State of Louisiana

Coastal Protection and Restoration Authority of Louisiana (CPRA)

2012/2013 Annual Inspection Report

for

CAMERON/CREOLE WATERSHED HYDROLOGIC RESTORATION PROJECT (CS-17)

State Project Number CS-17
Priority Project List 1

December 12, 2012
Cameron Parish

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I. Introduction

The Cameron Creole Watershed Hydrologic Restoration Project (C/S-17) is located in the Cameron Creole Watershed area in Cameron Parish. The project consists of two sheet pile plugs in the lakeshore borrow canal on the east side of Calcasieu Lake. The objective of the Cameron/Creole Watershed project is to reduce the salt water intrusion and ponding within the Cameron Creole Watershed area with an estimated 850 acres of marsh protection (See Appendix A).

The Cameron/Creole Watershed Project was 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 and approved on the first Priority Project List. The Cameron/Creole Project has a twenty–year (20 year) economic life, which began in February 1997.

II. Inspection Purpose and Procedures

The purpose of the annual inspection of the Cameron/Creole Watershed Project (CS-17) is to evaluate the constructed project features to identify any deficiencies and prepare a report detailing the condition of project features and recommended corrective actions needed. Should it be determined that corrective actions are needed, CPRA shall provide, in the report, a detailed cost estimate for engineering, design, supervision, inspection, and construction contingencies, and an assessment of the urgency of such repairs (O&M Plan, 2002). The annual inspection report also contains a summary of maintenance projects which were completed since completion of constructed project features and an estimated projected budget for the upcoming three (3) years for operation, maintenance and rehabilitation. The three (3) year projected operation and maintenance budget is shown in Appendix C. A summary of past operation and maintenance projects completed since completion of the Cameron/Creole Project are outlined in Section IV.

An inspection of the Cameron/Creole Watershed Project (CS-17) was held on December 12, 2012 under clear skies and cold temperatures. In attendance were Dion Broussard of CPRA, and Chris Wheat of Lonnie Harper & Assoc. for other inspections. Representatives from USFWS were invited but could not attend. The annual inspection began at approximately 10:30 a.m. at the Grand Bayou structure.

The field inspection included a complete visual inspection of the entire project site. Staff gauge readings and existing temporary benchmarks where available were used to determine approximate elevations of water, steel bulkhead structures and other project features. Photographs were taken at each project feature (see Appendix B) and Field Inspection notes were completed in the field to record measurements and deficiencies (see Appendix D).

III. Project Description and History

The Cameron-Creole Watershed consists of 64,000 acres (25,900 ha) of brackish, intermediate, and fresh marsh located in the Calcasieu/Sabine Basin in Cameron Parish, Louisiana (figure 1). This area is part of the Sabine National Wildlife Refuge. Since the original 30 ft (9.15 m) deep dredging of the Calcasieu Ship Channel in the 1940's, salt water intrusion from the Gulf of Mexico into the interior marshes via Calcasieu Lake has caused high rates of marsh loss. As a result, approximately 63,000 acres (25,496 ha) of brackish, intermediate, and fresh marsh on the east side of Calcasieu Lake were lost between 1950 and 1970, and replaced by brackish and saline marsh (Delany 1991). In 1989, a levee and five (5) water control structures (three variable-crest and two fixed crest) with vertical slots were constructed by the United States Fish and Wildlife Service (USFWS) and the Soil Conservation Service (SCS) along the east shore of Calcasieu Lake to reduce the movement of salt water into the watershed. A borrow canal was also constructed along the wetland side of the levee. Management of the five water control structures is controlled by the USFWS and is designed to retard the introduction of saltwater into the Cameron-Creole Watershed.

The five water control structures along Calcasieu Lake are scheduled for operation in two phases. Phase I emphasizes curtailing marsh erosion and reclaiming emergent marsh by implementing a partial drawdown of 0.5 ft (0.15 m) below marsh elevation from February 15-July 15. At least one of the vertical slots in each structure remains open during this time. Phase II, or the maintenance phase, primarily emphasizes curtailing marsh erosion with secondary emphasis on improving fisheries habitat, maintaining and improving wildlife habitat, and increasing species diversity in emergent marsh plants. The crests of all structures are set at 0.5 ft (0.15 m) below marsh level with all slots and the boat bay at Grand Bayou open. Temporary closures of the boat bay and slots are dependent on maintaining salinities below the 5 ppt limit at the east end of East Prong.

Changes in the water movement patterns on the Cameron-Creole Watershed since the water control structures were installed and the management plan was implemented in 1989 have not occurred as anticipated. Saline water continues to move through the structures, and through the borrow canal, resulting in excessive pooling of saline water in the southern end of the watershed (Delany 1991). In the northern project area, water moves rapidly in a counter-clockwise circulation pattern through the Peconi (Bois Connine) Bayou system.

The Cameron-Creole Watershed Borrow Canal Plug project (C/S-17) installed two sheet pile plugs in the lakeshore borrow canal, one south of Grand Bayou and one south of Mangrove Bayou (figure 2) to isolate management areas and improve hydrologic control. The two C/S-17 plugs require no operations, and will remain at their as-built elevations. The plug south of Mangrove Bayou, set at 1.5 ft (0.46 m) National Geodetic Vertical Datum (NGVD), will affect 2,500 acres (1,012 ha) in the northern project area. The vegetated marsh in this area is composed of *Spartina patens* (marshhay cordgrass), *Scirpus americanus* (Olney's three-cornered grass), *Paspalum vaginatum* (joint grass), *Typha* spp. (cattail), and *Phragmites*

australis (roseau cane). Soils over the majority of the northern project area are comprised of Bancker and Clovelly soil types, except in the northern project area, where a small percentage of Gentilly Muck is present (USDA 1995).

The plug south of Mangrove Bayou will also affect 1,750 acres (708 ha) of broken marsh and shallow open water ponds from 0.5 ft to 2 ft (0.15-0.61 m) deep vegetated by *Ruppia maritima* (widgeon grass), *Myriophyllum spicatum* (Eurasian watermilfoil), and *Ceratophyllum demersum* (coontail). The broken emergent marsh, composed of *S. patens,* is subject to shoreline erosion caused by wind driven wave action across long fetches of open water.

The plug south of Grand Bayou, set at 1.0 ft (0.3 m) NGVD, will allow separate operation of the Grand Bayou and Lambert Bayou structures, affecting 8,000 acres (3,238 ha) of brackish marsh in the southern project area. The vegetated marsh in this area is composed of *S. patens, Distichlis spicata* (saltgrass), and *Spartina alterniflora* (smooth cordgrass).

Construction was completed on February 1, 1997. The project objectives are to enhance and improve marsh condition in the northern, southern, and eastern project areas, and to improve present structural management capabilities. The specific project goals are to reduce duration of flooding in the southern project area, reduce water flow in the borrow canal in the northern project area, increase coverage of emergent marsh plants in both the northern and southern project areas, and to increase the relative frequency of occurrence of SAV in the eastern project area.

The principal project features include:

- Structure #1/Mangrove Bayou Structure – interlocking sheetpile plug with boat bay
- Structure #2/Grand Bayou Structure - interlocking sheetpile plug with boat bay

IV. Summary of Past Operation and Maintenance Projects

General Maintenance: Below is a summary of completed maintenance projects and operation tasks performed since February 1997, the construction completion date of the Cameron Creole Watershed Project (CS-17).

2005 – Cameron Creole Maintenance Project – LDNR: (M & M Electric) This maintenance project included the removal and replacement of existing handrails with hot dipped galvanized handrails, and installation of a boat guide in the existing boat bay. Construction was completed in May 2006. The cost associated with the engineering, design and construction of the Cameron Creole Watershed Maintenance Project is as follows:

Construction:	$ 67,777.00
Engineering & Design:	$ 4,292.40
Construction Administration:	$ 3,000.00

Construction Oversight/As builts:	$ 2,841.17
Project Total:	**$ 77,910.57**

2009 – Cameron Creole Maintenance Project – OCPR: (M & M Electric) This maintenance project included the installation of a boat guide in the existing boat bay for Mangrove and Grand Bayou as well as placement of 513 tons of 30# Class rock at Grand Bayou and 366 tons of 30# Class rock at Mangrove Bayou. Construction was completed in March 2009. The cost associated with the engineering, design and construction of the Cameron Creole Watershed Maintenance Project is as follows:

Construction:	$ 159,480.00
Engineering & Design:	$ 32,393.57
Construction Administration:	$ 3,000.00
Construction Oversight/As builts:	$ 18,018.43
Project Total:	**$ 212,892.00**

Structure Operations: There are no active operations associated with this project.

V. Inspection Results

Structure #2—Grand Bayou Weir

Overall this structure is in good condition. The west boat guide has been removed from the structure assumed to be by vandals. The east boat guide has been removed from the structure by Tal McCain and is currently at Lonnie Harper's Office. Warnings signs, swing gate and top rail are still visible. The recent maintenance event performed in 2009 to armor the ends of the sheet pile wall has been effective and looks in good condition. The sheet pile wall is showing signs of deterioration and will be monitored during future inspections. (Photos: Appendix B, Photos 1-4).

Structure #1—Mangrove Bayou Weir

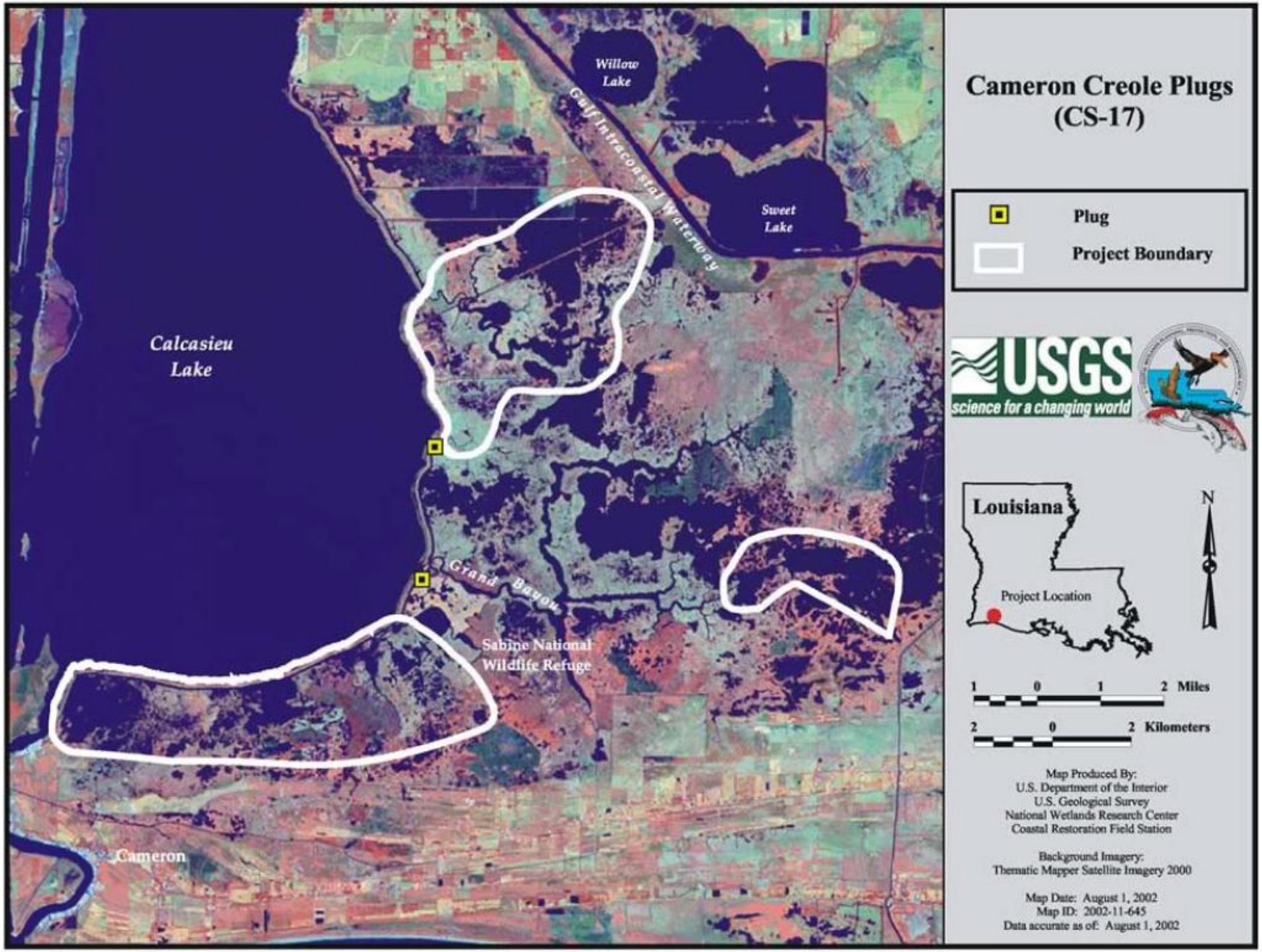
Overall the structure is in good condition. Both boat guides remain on the structure. Warning signs and top railing are still visible. The recent maintenance event performed in 2009 to armor the ends of the sheet pile wall has been effective and looks in good condition. The sheet pile wall is showing signs of deterioration and will be monitored during future inspections. (Photos: Appendix B, Photos 5-7).

VI. Conclusions and Recommendations

Overall, the structures of the Cameron-Creole Watershed Project are still in fair condition and are functioning as designed. The boat guide at Grand Bayou was replaced as part of a maintenance event for the Cameron-Creole CS-04a project (Photos: Appendix B, Photo 4). At the conclusion of the CS-04a project, one of the boat guides at Mangrove Bayou was missing.

Appendix A

Project Features Map


Willow Lake
Gulf Intracoastal Waterway
Sweet Lake
Calcasieu Lake
Grand Bayou
Sabine National Wildlife Refuge
Cameron
Cameron Creole Plugs (CS-17)
Plug
Project Boundary
USGS
science for a changing world
Louisiana
Project Location
N
1 0 1 2 Miles
2 0 2 Kilometers
Map Produced By:
U.S. Department of the Interior
U.S. Geological Survey
National Wetlands Research Center
Coastal Restoration Field Station
Background Imagery:
Thematic Mapper Satellite Imagery 2000
Map Date: August 1, 2002
Map ID: 2002-11-645
Data accurate as of: August 1, 2002

Appendix B

Photographs

Photo 1, Grand Bayou Weir, view of rock east side.

Photo 2, Grand Bayou Weir, view showing missing boat guides.

Photo 3, Grand Bayou Weir, view showing rock armor on west side.

Photo 4, Grand Bayou Weir, boat guide replacement.

Photo 5, Mangrove Weir, view looking south.

Photo 6, Mangrove Weir, view of rock armor west side.

Photo 7, Mangrove Weir, view of rock armor east side.

Appendix C

Three Year Budget Projection

Annual Inspection Report
CAMERON/CREOLE WATERSHED
State Project No. CS-17

CAMERON-CREOLE/ CS-17/ PPL 1

Three-Year Operations & Maintenance Budgets 07/01/2013 - 06/30/2016

Project Manager	O & M Manager	Federal Sponsor	Prepared By
Pat Landry	*Dion Broussard*	*USFWS*	*Dion Broussard*

	2013/2014 (-16)	2014/2015 (-17)	2015/2016 (-18)
Maintenance Inspection	$ 6,457.00	$ 6,651.00	$ 6,851.00
Structure Operation			
State Administration		$ -	$ -
Federal Administration		$ -	$ -
Maintenance/Rehabilitation			

13/14 Description:

E&D	
Construction	
Construction Oversight	
Sub Total - Maint. And Rehab.	$ -

14/15 Description

E&D	$ -
Construction	$ -
Construction Oversight	$ -
Sub Total - Maint. And Rehab.	$ -

15/16 Description:

E&D	$ -
Construction	$ -
Construction Oversight	$ -
Sub Total - Maint. And Rehab.	$ -

	2013/2014 (-16)	2014/2015 (-17)	2015/2016 (-18)
Total O&M Budgets	**$ 6,457.00**	**$ 6,651.00**	**$ 6,851.00**

O &M Budget (3 yr Total)	**$ 19,959.00**
Unexpended O & M Budget	**$ 46,585.00**
Remaining O & M Budget (Projected)	**$ 26,626.00**

Appendix D

Field Inspection Form

Annual Inspection Report
CAMERON/CREOLE WATERSHED
State Project No. CS-17

MAINTENANCE INSPECTION REPORT CHECK SHEET

Project No. / Name: CS-17 Cameron Creole

Date of Inspection: December 12, 2012 Time: 10:30 am

Structure No. 2

Inspector(s): Dion Broussard (CPRA)
Chris Wheat (Lonnie Harper & Assoc.) for other inspections

Structure Description: _ Fixed crest weir at Grand Bayou

Water Level

Type of Inspection: Annual

Weater Conditions: Sunny and cold

Item	Condition	Pysical Damage	Corrosion	Photo #	Observations and Remarks
Steel Bulkhead / Caps	Fair				
Steel Grating	N/A				
Stop Logs	N/A				
Hardware	Fair				
Boat Guides	Fair			4	West boat guide missing. East boat guide removed and being held by Lonnie Harper's office. Repaired as part of CS-04a maintenance project (2/20/2013).
Timber Wales	N/A				
Galv. Pile Caps	Fair				
Cables	N/A				
Signage /Supports	Good			1,2,3	
Rip Rap (Rock Armor)	Good			1,3	
Eathern Embankment	Good				

What are the conditions of the existing levees? Fair
Are there any noticable breaches? None
Settlement of rock plugs and rock weirs? None
Position of stoplogs at the time of the inspection? N/A
Are there any signs of vandalism? Removal of boat bay guide