

FRESHWATER BAYOU WETLANDS (ME-04) PHASE 1¹

PROGRESS REPORT NO. 2 for the period January 31, 1995 to July 8, 1996

Project Status

No additional data have been collected since the previous progress report.

Project Description

The Freshwater Bayou Wetlands (ME-04) project encompasses approximately 37,000 acres of fresh to intermediate wetlands located between La. Hwy. 82 and Freshwater Bayou Canal, approximately 5 mi east of White Lake, Louisiana (figure 1). Boat wake-induced shoreline erosion, which averaged 12.5 ft/yr along each bank of Freshwater Bayou Canal between 1968 and 1992 (Brown & Root 1992), has deteriorated the spoil banks along the channel, allowing multiple breaches to form, and tidal scour of the organic soils in the adjacent wetlands to ensue. Between 1968 and 1990, the bank width of this navigation canal increased almost fourfold, resulting in the loss of 768 acres of coastal wetlands (Good et al. 1995).

The objective of phase 1 of this project is to prevent further widening of the Freshwater Bayou Canal channel into the project area, thereby protecting existing emergent wetlands along the west bank of the canal from further deterioration caused by shoreline erosion and tidal scour. The specific goal of the project is to decrease the rate of erosion and wetland loss along the west bank of Freshwater Bayou Canal using a rock dike. Construction of approximately 28,000 linear ft of free-standing, continuous rock dike along the west bank of the canal was completed in January 1995.

¹ The ME-04 wetland restoration project encompasses work that is being implemented in two phases. An emergency authorization to dismantle the Wax Lake Outlet weir in 1994 allowed for phase 1, the construction of 28,000 ft of rock dike along the canal's west bank, to be completed in February 1995. Phase 2, which involves the construction of eight water control structures to increase water management capabilities within the project area wetlands, is tentatively scheduled for implementation in 1997.

Monitoring Design

To document land and water areas, marsh loss rates, and interannual shoreline movement, color-infrared aerial photographs (1:12,000 scale) will be taken, georectified, photointerpreted, mapped, and analyzed with a Geographic Information System (GIS) once preconstruction and three times postconstruction. To document shoreline movement, 31 shoreline markers denoting the edge of the perennial vegetation were established in June 1995 at 1000-ft intervals along the west bank of the canal in the project area. In April 1995, three shoreline markers were also established along the east bank of the canal within each of the two reference areas. Each marker is referenced to a settlement plate located on the rock dike. Shoreline position relative to the shoreline markers will be monitored annually by direct measurement.

Results/Discussion

Due to an emergency authorization to construct the Phase 1 rock dike well in advance of schedule, it was not possible to schedule an aerial photography flight over the project area prior to construction. Therefore, the aerial photography scheduled to be flown October 31, 1996, will serve as the preconstruction photography for phases 1 and 2 of the project.

Site characteristics were recorded at each shoreline marker. In addition, at each shoreline marker site in the reference area, the GPS coordinates of a survey hub placed approximately 75 ft inland from the shoreline were recorded. An example of the information obtained is provided in table 1. The shoreline surveys are to be repeated in June 1996, after which time two data sets will be available for analysis and interpretation.

References

- Brown and Root, Inc. 1992. Conceptual engineering report for Freshwater Bayou Canal bank stabilization, Vermilion Parish, Louisiana. Prepared for Department of Natural Resources/Coastal Restoration Division. Belle Chase, La.: BRI.
- Good, B. J. Buchtel, D. Meffert, J Radford, K. Rhinehart, and R. Wilson, eds. 1995. Louisiana's major coastal navigation channels. Unpublished report. Baton Rouge: Louisiana Department of Natural Resources, Coastal Restoration Division. 57 pp.

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Construction Start:	October 10, 1994	
Construction End:	January 31, 1995	

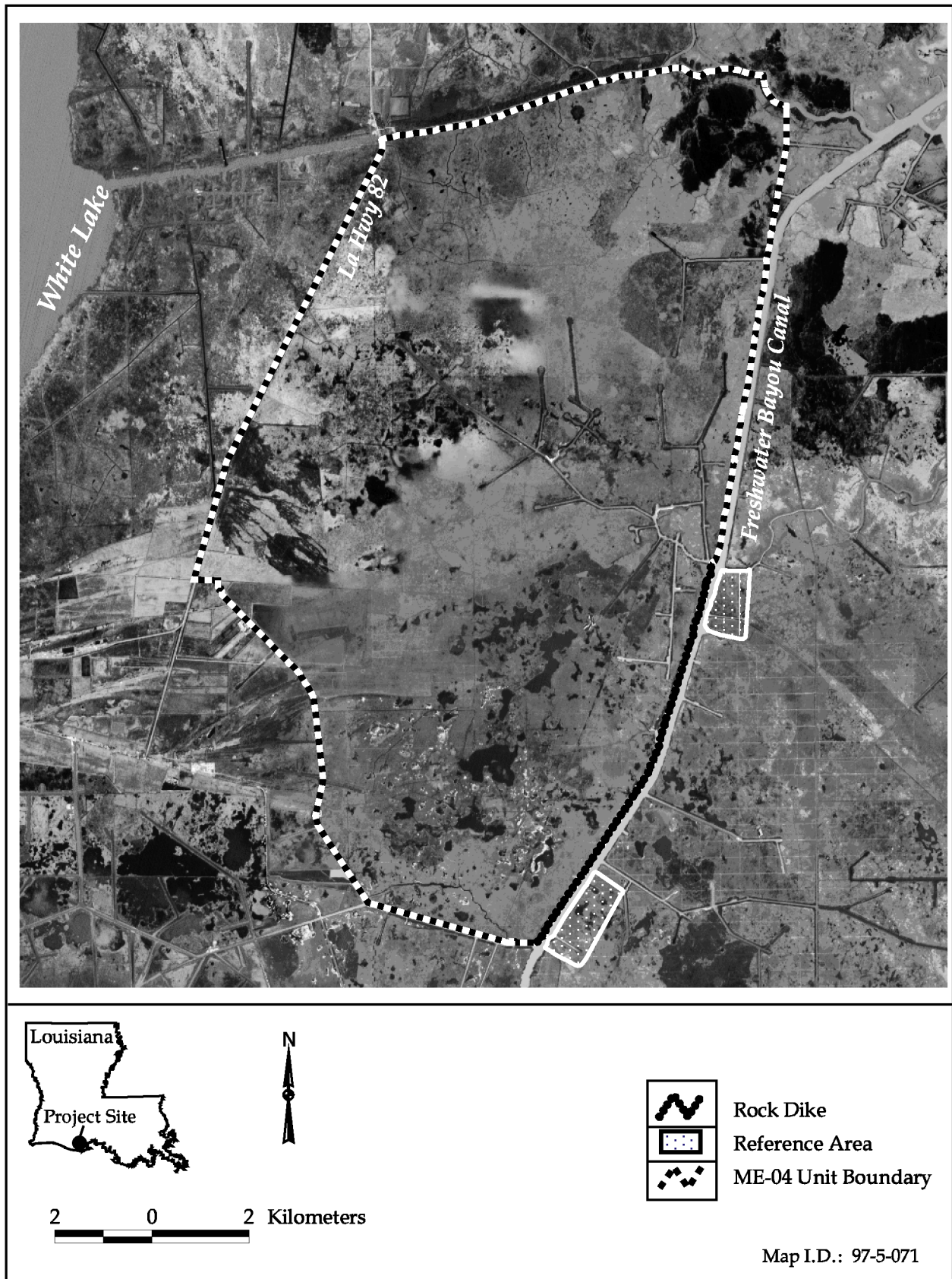


Figure 1. Freshwater Bayou Wetlands (ME-04) project area map showing phase 1 features.

Table 1. Freshwater Bayou Wetlands (ME-04) Phase 1. Locations and site characteristics of the reference area monitoring sites, established April 1995.

Shoreline Marker	Settlement Plate	Distance from Hub to Shoreline (ft)	Shoreline Characteristics	
ME-04-R1-1-M	1	74.6	Earthen spoil bank ridge about 6 ft wide with <i>Sapium sebiferum</i> , on underlying layer of shell. Protecting marsh with 70% <i>Scirpus olneyi</i> , 20% <i>Spartina patens</i> , and 10% <i>Typha</i> sp. Marker installed in open marsh.	
ME-04-R1-2-M	2	78.0	Earthen spoil bank ridge about 3 ft wide with <i>S. sebiferum</i> , on underlying layer of shell. Protecting marsh with 70% <i>S. olneyi</i> , 20% <i>S. patens</i> , and 10% <i>Typha</i> sp. Site more eroded than R1-1. Marker installed in open marsh.	
ME-04-R1-3-M	3	70.0	High-banked, wide earthen spoil bank with <i>S. sebiferum</i> , on underlying layer of shell. Protecting marsh with 70% <i>S. olneyi</i> , 20% <i>S. patens</i> , and 10% <i>Typha</i> sp. Marker installed on edge of spoil bank.	
ME-04-R2-1-M	20	74.4	Low, narrow, earthen spoil bank with <i>S. sebiferum</i> mostly fallen into canal, leaving <i>Phragmites australis</i> as dominant plant on bank. Protecting marsh with 95% <i>S. patens</i> and trace of <i>S. olneyi</i> , surrounded by stand of <i>P. australis</i> .	
ME-04-R2-2-M	22	62.55	High-banked, wide, earthen spoil bank dominated by <i>S. sebiferum</i> and <i>Rubus</i> sp., on underlying layer of shell. Protecting marsh stand of 100% <i>P. australis</i> . Marker installed in <i>Phragmites</i> stand near the edge of the spoil bank.	
ME-04-R2-3-M	23	76.85	High-banked, narrow, earthen spoil bank with <i>S. sebiferum</i> and <i>Rubus</i> sp., on underlying layer of shell. Protecting marsh stand of 100% <i>P. australis</i> . Marker installed in a <i>Phragmites</i> stand near the edge of the spoil bank.	
			GPS Coordinates (at corresponding survey hub)	
ME-04-R1-1-M	1		29° 39' 46.9" N	92° 15' 22.0" W
ME-04-R1-2-M	2		29° 39' 34.1" N	92° 15' 29.0" W
ME-04-R1-3-M	3		29° 39' 34.9" N	92° 15' 20.3" W
ME-04-R2-1-M	20		29° 35' 50.3" N	92° 17' 28.1" W
ME-04-R2-2-M	22		29° 35' 58.7" N	92° 17' 24.2" W
ME-04-R2-3-M	23		29° 36' 15.6" N	92° 17' 07.7" W