Region 1 Recently Constructed Project

Photo by LDNR

Construction of an earthen dike in the MRGO Back Dike Marsh Protection Project (XPO-71).

Progress in Region 1

Altered hydrology, shoreline erosion, and subsidence have been identified as major contributors to coastal wetland loss in Region 1. The four projects constructed to date have addressed these issues on a small scale. However, there are a number of projects in various stages of development in Region 1 that will address larger areas of wetlands.

Equally significant as preserving wetland acreage, the projects implemented in Region 1 to date have provided an opportunity to observe the preliminary effectiveness of four small-scale restoration projects with an eye toward future projects. Use of dedicated dredging at the LaBranche wetlands has resulted in the creation of approximately 300 acres of land in place of an open water pond originally created by the combined effects of abandoned agriculture attempts and storm damage. The dredged material has continued to compact and subside and has evolved into a self-sustaining area dominated by wetland vegetation. This project has also provided information (such as compaction rates and vegetation colonization) that can be applied to future projects using dredged material in Louisiana. The Bayou Sauvage projects (XPO-52a and XPO-52b) have indicated that using pumps can be an effective means of reducing water levels. However, mechanical problems with the pumps limited their effectiveness while concurrently, natural drought conditions limited the necessity for pump operation. We cannot distinguish at this time how these lowered water levels have affected sediment elevation and compaction, yet we are able to determine how they benefit plant growth.

Breached canal spoil banks were repaired and rebuilt adjacent to the MRGO to prevent complete drainage of interior wetlands in the MRGO Disposal Area Marsh Protection project. This project was reduced in scope from the original design. Consequently, the construction and monitoring budgets were also reduced. Monitoring of this project will be via periodic visual inspections and review of aerial photography to ensure that the spoil banks maintain their structural integrity.

The preliminary results from these four specific projects indicate that we have the means to affect areas of wetlands and potentially manage some of the processes (i.e., hydrology, sediment elevation) that dictate whether or not a wetland area is productive. In areas where altered hydrology has interrupted drainage, we can potentially use pumps to control water levels. Where marshes have been lost and have become large areas of open water, we have the ability to recreate marsh through the use of dredged sediments.

Challenges to restoration efforts in this region have centered around land rights issues. Approximately 80% of Louisiana's coastal lands are privately owned. Landowners may decline to participate in restoration projects or restrict access for construction and monitoring. For example, the Eden Isles project was deauthorized due to a change in landownership. The new landowner chose not to participate in the restoration program for financial reasons, so the project could not continue.

The five Breaux Act projects from priority lists 1-8 yet to be constructed in Region 1 target issues of land loss not previously addressed. Shoreline protection will be employed in marsh creation at Bayou Chevee (XPO-69). More complex methods such as hydrologic restoration will be employed at Fritchie Marsh (PO-06) and Hopedale Hydrologic Restoration (PPO-38). These projects include such features as restoring bayous, plugging old canals, and providing a means for adequate drainage to protect against saltwater intrusion and marsh erosion. A combination of earthen terraces (shown to be successful in Region 4), existing pump stations, and a new diversion channel at Bayou Bienvenue (XPO-74a) will test the effectiveness of this innovative technique at addressing localized wetland loss. With continued monitoring and project evaluation, we will understand the effectiveness and utility of these techniques at addressing coastal wetland loss on an ecosystem-level scale.

Though these projects were authorized prior to the development of the Coast 2050 Plan, consistency in restoration techniques and project types between past efforts and the new planning system smooths the transition from smaller site-specific projects to a larger ecosystem-wide approach. Thus, projects begun under guidelines set by the 1993 restoration plan meld easily with new projects proposed under the Coast 2050 Plan. The Coast 2050 Regional Ecosystem Strategies for Region 1 include restoring natural drainage patterns (hydrology), maintaining the integrity of the Lake Pontchartrain shoreline, and maintaining the land bridge between Lakes Pontchartrain and Borgne. All of the projects already constructed in Region 1 fit into this basic framework for ecosystem sustainability, attesting to the progressive evolution of the Breaux Act in Louisiana.

Region 2 Background

Region 2 (see figure 3.1, page 9) comprises three distinct hydrologic basins including Barataria, Breton Sound, and the Mississippi River Birdsfoot Delta. It is bounded by the Mississippi River Gulf Outlet (MRGO) disposal area to the east, Bayou Lafourche to the west, the Mississippi River to the north, and the Gulf of Mexico to the south. Historically, marshes within this region have received riverine water, nutrients, and sediment during annual flooding of rivers such as the Mississippi, and distributary bayous such as Bayou Lafourche. But today, this natural, hydrologic process that helped to sustain marshes in the past has been altered by the construction of levees to protect communities. This method of protection, although important for the livelihoods of people in south Louisiana, has accelerated wetland loss and has forever altered the self-sustaining marsh building processes within this region. The Mississippi River has changed course numerous times, each time building a new delta lobe while abandoning the old one. The decision to maintain the river in its present location also limits the deposition of sediment that would otherwise occur via the Atchafalaya River in Region 3.

Region 2 contains approximately 894,700 acres of wetlands (figure 5.4). From 1932 to 1990, this region lost an average of 6,207 acres of wetlands per year, totaling nearly 360,000 acres over the 58-year period (LCWCRTF and WCRA 1998). Region 2 currently has some of the highest land loss rates within the Louisiana coastal zone. Most losses have occurred in Barataria basin, where approximately 195,540 acres of wetlands were lost between 1932 and 1990 (LCWCRTF and WCRA 1998). The coastal marshes of Region 2 are subjected to the highest rates of subsidence anywhere on the Louisiana coast. In many areas of Barataria and in the Birdsfoot Delta, subsidence rates exceed 3 ft per century. For marshes to survive under these conditions the marsh soil must build up at at least the same rate; otherwise, the landscape simply becomes submerged. Under optimal conditions marshes can survive this subsidence, and marsh soils can build through sediment deposition and/or organic matter accumulation. However, the massive losses of interior marshes in this area have largely occurred where other factors, such as altered hydrology and saltwater intrusion, combine with subsidence to produce conditions too severe for continued marsh growth. On barrier shorelines and around the edges of bays and waterways, erosion by storms and boat wakes are also important contributors to land loss. Although the majority of barrier island projects implemented to date have been in Region 3, Region 2 also has barrier islands and barrier shorelines, some of which are critical to the protection of interior wetlands. Barrier shorelines in Region 2 will benefit by the implementation of the Coast 2050 Feasibility Study (refer to page 18) and such projects as vegetation planting on Grand Terre Island (XBA-1a-i) and the ninth list East/West Grand Terre Islands Restoration (XBA-01a) project.

Levees on the Mississippi River, major navigation routes such as the Barataria Bay Waterway (BBW), and the Gulf Intracoastal Waterway (GIWW), along with oil and gas exploration, have upset the natural hydrology in this region. Within the Barataria basin, the GIWW has significantly altered freshwater distribution by providing direct lateral access of salt water through tidal influence into interior marshes during low river stages and drought. Channels cut for oil and gas exploration also allow salt water to penetrate inland marshes. In addition to saltwater intrusion, constructed canals and associated spoilbanks prevent the distribution of water across the marsh surface and alter natural drainage patterns. In combination with subsidence, these factors stress vegetation, frequently resulting in plant mortality, and often lead to fragmented marsh or the creation of open water ponds via soil erosion (LCWCRTF and WCR 1998). To combat these types of changes, hydrologic restoration projects such as GIWW to Clovelly Hydrologic Restoration (BA-02), Jonathan Davis Wetland Protection (PBA-35), and Bayou L'Ours Ridge Hydrologic Restoration (PBA-34i) attempt to restore natural flow regimes within the coastal marshes. Freshwater diversion projects such as Bayou Lafourche Siphon (PBA-20), Myrtle Grove Siphon (PBA-48a) and Upper Oak River Freshwater Siphon (PBS-1) are designed to, at least on a local scale, mimic the historical inputs of fresh river water, nutrients, and fine sediments to marshes close to the Mississippi River. In addition, and in recognition that the marshes are now so altered hydrologically compared to historic times, three projects, West Pointe a la Hache Outfall Management (BA-04c), Naomi Outfall Management (BA-03c), and Caernarvon Outfall Management (BS-03a), are being constructed to manage

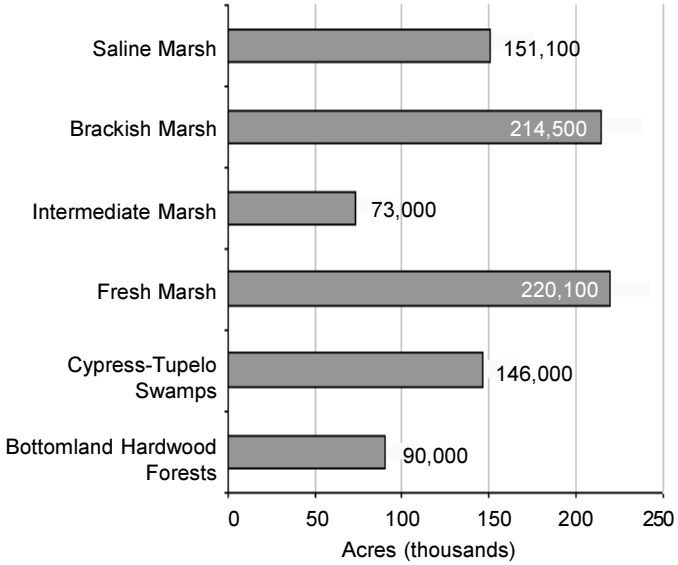


Figure 5.4 *Number of acres representing different wetland types in Region 2.*

the outfall areas close to freshwater diversions to ensure that diverted waters are retained in natural waterways and marshes, rather than flowing rapidly to the gulf through canal networks.

Major contributing factors to shoreline erosion within Region 2 include vessel traffic along the BBW and GIWW navigation canals, and wave action along the shorelines of bays and lakes. The GIWW is prone to breaches along its spoil banks, allowing an influx of salt water into adjacent marshes. Although the original width of the GIWW was between 150 and 200 ft (LCWCRTF 1993), shoreline erosion has resulted in a current width ranging from 500-600 ft, and up to 775 ft wide in some areas (LDNR 1995). The BBW has experienced similar erosion problems, resulting in the construction of several shoreline protection projects along the waterway to limit the continuous expansion of the channel width. Large bodies of water, such as Lake Salvador, have also experienced high rates of shoreline erosion. Shoreline erosion of approximately 13 ft/yr has resulted in breaching in several locations (HNTB 1992). These breaches allow waves to erode the fragile interior marsh surface, resulting in shallow open water ponds in the interior marsh (Gagliano and Wicker 1989; Grosskopf and Vincent 1982; Knutson and Inskeep 1982). Shoreline protection projects on the Barataria Waterway (PBA-12a and PBA-12b) and around large open bay areas (Barataria Basin Landbridge Shoreline Protection XBA-63 and XBA-63ii Phases I and II) will protect more organic marsh soils from the effects of boat wakes or wind waves, while Lake Salvador Shore Protection (BA-15) is a demonstration project to show the efficacy of various approaches to shoreline protection.

Much of the documented land loss within this region has occurred during storm events such as hurricanes, tropical storms, and frontal passages. In a matter of days, storm surges, winds and waves can damage fresh and floating marshes (Guntenspergen et al. 1995) and erode and fragment barrier islands. However, these episodic events redistribute large amounts of sediment throughout the coastal wetlands, which can be of great benefit in maintaining marsh elevation in the face of subsidence. For example, in the deltaic wetlands of the Barataria basin where connections with the Mississippi River have been severed, 40% of the sedimentation on existing salt and brackish marshes between 1975 and 1979 was caused by two storms, Hurricane Bob and Tropical Storm Claudette (Baumann et al. 1984). Two studies (Cahoon et al. 1995; Nyman et al. 1995) documented several centimeters of new sediment deposited in coastal marshes after the passage of Hurricane Andrew in 1992. Even smaller more frequent storms like cold fronts are important in bringing much needed sediment from coastal bays into adjacent marshes (Reed 1989). Storms, like subsidence and erosion, are a natural component of coastal wetland dynamics. Projects such as those described here which can rebuild substrate or modify hydrology to restore vigor to stressed areas can also increase the resilience of marshes to storm damage and promote natural recovery processes by retaining organic material that might otherwise be lost by export.

While many of the existing efforts in Region 2 focus on improving the health and sustainability of the remaining marshes in the area, several projects actually rebuild lost substrate and create new marshes by using either the natural resources of the Mississippi River or capitalizing on opportunities presented by dredging to maintain navigation channels. The most ambitious of these is the sediment diversion at West Bay Sediment Delivery (FMR-03) which alone is projected to create over 9,000 acres of new marsh in the next 20 years. Delta Wide Crevasses (PMR-10) and Channel Armor Gap Crevasse (XMR-10) use the same approach of using the river to create new land on a smaller scale. Dredged material can also be an effective tool in building marsh substrate. In Region 2, Combination Dustpan and Cutterhead Maintenance Dredging (XMR-12b) will help us learn about how to combine marsh creation with the specific dredging approaches needed in this heavily trafficked section of the lower Mississippi River. Success with the placement and planting of dredged material has already been demonstrated within Barataria Bay with Barataria Bay Waterway Marsh Creation (BA-19), and this approach has been extended to working with existing beneficial use projects by planting vegetation and accelerating the transition from dredged material to vegetated marsh with Vegetative Planting of Grande Terre Island (XBA-1ai). These projects are itemized in figure 5.5 and table 5.4.

Breaux Act Projects in Region 2

Twenty-six Breaux Act projects have been authorized from Priority Project Lists 1-8 in Region 2 (table 5.4; figure 5.5). These projects were authorized prior to the Regional Ecosystem Strategies of the Coast 2050 Plan and address critical problems identified in the 1993 Restoration Plan (LCWCRTF 1993).

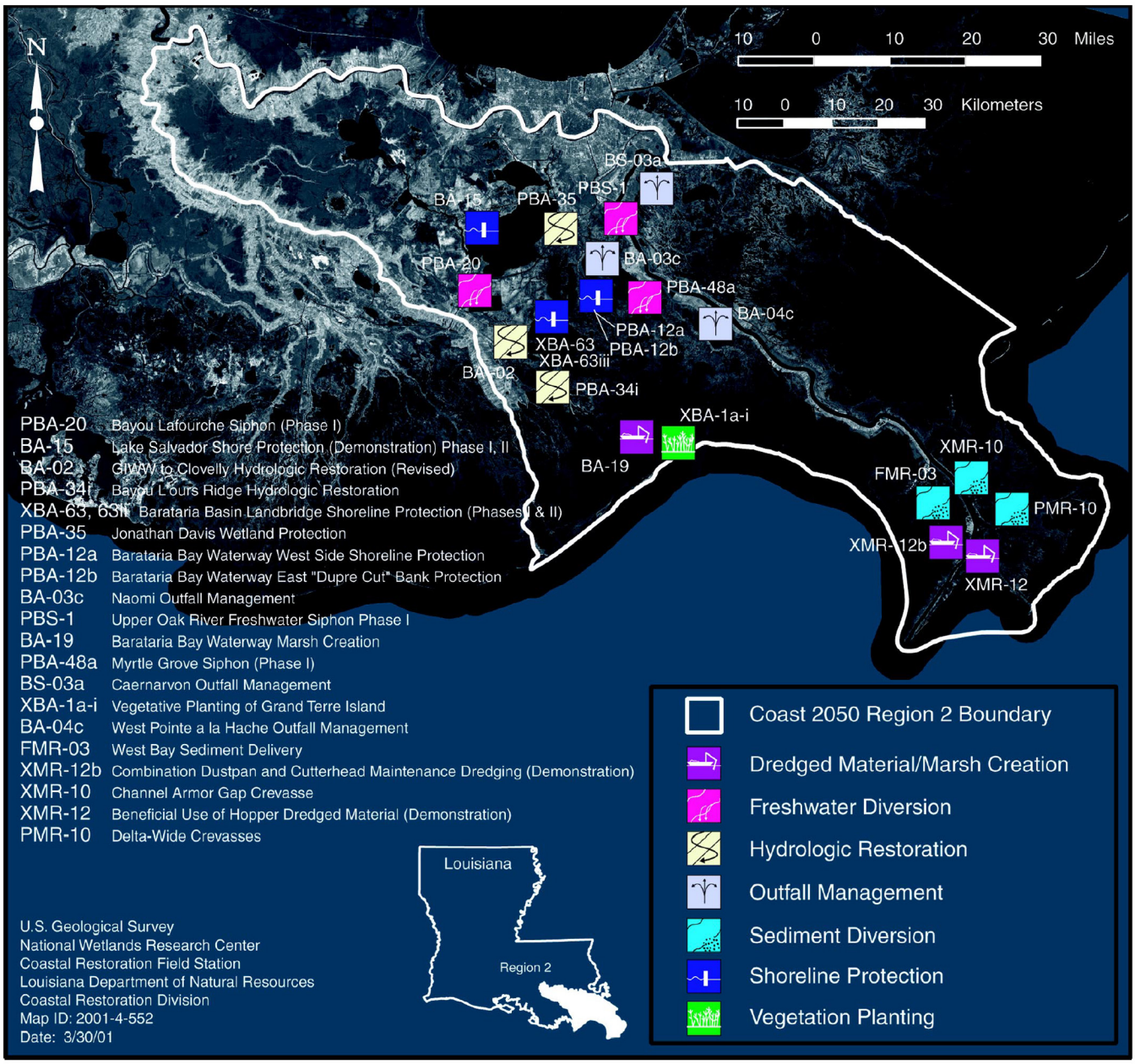


Figure 5.5 *Location of Breaux Act projects authorized on priority project lists 1-8 in Region 2.*

Table 5.4. Projects authorized on Breaux Act priority project lists 1-8 in Region 2.

	Project Name	Activities[a] Engineering	Landrights	Construction	Monitoring	Operations & Maintenance	Priority List	Agency[b]	Project Type[c]	Year Completed	Anticipated Acres Created/ Restored and Protected[d]	Current Estimated Cost (20 yr)
Completed Projects	Barataria Bay Waterway Marsh Creation (BA-190)	C	C	C	I	I	1	USACE	MC	1996	445	$ 1,180,393
	■ Phase I of construction was completed in October 1996. Another dredge cycle is scheduled for 2000. Discussed on page 41.											
	Channel Armor Gap Crevasse (XMR-10)	C	C	C	I	NA	3	USACE	SD	1997	936	$ 902,720
	■ The objective of this project is to promote the formation of emergent freshwater marsh in place of a shallow, open water area by increasing the flow of sediment-laden river water into the receiving bay. Specific goals are to increase elevation and cover of emergent wetland vegetation in the project area. To date, data on suspended sediments and river discharge, elevation, and land-to-water ratio have been collected but only to described pre-construction conditions. Although no subaerial land has formed in the project area after 2 years, shoals are evident in areas of the receiving bay nearest the crevasse. Because no post-construction data have been collected, evaluations with respect to project goals cannot be made at this time. See photo on page 43.											
	Lake Salvador Shore Protection (Demonstration) Phase I, II (BA-15)	C	C	C	I	NI	3	NMFS	SP	1997-I 1998-II	NA	$ 2,543,098
	■ Discussed on page 42.											
	Delta-Wide Crevasses (PMR-10)	C	C	C	I	NI	6	NMFS	SD	1999	2,386	$ 4,732,653
	■ This project consists of maintaining presently existing crevasse-splays, the construction of new crevasse-splays, and future maintenance of selected crevasse-splays in both the Pass-A-Loutre Wildlife Management Area and the Delta National Wildlife Refuge. The objective is to promote the formation of emergent freshwater and intermediate marsh. To date, all crevasses have been dredged or redredged in accordance with the plan. See photo on page 43.											
Projects in Progress	GIWW to Clovelly Hydrologic Restoration (Revised) (BA-02)	C	C	I	I	NI	1	NRCS	HR	2000*	2,052	$ 8,328,603
	■ This project will protect and maintain approximately 2,052 acres of intermediate marsh in the project area by restoring natural hydrologic conditions that promote greater use of available fresh water and nutrients. This restoration will be accomplished by greater freshwater retention and utilization, limiting rapid water level changes, slowing water exchange through over-bank flow, reducing rapid salinity increases, and reducing saltwater intrusion. (Construction Unit 1 has already been completed).											
	Beneficial Use of Hopper Dredged Material (Demonstration) (XMR-12)	C	NA	NI	I	NA	4	USACE	DM	2000*	NA	$ 52,909
	■ This 3-year demonstration project would have utilized hopper dredged material to create emergent vegetated marsh in an area that is currently a shallow, open-water pond. More specifically, the goals were to create 1 acre of emergent vegetated marsh for every 15,000 yd^3 of dredged material deposited in the project area, increase mean elevation, and increase abundance of emergent wetland vegetation. This project is in the process of being deauthorized because of high cost and technical problems.											
	Barataria Bay Waterway West Side Shoreline Protection (PBA-12a)	C	C	I	I	NI	4	NRCS	SP	2000*	232	$ 3,304,787
	■ This project will restore the natural hydrology within the marsh by reconstructing the Barataria Bay Waterway (BBW) shoreline through the use of dredged material and rock amoring along 9,400 linear ft of the west bank. This hydrologic barrier will protect marsh from excessive wave energy, water level fluctuations, and saltwater intrusion from the BBW.											
	Jonathan Davis Wetland Protection (PBA35)	I	I	I	I	NI	2	NRCS	HR/ SP	2000*	510	$ 4,431,026
	■ This hydrologic restoration project utilizes structural measures, including a 34,000 ft rock dike for shoreline stabilization along the entire southern boundary of the project area to reduce shoreline erosion and restore hydrologic conditions that will reduce water level and salinity fluctuations (variability), allow greater freshwater retention to increase emergent vegetation, and create conditions conducive to the maintenance of fresh and intermediate marsh. Phase I of this project is complete.											
	Naomi Outfall Management (BA-03c)	I	I	NI	I	NI	5	NRCS	OM	2001*	663	$ 2,102,650
	■ This project was authorized to manage fresh water diverted from the Mississippi River through the Naomi siphons via the installation of two water control structures designed to reduce freshwater loss and saltwater intrusion. Specific goals are to reduce the rate of conversion of marsh to open water, increase relative abundance of intermediate to fresh marsh type plant species, and decrease mean salinity within the project area.											

(continued)

Table 5.4. Continued.

	Project Name	Activities[a] Engineering	Landrights	Construction	Monitoring	Operations & Maintenance	Priority List	Agency[b]	Project Type[c]	Year Completed	Anticipated Acres Created/ Restored and Protected[d]	Current Estimated Cost (20 yr)
Projects in Progress	Barataria Bay Waterway East "Dupre Cut" Bank Protection (PBA-12b)	I	I	NI	I	NI	6	NRCS	SP	2001*	217	$ 6,042,090
	■ This project will rebuild and stabilize the banks of the Dupre Cut section of the Barataria Bay Waterway by installing approximately 17,600 linear ft of rock dike on the east bank of the BBW to protect the adjacent marsh from erosion due to boat wakes and saltwater intrusion.											
	Caernarvon Outfall Management (BS-03a)	I	I	NI	I	NI	2	NRCS	OM	2001*	802	$ 2,658,799
	■ This project was authorized to increase freshwater dispersion into interior marshes that are currently isolated from Caernarvon Diversion flow during low discharge periods by incorporating culverts, plugs, and spoilbank restoration. Retention of fresh water within the brackish marsh should increase emergent marsh vegetation and diversity, reduce saltwater intrusion and salinity spikes, and increase the occurrence of submerged aquatic vegetation in shallow open-water areas.											
	West Pointe a la Hache Outfall Management (BA-04c)	I	I	NI	NI	NI	3	NRCS	OM	2001*	1,087	$ 4,068,045
	■ This project provides for management of the West Pointe a la Hache Siphon outfall area to maximize the retention of fresh water, nutrients and sediment within interior brackish marshes to counteract saltwater intrusion and wetland loss.											
	Barataria Basin Landbridge Shoreline Protection (Phase I) (XBA-63), (Phase II) (XBA-63ii)	I	I	NI	NI	NI	7, 8	NRCS	SP	2001*	1,304	$ 17,515,020
	■ Phase I of this project will protect a deteriorated intermediate-to-brackish marsh located between Lake Salvador and Little Lake by reducing shoreline erosion, while Phase II will provide 14,000 linear ft of shoreline protection along Bayous Perot and Rigolettes within the Barataria Basin, also designed to abate shoreline erosion.											
	Bayou Lafourche Siphon (Phase I) (PBA-20)	I	NI	NI	NI	NI	5	USEPA	FD	2001*	988	$ 8,391,454
	■ This phase of the project involves the study of questions regarding the installation of eight large diversion pipes to divert 1,000 cfs of fresh water and reduce marsh loss adjacent to Bayou Lafourche through the introduction of nutrient and sediment laden river water. The siphon should also enhance benefits from the GIWW/Grand Bayou Diversion Project (TE-10).											
	West Bay Sediment Delivery (FMR-03)	I	I	NI	NI	NI	1	USACE	SD	2001*	9,831	$ 16,673,000
	■ This project is an uncontrolled sediment diversion designed to create approximately 9,831 acres of fresh and intermediate marsh through the diversion and capture of fluvial sediments from the Mississippi River. This project has been held up in the planning stages but work is scheduled to begin in the fall of 2000.											
	Bayou L'Ours Ridge Hydrologic Restoration (PBA-34i)	I	I	NI	NI	NI	4	NRCS	HR	2001*	737	$ 2,793,221
	■ This project will restore the natural hydrologic flow to the marsh by reinforcing breached areas of the Bayou L'Ours Ridge through a series of canal closures and two water control structures designed to prevent an increase in saltwater intrusion and reduce the influence of tidal action.											
	Myrtle Grove Siphon (Phase I) (PBA-48a)	I	I	NI	NI	NI	5	NMFS	FD	2003*	1,119	$ 15,092,773
	■ This freshwater diversion project will divert a maximum discharge of 2,100 cfs into the project area, providing the marsh with fresh water, nutrients, and sediment. In addition, it will include a mile of leveed and armored outfall channel, a new pump, and a low-level fixed crest weir. The project is being carried out in three phases.											
	Vegetative Planting of Grand Terre Island (XBA-1a-i)	NI	I	NI	NI	NI	7	NMFS	VP	No Date	127	$ 928,900
	■ The objective of this project is to stabilize two different dredged material sites on Grand Terre Island including: (1) a 1996 USACE dredged disposal area that is completely devoid of vegetation, and (2) a future 80-acre dredged material platform through development and implementation of a planting protocol to revegetate the disposal areas with native flora.											
	Upper Oak River Freshwater Siphon (Phase I) (PBS-1)	NI	NI	NI	NI	NI	8	NRCS	FD	No Date	339	$ 250,239
	■ The primary goal of this project is to reverse the trend of interior marsh breakup in the project area due to saltwater intrusion through installation of a 1,000 cfs freshwater siphon and outfall channel that will provide fresh nutrients and sediment to enhance marsh health.											
	Combination Dustpan and Cutterhead Maintenance Dredging (Demonstration) (XMR-12b)	I	NI	NI	NI	NI	6	USACE	DM	No Date	NA	$ 1,640,000
	■ This project will use dredged material from routine maintenance of the Mississippi River Navigation Channel to create and restore adjacent marsh. Approximately 273 acres of deteriorated marsh will be restored with approximately 1.76 million yd^3 of dredged material over the course of 3 years, with the expectation of an increase in marsh.											

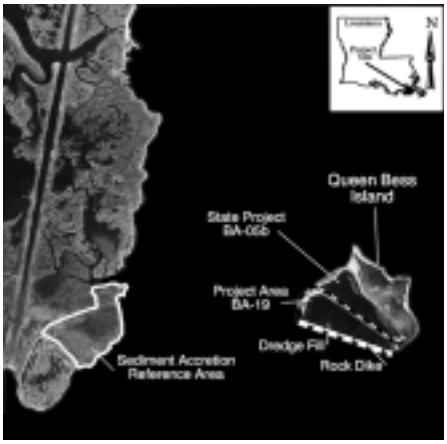
(continued)

Table 5.4. Concluded.

	Project Name	Activities[a] Engineering	Landrights	Construction	Monitoring	Operations & Maintenance	Priority List	Agency[b]	Project Type[c]	Year Completed	Anticipated Acres Created/ Restored and Protected[d]	Current Estimated Cost (20 yr)
Deauthorized Projects	Fourchon Hydrologic Restoration (BA-18)	NI	NI	NI	NI	NI	1	NMFS	HR	Deauthorized	NA	$ 6,999
	■ This project, located in Lafourche Parish, was intended to restore typical estuarine functions to an impounded area by establishing regular tidal exchange and reducing mean water levels. The project was officially deauthorized by the CWPPRA Task Force on July 14, 1994, at the request of the landowner.											
	Bayou Perot and Bayou Rigolettes Marsh Restoration (XBA-65a)	NI	I	NI	NI	NI	3	NMFS	MC	Deauthorized	NA	$ 20,963
	■ This project was initially authorized to protect deteriorated intermediate to brackish marsh located between Lake Salvador and Little Lake by using spray dredge sediment to create a 250-ft wide berm in order to reestablish the shoreline. Due to an unstable and rapidly eroding site, the project was deemed unfeasible and deauthorized on January 16, 1998, at the recommendation of both the federal sponsor and the state.											
	White's Ditch Outfall Management (BS-04a)	NI	I	NI	NI	NI	3	NCRS	OM	Deauthorized	NA	$ 32,862
	■ This project was designed to direct the flow of Mississippi River nutrients and sediment into deteriorating wetlands in the Breton Sound basin. Failure to secure landrights as a result of receiving unexpected benefits from the Caernarvon Freshwater Diversion Project led to deauthorization of the project on March 30, 1998.											
	Grand Bay Crevasses (PBS-06)	NI	I	NI	NI	NI	4	USACE	SD	Deauthorized	NA	$ 64,442
	■ This project, located in Plaquemines Parish, was designed to rearrange 1,550 tons of rock at the head of the Jurgevich Canal, which would allow 20,000 cfs of fresh water to flow into the Grand Bay area. Deauthorization was due to objections from the primary landowner. The project was officially deauthorized by the CWPPRA Task Force on July 23, 1998.											
	Pass-A-Loutre Crevasse (MR-8/9)	NI	NI	NI	NI	NI	3	USACE	SD	Deauthorized	NA	$ 119,856
	■ Marsh creation and restoration were the objectives of this project, to be accomplished through construction of a crevasse on the left descending bank of the Mississippi River between Pass-A-Loutre and Raphael Pass. The project was officially deauthorized on July 23, 1998, due to high costs attributed to relocating underground utilities in the area. A suitable alternative site could not be found by the federal sponsor.											

[a]Activities:	Initiated (I); Completed (C); Not Initiated (NI); or Not Applicable (NA).
[b]Agency:	U.S. Environmental Protection Agency (USEPA); National Marine Fisheries Service (NMFS); Natural Resources Conservation Service (NRCS); U.S. Army Corps of Engineers (USACE); and U.S. Fish and Wildlife Service (USFWS).
[c]Project Type:	Beneficial Use of Dredged Material (DM); Hydrologic Restoration (HR); Marsh Creation (MC); Shoreline Protection (SP); Freshwater Diversion (FD); Sediment Diversion (SD); Vegetation Planting (VP); Outfall Management (OM).
[d]Acres Created/ Restored and Protected	The net gain in emergent marsh as a result of project implementation as projected by the Environmental Work Group during the Wetland Value Assessment. This figure includes acres of emergent marsh to be protected, created, and restored as a result of project implementation estimated at the time the project was approved by the Breaux Act Task Force.
*	Anticipated construction date.

Barataria Bay Waterway Marsh Creation (BA-19)



BA-19 project location.

Problem:

- Queen Bess Island experienced significant erosion between 1956 and 1989, which reduced the island in size from 45 to 17 acres. The island lost nearly 1 acre of land per year due to subsidence and erosion, which has reduced brown pelican (*Pelecanus occidentalis*) habitat and increased the frequency of storm-induced overwash.

Proposed Solution:

- An additional 9 acres of vegetated wetland were created adjacent to the state-funded Queen Bess (BA-05b) project area by constructing a rock dike and filling the containment area with dredged material from the Barataria Bay Waterway to an initial elevation of 3.72 ft NGVD.
- A breach was built on the north side of the rock dike to allow effluent to be routed from the containment area through the BA-05b project area and the original Queen Bess Island.

Progress to Date:

- The size of Queen Bess Island increased from 17 acres in 1989 to 32.3 acres in 1996 from a combined effort of BA-19 and a state-funded project, BA-05b.
- Dredged material consolidated at a rate of 0.21 ft/yr and has an average elevation of 0.84 ft NGVD, which is below the desired goal for the project area of 1.22 ft NGVD.
- Vegetation has not colonized in the project area due to low elevation in conjunction with frequent inundation from precipitation.
- A sediment deposition rate of 0.14 ft/yr in the BA-05b project area and 0.31 ft/yr in the original island indicates that the breach allowed for excess effluent to settle outside the dredge-fill area, in adjacent wetlands, as desired.

Challenges for the Future:

- Provide drainage for the project area to prevent water retention and subsequent anaerobic conditions that are not conducive to propagation of vegetation.
- Resolve conflicts with local oyster leases to permit the deposition of more dredged material in the project area and raise the average elevation to 2.0 ft NGVD.
- Increase height of created marsh to allow for vegetation to grow and as a side benefit to provide potential for expansion of the brown pelican colony.

Photo by LDNR

Brown pelicans nesting on Queen Bess Island.

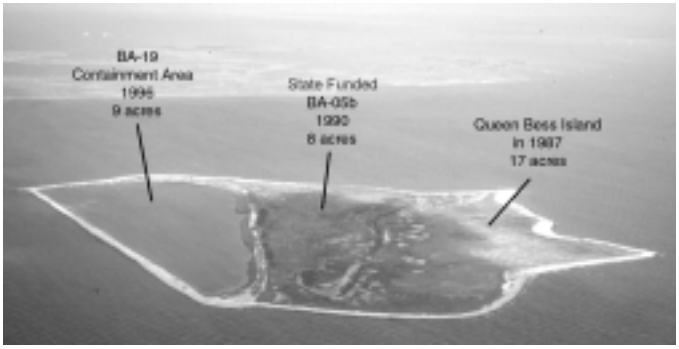
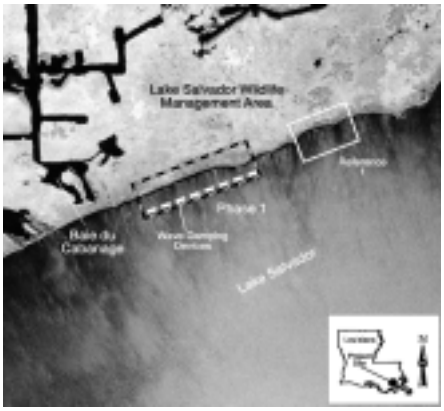


Photo by LDNR

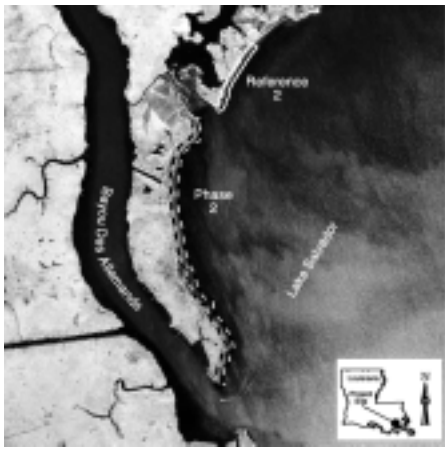
Location of BA-19 project area on Queen Bess Island.

This project summary was synthesized from the project's finalized Monitoring Plan (LDNR 1998d), the project's most recent Comprehensive Monitoring Report (Smith 1999), and unpublished data. More information about this project is available on the Internet at the CRD website, www.saveLAwetlands.org, and at the Breaux Act website at www.lacoast.gov.

Lake Salvador Shore Protection
(Demonstration) Phase I, II (BA-15)



BA-15 Phase I project area location.



BA-15 Phase II project area location.

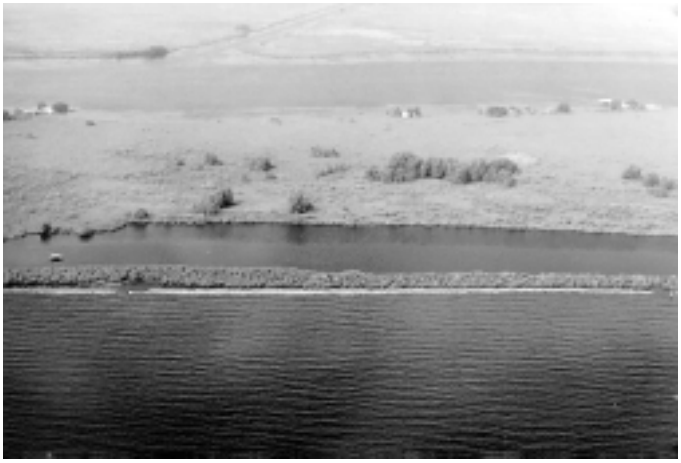


Photo by LDNR

BA-15 Phase II rock dike constructed parallel to shoreline.

Problem:

- The Lake Salvador area has experienced high rates of land loss caused by shoreline erosion averaging 13 ft/yr. Chronic erosion has breached the lake shoreline in several locations, exposing fragile, highly organic marsh substrates to higher wave and tidal energy, causing ponds to form in the interior marshes.

Proposed Solution:

- Phase I of the project is testing four types of shoreline protection structures along a section of the northern lakeshore to determine their effectiveness in reducing shoreline erosion.
- Phase II of the project constructed a 9,000 ft rock structure along a section of the western lakeshore to protect a stretch of shoreline and adjacent marsh from wave-induced erosion.

Progress to Date:

- Phase I - the vinyl sheet piles had the lowest erosion rate, followed by the geotextile tube structures. However, these two treatment areas also had the lowest shoreline erosion rate pre-construction. These structures have also been damaged by environmental conditions. Grated apex structures were least effective at minimizing shoreline erosion. Wave height measurements indicate that the geotextile tubes and vinyl sheet breakwaters were initially effective in reducing wave height and energy before being damaged, while the grated apex and angled timber structures were not consistent.
- Phase II - 5 months after construction, the project area shoreline had eroded at a rate of 14.41 ft/yr, and the reference area shoreline had advanced at a rate of 1.80 ft/yr. Ten month post-construction data could not be collected due to poor environmental conditions. Consequently, shoreline data collected to date are inconclusive.

Challenges for the Future:

- Phase I - Determine overall effectiveness of wave damping structures in reducing shoreline erosion and evaluate the different types based on initial cost, maintenance, and potential benefits for future application toward abating shoreline erosion.
- Utilize the knowledge gained from this project to improve structural integrity of shoreline protection structures in future projects.
- Phase II - Determine annual accretion benefits of the rip-rap structure and isolate fluctuations due to temporal variables.
- Determine changes in erosion rate over time in the project and reference areas.

This project summary was synthesized from the project's finalized Monitoring Plan (LDNR 1998e), the project's most recent Monitoring Series Progress Report (Smith and Gaudet 1999), and unpublished data. More information about this project is available on the Internet at the CRD website, www.saveLAwetlands.org, and at the Breaux Act website at www.lacoast.gov.

Region 2 Recently Constructed Projects

Photo by LDNR

A recently redredged crevasse, part of the Delta-Wide Crevasses (PMR-10) project.

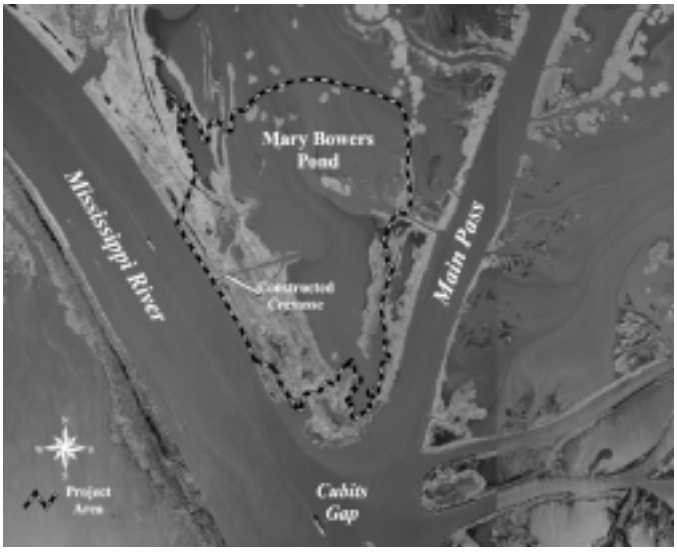


Photo by LDNR

Channel Armor Gap Crevasse (XMR-10) project area.

Progress in Region 2

The interrelated factors contributing to the substantial wetland loss in Region 2 include altered hydrology, leveeing the Mississippi River, wave-induced shoreline erosion, high subsidence rates, excessive flooding of the marsh, saltwater intrusion, nutria herbivory, and storm damage. Three of the four projects constructed to date in Region 2 have emphasized the creation of wetlands utilizing dredged material or diverted sediment and fresh water from the Mississippi River.

The Barataria Bay Waterway Marsh Creation (BA-19) project has increased the size of Queen Bess Island by approximately 9 acres through the use of dredged material. Although the elevation of this 9-acre area was increased, it was not enough to become subaerial, and the addition of more dredged material is necessary to create land. Avoidance of impacts to oyster leases near this project has been a difficulty to overcome in order to pump additional dredged material and create channels for work barges to access this area. However, the original portion of Queen Bess Island and the portion created by the state-funded BA-05b project are providing nesting habitat for increasing populations of brown pelican, and the addition of more sediments to the BA-19 project area is projected to create additional nesting habitat for these and other bird species.

The demonstration shoreline protection project along the northern shore of Lake Salvador (BA-15) is providing useful information about the effectiveness of various wave-energy damping structures in reducing shoreline erosion. Several of the experimental devices in Phase I were not able to withstand the high wave energies of this area. The rock dike constructed in Phase II was able to withstand the high wave-energy, and although preliminary data indicate shoreline erosion has not been stopped, vegetation is colonizing the area immediately behind the rock dike and providing a stabilizing force to the sediment.

Monitoring has begun on the Delta-Wide Crevasses (PMR-10) and Channel Armor Gap Crevasse (XMR-10) projects, but information quantifying the effectiveness of these projects is not yet available.

Over the next several years, as monitoring information becomes available from projects that are still either being planned, constructed, or are currently on hold, planners will have access to a growing data set clarifying the effectiveness of large-scale river diversions, outfall management, and dedicated dredging projects. This information should help provide insight to the capabilities of present strategies for coastal restoration in Louisiana and facilitate refinement of these strategies based on the best information available.

Many of the projects authorized in Region 2 have yet to be constructed but are in advanced stages of engineering design. It is projected that an additional four projects will be constructed by the end of 2000, and eight more will be completed by the end of 2001. Projects authorized in Region 2 have been designed to take maximum advantage of the available resources of the Mississippi River whenever possible. Nearly 40% of the projects authorized in Region 2 rely on fresh water and/or sediment from the river as a major project component. Five projects in Region 2 (19% of Region 2 projects) are classified as shoreline protection projects and are designed to armor lake and navigation canal shorelines to protect interior wetlands from high energy waves and saltwater intrusion. These projects will utilize the knowledge gained from the BA-15 project (and similar shoreline protection projects in other regions) to maximize the potential for success.

Many problems remain within Region 2, not least of which is the challenge of sustaining or re-creating marshes in a highly subsiding landscape while maintaining navigation to one of the countries biggest port facilities. The 20 ongoing Breaux Act projects within Region 2 will make substantial progress towards retaining critical landscape components as more ambitious plans for the region under the Coast 2050 Plan move forward. In addition, the projects now moving to implementation can act as prototypes for more extensive implementation of the same technique (such as marsh creation and shoreline protection) or provide information for the successful adaptive management of the river, its water, nutrients and sediments, and the coastal wetlands and barrier shorelines. The challenges of land rights, the costs of infrastructure relocations, as well as the technical challenges of working in highly organic substrates, have all been faced by Breaux Act projects in this region and have forced deauthorization of some projects. These lessons are already being incorporated into new project planning. As more data become available concerning the relative performance of various hydrologic restoration approaches and outfall management techniques, project design and implementation will improve such that the problems faced in the region can be more effectively addressed.