



State of Louisiana

**Coastal Protection and Restoration Authority
of Louisiana**

Monitoring Plan

for

Lost Lake Marsh Creation and Hydrologic Restoration Project (TE-72)

State Project Number TE-72
Priority Project List 19

May 2016
February 2024 - Update
Terrebonne Parish



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The Coastal Protection and Restoration Authority (CPRA) of Louisiana and the United States Department of the Interior / Fish and Wildlife Service (USFWS) agree to carry out the terms of this Monitoring Plan of the accepted, completed project features in accordance with the cost sharing agreement no. 2511-10-06, dated April 22, 2010 amended on August 9, 2013 to include Phase 2 cost.

The project features covered by this plan are inclusive of and are identified as the Lost Lake Marsh Creation and Hydrologic Restoration Project (TE-72). The intention of the provisions of this monitoring plan is to monitor the project using standardized data collection techniques and to analyze that data to determine whether the project is achieving the anticipated benefits. Reports will be generated and recommendations made to adaptively manage the project.

Construction of the Lost Lake Marsh Creation and Hydrologic Restoration Project (TE-72) is authorized by Section 303(a) of Title III Public Law 101-646, the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) enacted on November 29, 1990 as amended. The Lost Lake Marsh Creation and Hydrologic Restoration Project (TE-72) was approved on the 19th Priority Project List.

1. **PROJECT DESCRIPTION, PURPOSE, GOALS, and FEATURES**

Description

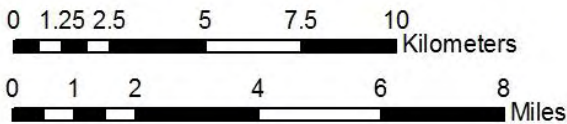
The Lost Lake Marsh Creation and Hydrologic Restoration Project (TE-72) is located in Terrebonne Parish, Louisiana in the vicinity of Lost Lake (Figure 1). The project encompasses approximately 7,312 acres, including 3,646 acres of intermediate marsh and 3,666 acres of open water (USFW 2012).

The project area is composed primarily of intermediate marsh, with marshhay cordgrass, bulltongue, cattail, Roseau cane, California bulrush and Olney bulrush as common species (USFWS 2012). The project area supports a diverse assemblage of estuarine animal species, including blue catfish, Gulf menhaden, blue crab, white shrimp, many species of waterfowl, wading and shore birds, muskrat, mink, river otters, raccoons, alligators and various other vertebrates (USFWS 2012). The West Indian manatee, a federally listed endangered species, may occur within the project area (USFWS 2012).

The TE-72 project will restore an important feature of the structural framework between Lake Pagie and Bayou Decade, preventing the joining of these two water bodies. It will increase the delivery of fresh water, sediment, and nutrients into marshes north and west of Lost Lake, and reduce fetch in open water areas via construction of a terrace field. Marshes to the north, east, and west of Lost Lake serve an important function as an intermediate zone buffering fresh marshes to the north from the higher salinities to the south (Figure 1 and Figure 2).

Although there are no CRMS sites located within the project area, CRMS4045, CRMS0354, CRMS0332 and CRMS0399 are located within a three to five mile radius of

Lost Lake Marsh Creation and Hydrologic Restoration (TE-72) Location



Map Produced By:
Coastal Protection Restoration Authority
Thibodaux Regional Office

Background Imagery: 2008 DOQQ

Map Date: 6 May 2013
Map ID: 2013-TRO-031



Figure 1. Location of the Lost Lake Marsh Creation and Hydrologic Restoration (TE-72) project.

the approximate project center (Figure 2). Data collected from the surrounding CRMS sites includes continuous hydrographic metrics, discrete hydrographic metrics, bi-annual accretion, surface elevation (RSET), and yearly vegetation. These nearby CRMS sites may provide important reference sites for evaluation of the project goals.

Purpose:

The purpose of the proposed project is to create emergent wetlands by dredging sediment from Lost Lake and depositing that material in shallow open-water areas. In addition, fixed-crest weirs and plugs will be replaced with variable-crest structures to allow greater volumes of fresh water and sediment into project area marshes.

As defined in the Environmental Assessment (USFWS 2012), the primary goals of the Lost Lake Marsh Creation and Restoration Project are to:

- 1) Restore an important feature of the structural framework between Lake Pagie and Bayou Decade to prevent the joining of these two water bodies.
- 2) Increase the delivery of fresh water, sediment, and nutrients into marshes north and west of Lost Lake.

Specific Goals of the project are:

- 1) Create approximately 468 acres (estimated 345 acres of marsh creation and an estimated 123 acres of marsh nourishment) of marsh with dredged material from Lost Lake.
- 2) Increase the delivery of fresh water, sediments, and nutrients by replacing 4 fixed-crest weirs and one plug with variable-crest, flap-gated structures.
- 3) Create approximately 18 acres of emergent marsh via the construction of 30,000 feet of terraces.

Features:

The estimated acres for the Lost Lake Marsh Creation project fill areas are; Fill Area 1: 262 acres; Fill Area 2A: 43 acres; Fill Area 2B East: 4 acres; Fill Area 2B West: 60 acres; Fill Area 2C: 42 acres; Fill Area 3: 54 acres.

The Lost Lake Marsh Creation and Hydrologic Restoration Project (TE-72) involves creation and nourishment between Lake Pagie and Bayou DeCade, north of Bayou DeCade, areas along the northwest Lost Lake shoreline near the mouth of Crochet Canal.

Also included is approximately 30,000 linear feet of terracing north of the marsh creation cells near Bayou DeCade and the construction of five (5) water control structures. The project has a twenty (20) year economic life.

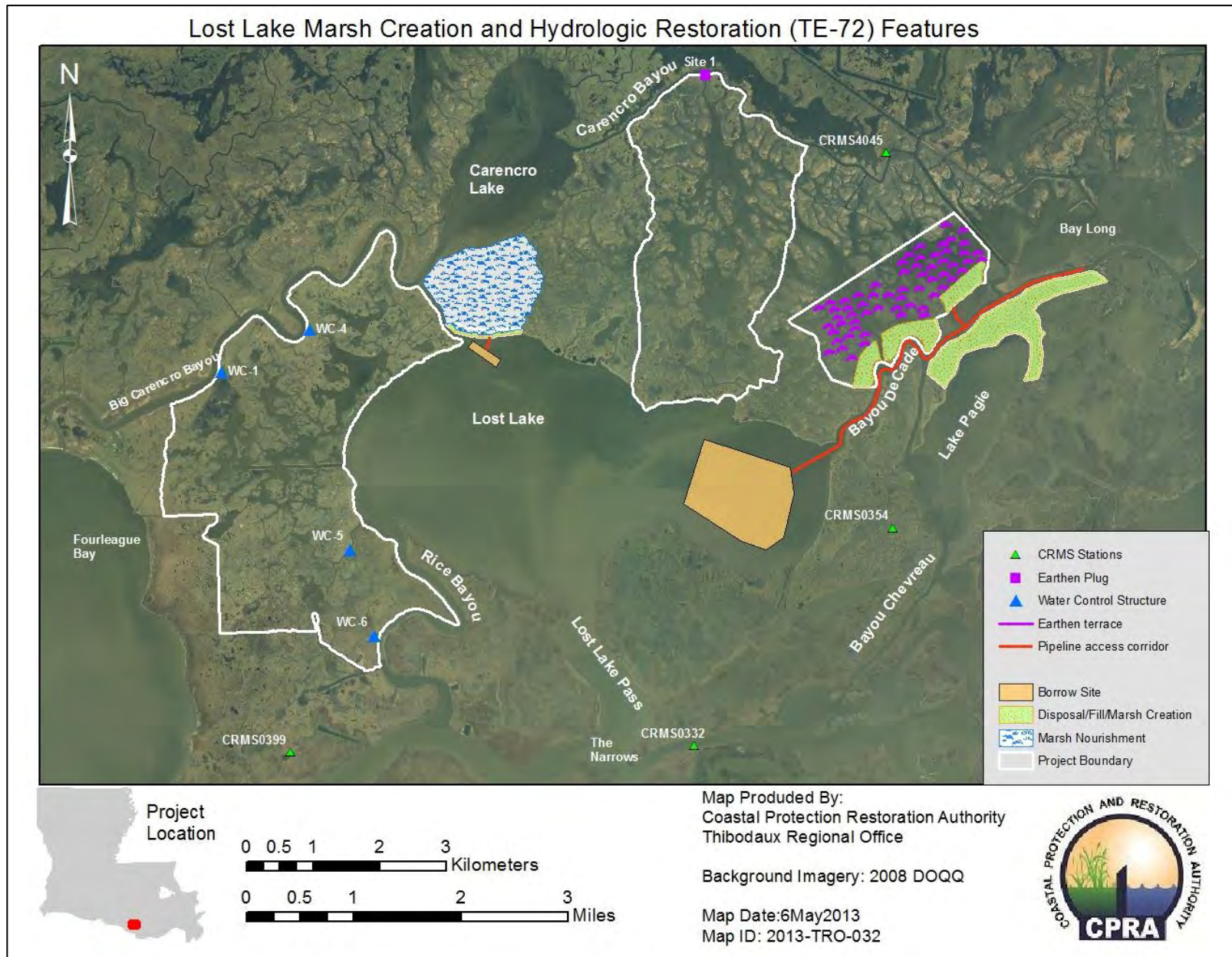


Figure 2. Project features for the Lost Lake Marsh Creation and Hydrologic Restoration (TE-72) project.

2. ITEMS REQUIRING MONITORING

The Coast-wide Reference Monitoring System (CRMS) - *Wetlands* is a network of 392 monitoring sites distributed throughout the coastal zone of Louisiana. Hydrographic, vertical accretion, elevation change, vegetation, soils, and aerial photography data are collected at each CRMS site. Although there are no CRMS sites located within the project boundaries (Figure 2), data from the surrounding CRMS sites (CRMS4045, CRMS0354, CRMS0332 and CRMS0399) may be used to help characterize conditions surrounding the project area.

A. **Aerial Photography:** To document the change in land to water ratio within the project area, land/water data will be obtained from digital imagery (Z/I Imaging digital mapping camera) with a minimal of 1-meter resolution. The photography will be georectified using standard operating procedures described in Steyer et al. (1995, revised 2000), and land/water ratios will be determined. Project specific land/water analysis is tentatively scheduled for post-construction project years 2, 4, 8 and 17 (2021, 2024, 2027 and 2036). Scheduled land/water analysis will be adjusted to coincide with the CRMS coastwide aerial photography. Three land/water analysis and all administrative cost associated with the analysis will be funded by the TE-72 project Monitoring budget while the acquisition of the imagery will be funded through the CRMS coastwide aerial photography.

B. **Surveys:** To document the change in the elevation of the marsh creation areas, three surveys will be conducted at years 2, 4 and 17 (2021, 2023, and 2036) post-construction in addition to the as-built surveys. Scheduling of the surveys may be adjusted to coincide with OM&M events or land/water analysis. The survey cost, administrative cost and other cost associated with the collection of all survey data will be charged to the Monitoring budget.

To estimate elevation and volume changes in the project areas over time, ground surveys will be employed. This elevation data will be used to measure elevation and sediment volume for the created marsh areas. Topographic surveys will be performed along as-built survey transects in the marsh creation area in accordance with the current Guide to Minimum Standards. These survey transects will be located 750 ft (228.6 m) apart. Elevation points will be collected every 100 ft (30.5 m) across the transects.

C. **Reports:** Monitoring reports will be produced during project years 6 and 11 (2025 and 2028) with a final closeout report to be produced during project year 19 or 20 (2037 or 2038).

3. MONITORING BUDGET

The cost associated with project-specific monitoring variables outlined in Section 2 of this plan for the twenty (20) year project life is **\$783,478**. Funding for monitoring was approved by the CWPPRA task force on October 18, 2016. The Project has a 20 year Economic life beginning in November 2018 with an anticipated end of life in November 2038.

4. **RESPONSIBILITIES**

A. CPRA will:

1. Coordinate and oversee all scientific data collection.
2. Ensure that all data goes through quality control procedures and is entered into the public database.
3. Analyze the data and report on the status of the project after data collection events. Should the data indicate that the project is not meeting the goals and objectives, adaptive management recommendations will be made to improve the response.
4. Review the monitoring plan and budget annually with the USFWS to determine that the data being collected adequately evaluates the project.

B. USFWS will:

1. Review the monitoring plan and budget annually with the CPRA to determine that the data being collected adequately evaluates the project.
2. Review and provide feedback of data results and reports for adaptive management decisions associated with the project.

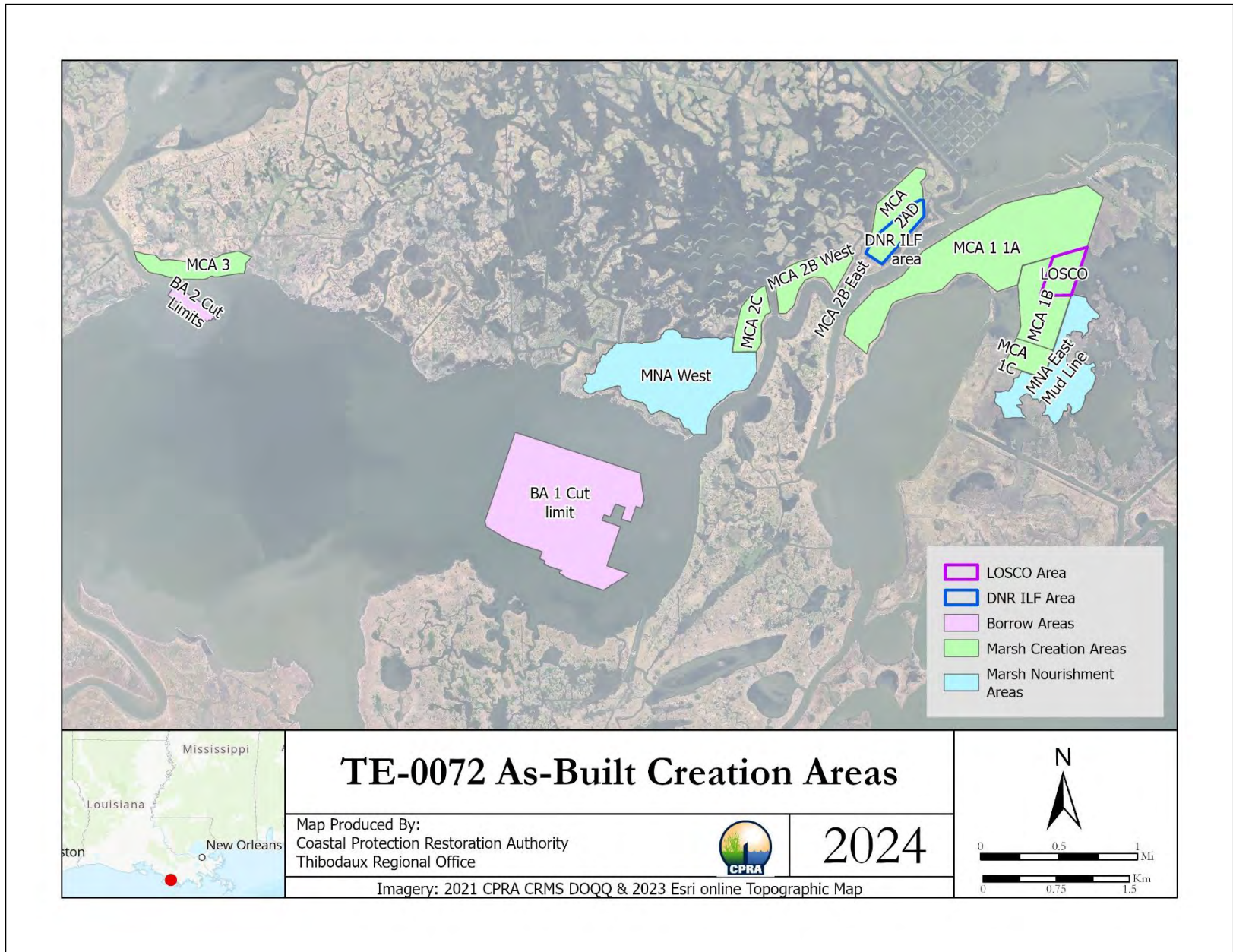
References

- Folse, T. M., J. L. West, M. K. Hymel, J. P. Troutman, L. A. Sharp D. Weifenbach, T. McGinnis, and L. B. Rodrigue. 2008. A Standard Operating Procedures Manual for the Coast-wide Reference Monitoring System-Wetlands: Methods for Site Establishment, Data Collection, and Quality Assurance/Quality Control. Louisiana Coastal Protection and Restoration Authority. Office of Coastal Protection and Restoration. Baton Rouge, LA. 191pp.
- USFWS, 2014. Final Environmental Assessment Lost Lake Marsh Creation and Hydrologic Restoration (TE-72). U.S. Fish and Wildlife Service Ecological Services. Lafayette Louisiana. 31pp.
- Steyer, G. D., R. C. Raynie, D. L. Stellar, D. Fuller, and E. Swenson. 1995, (revised 2000). Quality Management Plan for Coastal Wetlands Planning, Protection, and Restoration Act Monitoring Program. Open-file series no. 95-01. Baton Rouge: Louisiana Department of Natural Resources, Coastal Restoration Division. 97pp.

Attachment 1

Project As-Built Construction and Monitoring Areas

February 2024 Update



Attachment 1. TE-0072 As-built marsh creation, marsh nourishment and borrow areas.

Attachment 2

Project Monitoring Budget

Fully Funded budget of \$783,478

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Year	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	
State Monitoring Items																						
SOS, Task Mngt, Inspections		9,290	1,578	9,656	1,642	10,046	10,247	1,742	1,777	1,812	11,092	11,314	1,923	1,962	2,001	2,041	2,082	2,124	21,660	33,139	2,253	
Elevation Surveys		-	-	52,964	-	55,104	-	-	-	-	-	-	-	-	-	-	-	-	71,283	-	-	
Land-Water Analysis		29,775	-	-	-	-	-	-	-	-	44,396	-	-	-	-	-	-	-	63,378	-	-	
OM&M Report		-	-	-	-	-	40,989	-	-	-	-	45,255	-	-	-	-	-	-	-	53,023	-	
<i>State Costs - Misc.</i>																						
Engineering Monitoring		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Engineering and Design Cost		-									-					-						-
Administrative Cost		7,742	7,889	8,047	8,208	8,372	8,539	8,710	8,884	9,062	9,243	9,428	9,617	9,809	10,005	10,205	10,409	10,618	10,830	11,046	11,267	

