal wetlands are to me. I want you to do something to restore them." Citizens don't have to come up with the solutions; they just have to create the political incentive for those solutions.

 **WaterMarks:** *Based on your description of a hurricane hitting New Orleans, the private sector has a lot at*

stake in protecting and restoring wetlands.

 **Thomas:** They have a lot at stake and I think they can be part of the solution because their attitudes are changing. Twenty years ago, even 10 years ago, the gas and oil industry was in a persistent state of denial about the magnitude of their role in coastal loss. My impression is that their attitudes have changed. They now understand that they were part of the problem, and they know everyone is watching — and they have their own interests to protect. They don't want their pipelines lying in open water, because they know they could snap, causing ecological havoc and a terrible economic loss — a lose-lose situation.

 **WaterMarks:** *What role should government play in encouraging the private sector?*

 **Thomas:** First, I would like to think that the private sector clearly understands their obligations, as responsible citizens, in addressing coastal loss. That said, I do think it will be beneficial to give the private sector incentives from government to expand their role in the preservation and restoration effort. I'd like to see officials go out and really ask businesses, "What do you need to move in a direction that will be good for you and good for the wetlands?" Government needs to be knocking on doors, pushing at the edge, taking the risks

demanding by the gravity of the situation. And that's going to take courageous leadership.

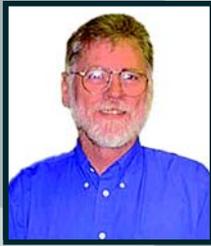
 **WaterMarks:** *Any solution is going to require a huge infusion of dollars, and that will require a national commitment. How do you convince a senator from South Dakota to support the idea of channeling billions of dollars into Louisiana to save coastal wetlands?*

 **Thomas:** It's not going to be easy, but we have to start here at home. We have to demonstrate to the nation that we understand the magnitude of the problem — that we recognize we are facing an impending disaster. We have to shake off the bureaucratic lethargy that keeps us from doing the things on which there's already a clear consensus.

 **WaterMarks:** *For example?*

 **Thomas:** Closing the MRGO is one example, and there are many others. Most importantly, we have to do something we've been hesitant to do — we must stop trying to find a way to make saving the wetlands free for us. That's sending the wrong message. If we really want credibility with the nation, we must be willing to tax ourselves at a level that reflects our claims about the magnitude of the problem — anything less simply won't work. WATER.MARKS

The WATERMARKS Interview



Dr. Bob Thomas

Dr. Thomas holds the Loyola Chair in Environmental Communications at Loyola University in New Orleans.

WATERMARKS: *There's been a lot written about coastal wetlands forming a buffer zone that protects the urban population of New Orleans. Everyone agrees that part of the protection has been lost, but have the losses been large enough to really make the city vulnerable?*

THOMAS: Vulnerable is an understatement. This city, its people, its economy and its culture are all exposed to a potential — if not inevitable — catastrophe. Every three miles of wetlands reduces the height of a storm surge by one foot. In the past, these coastal wetlands and barrier islands have stood between us and the devastation of a hurricane's storm surge. But now, because 25 to 35 square miles of marsh and swamp convert to open water every year, it's clear that literally hundreds of thousands of people

and billions of dollars in property are at grave risk in New Orleans and the surrounding area.

WATERMARKS: *Can you describe that risk?*

THOMAS: NOAA [National Oceanic and Atmospheric Administration] is predicting that there will be between six and eight hurricanes developing between June 1 and November 30, which is about average. If we're lucky they'll all miss the city, but if we're not — without the buffers in place — the consequences are difficult to imagine.

WATERMARKS: *Give us a little glimpse.*

THOMAS: OK. Consider one simple fact — the storm surge and aftereffects from a major hurricane would put 20 feet of water in downtown New Orleans.

Imagine you're one of the thousands of people who didn't evacuate because you don't own a car and are too poor to find some other form of transportation. Then imagine yourself knee deep in water while you're standing on top of a two-story building in the middle of the night. Imagine what's left of the business districts, restaurants and homes after the water does recede. Think about what it would mean to the personal lives and the economy of the city in the following weeks and months.

WATERMARKS: *The point is that coastal wetlands loss isn't somebody else's problem but everybody's.*

THOMAS: It's everybody's problem but we won't get people's attention until we can

continued on the page 11...

Louisiana Coastal Wetlands Planning, Protection and Restoration News

WATERMARKS

REGION 1 September 2002 • Number 21

Number Four in a Series of Four

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

OFFICIAL BUSINESS

First Class Mail
Postage and Fees Paid
U.S. Army Corps of Engineers
New Orleans District
Permit No. 80