



**State of Louisiana
Department of Natural Resources
Coastal Restoration Division and
Coastal Engineering Division**

**2005 Operations, Maintenance,
and Monitoring Report**

for

Cameron Creole Plugs Project

State Project Number CS-17
Priority Project List 1

June, 2005
Cameron Parish

Prepared by:

L. A. Sharp, Monitoring Section, Coastal Restoration
Division (CRD)
and
Dewey Billodeau, P.E., Field Engineering Section, Coastal
Engineering Division (CED)
Louisiana Department of Natural Resources/Coastal
Restoration and Management
Lafayette Field Office
635 Cajundome Boulevard
Lafayette, LA 70506

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2005 Operations, Maintenance, and Monitoring Report
for
Cameron Creole Plugs Project (CS-17)

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Preface

The Operations, Maintenance, and Monitoring (OM&M) Report format is a streamlined approach which combines the Operations and Maintenance annual project inspection information with the Monitoring data and analyses on a project-specific basis. This report includes monitoring data collected through December 2004, and annual Maintenance Inspections through June 2005.

The 2005 report is the second in a series of reports. For additional information on lessons learned, recommendations, and project effectiveness, please refer to the 2004 Operations, Maintenance, and Monitoring Report on the Louisiana Department of Natural Resources (LDNR) web site at dnr.louisiana.gov (Sharp and Billodeau 2007).



I. Introduction

The Cameron Creole Watershed consists of 64,000 acres (25,900 ha) of brackish, intermediate, and fresh marsh located along the east side of Calcasieu Lake, south of the Gulf Intracoastal Waterway (GIWW) in the Calcasieu/Sabine Basin in Cameron Parish and is part of the Sabine National Wildlife Refuge. The Calcasieu Ship Channel has allowed salt water to flood the interior marshes surrounding Calcasieu Lake. 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 (Delany 1991).

In 1989, a levee and five (5) water control structures were constructed by the Soil Conservation Service along the eastern shore of Calcasieu Lake. The structures were intended to reduce the movement of salt water into the watershed. A borrow canal was also constructed along the wetland side of the levee, which may further prevent saltwater intrusion into the marsh. In order to increase control of water flow, isolate management areas, and prevent further saltwater intrusion in the Cameron Creole Watershed, the CS-17 plug project placed two plugs in the borrow canal in 1997 (USFWS 1991).

The CS-17 project comprises 14,471 acres (5,858 ha) of brackish marsh divided into three project areas and two reference areas (figure 1). The plug south of Mangrove Bayou was intended to influence 6,082 acres (3,462 ha) in the northern project area (figure 2). In order to investigate the effect of the plug south of Mangrove Bayou on the surrounding marshes, water flow and the response of emergent vegetation were measured in the northern project area.

The plug south of Grand Bayou was intended to allow for separate operation of the Grand Bayou and Lambert Bayou structures and was expected to affect 6,606 acres (2675 ha) of brackish marsh in the southern project area (figures 1 and 2). In order to determine if the borrow canal plugs reduced water level in the southern project area, duration of flooding was measured and emergent vegetation was sampled.

The plugs were also expected to affect 1,783 acres (720 ha) of broken marsh and shallow open water ponds from 0.5 ft to 2.0 ft (0.15-0.61 m) to the east of Grand Bayou (figures 1 and 2). The ponds support stands of submerged aquatic vegetation (SAV). The ponds in the eastern project area were monitored for effects of the plug project on SAV. Project construction was completed in February 1997.





Figure 1. Cameron Creole Plugs (CS-17) project and reference areas.

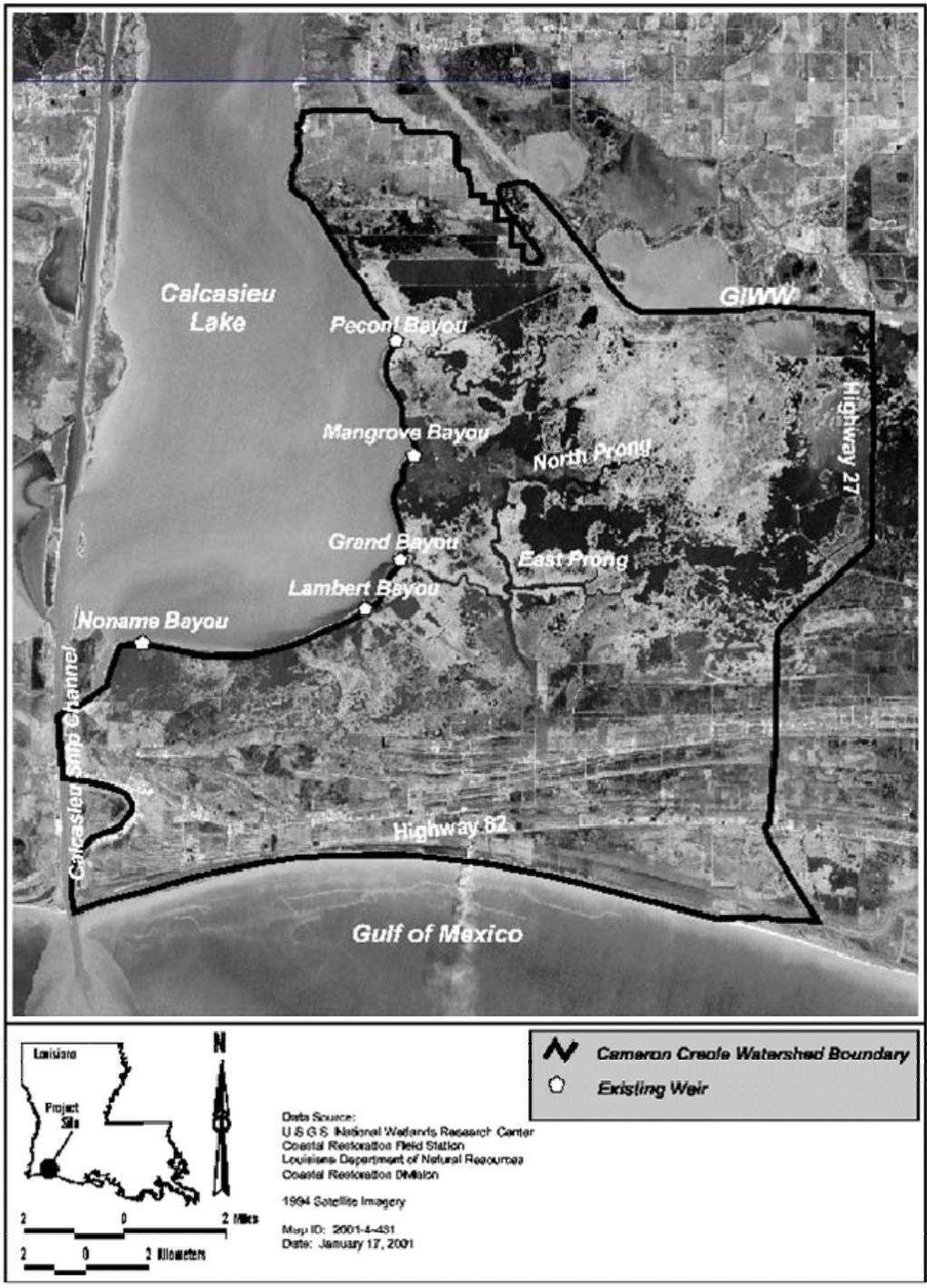


Figure 2. Cameron Creole Plugs (CS-17) project boundaries and structures.



II. Maintenance Activity

a. Project Feature Inspection Procedures

The purpose of the annual inspection of the Cameron Creole Plugs (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, LDNR 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 (Menard 2002).

An inspection team consisting of two representatives of LDNR and one representative of the U.S. Fish and Wildlife Service (USFWS) performs annual visual inspections. If damage is apparent, LDNR and USFWS assign a team to perform a detailed inspection and report on the findings. The team documents the condition of the project features and may employ a survey party to make detailed measurements. As noted in Appendices A, B, and C, initial project goals included documenting inspections with photographs, creating a three-year budget projection, and taking field inspection notes.

b. Inspection Results

No inspection was conducted in calendar year 2005 since this project is currently under a maintenance event.

c. Maintenance Recommendations

i. Immediate/Emergency Repairs

Existing railings, gates, and signage need to be replaced on each weir structure. Boat bumpers will be added to each of the boat bays.

ii. Programmatic/Routine Repairs

None

d. Maintenance History

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:	\$ <u>2,841.17</u>
Project Total:	\$ 77,910.57

III. Operation Activity

a. Operation Plan

Although the structures are operable, there are no active operations currently associated with this project.

b. Actual Operations

Although the structures are operable, there are no active operations currently associated with this project.

IV. Monitoring Activity

Pursuant to a Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) Task Force decision on August 14, 2003, to adopt the Coastwide Reference Monitoring System-*Wetlands* (CRMS-*Wetlands*) for CWPPRA, updates were made to the CS-17 Monitoring Plan to merge it with CRMS-*Wetlands* and provide more useful information for modeling efforts and future project planning while maintaining the monitoring mandates of the Breaux Act.

a. Monitoring Goals

The object of the Cameron Creole Plugs project is to enhance and improve marsh condition in the northern, southern, and eastern project areas, and to improve present structural management capabilities.

The following goals will contribute to the evaluation of the above objective:

1. Reduce the duration of flooding in the southern project area.
2. Reduce water flow in the borrow canal in the northern project area.
3. Increase cover of marsh vegetation in the northern and southern project areas.



4. Increase the relative frequency of occurrence of submerged aquatic vegetation (SAV) in the eastern project area.

b. Monitoring Elements

Aerial Photography:

To measure wetland to open water ratios and to map habitat types in the project area, 1:24,000 scale near-vertical color-infrared aerial photography was obtained pre-construction on November 1, 1993. The original photographs were checked for flight accuracy, color correctness, and clarity and were subsequently archived. The photography was photo interpreted and classified to the subclass habitat level. The habitat delineations were transferred to 1:6,000 scale Mylar base maps, and digitized according to standard operating procedures by United States Geological Survey/National Wetlands Research Center (USGS/NWRC) personnel (Steyer et al. 1995, revised 2000). No further flights are scheduled.

Salinity:

To monitor the effects of the plugs on salinity in the project and reference area, salinity was measured at four continuous stations. One recorder was placed in the northern project area, one in the southern project area, one in the vegetation reference area (in the borrow canal), and one outside of the levee surrounding the watershed in Calcasieu Lake (figure 3). These recorders were removed in July 2004 as recommended in the 2003 comprehensive report. Discrete salinity readings were taken by refuge personnel at 25 existing USFWS monitoring stations, 6 located inside the project areas, and 19 located outside the project areas (figure 3), every two weeks (bi-weekly) from January 1990 to December 1999. Maximum and minimum mean salinity were calculated for each station over the entire sampling period. Salinity will be monitored at seven CRMS-*Wetlands* stations

Water Flow:

Flow was measured in four channels for four consecutive days in May, 1996, pre-construction, and was not measured post-construction.

Water Level:

To monitor the effects of the plug project on inundation in the project and reference area, water level was recorded hourly at four continuous stations and at six staff gages (three located within the project area and three located outside the project area). These recorders were removed in July 2004 as recommended in the 2003 comprehensive report (figure 3). Staff gages were monitored bi-weekly by USFWS personnel. Water level will be monitored at seven CRMS-*Wetlands* stations.

Emergent Vegetation:



Species composition, percent cover, and height of dominant plants in 2-m² vegetation plots (1.4 m x 1.4 m) were determined at 60 sampling points (25 in the northern portion, 25 in the southern portion, and 10 in the vegetation reference area [figure 4]) along transects, using the modified Braun-Blanquet method (Steyer et al. 1995, revised 2000). Emergent vegetation data were collected pre-construction in October 1996 and post-construction in October 1997, September 2000, and September 2002. Vegetation will be monitored at seven CRMS-*Wetlands* stations.

Submerged Aquatic Vegetation (SAV):

Species composition and relative frequency of occurrence were determined for SAV in two ponds in the eastern project area and two ponds in an SAV reference area (figure 4). Presence or absence of SAV was recorded at no less than 25 random points along two transects in each pond, using the rake method (figure 4) (Chabreck and Hoffpauir 1962; Nyman and Chabreck 1996). SAV was monitored pre-construction in October 1996 and post-construction in October 1997, September 2000, and September 2002. Means of relative frequency of occurrence of each species, species richness, and water depth and salinity were calculated and compared in the eastern project and SAV reference areas.



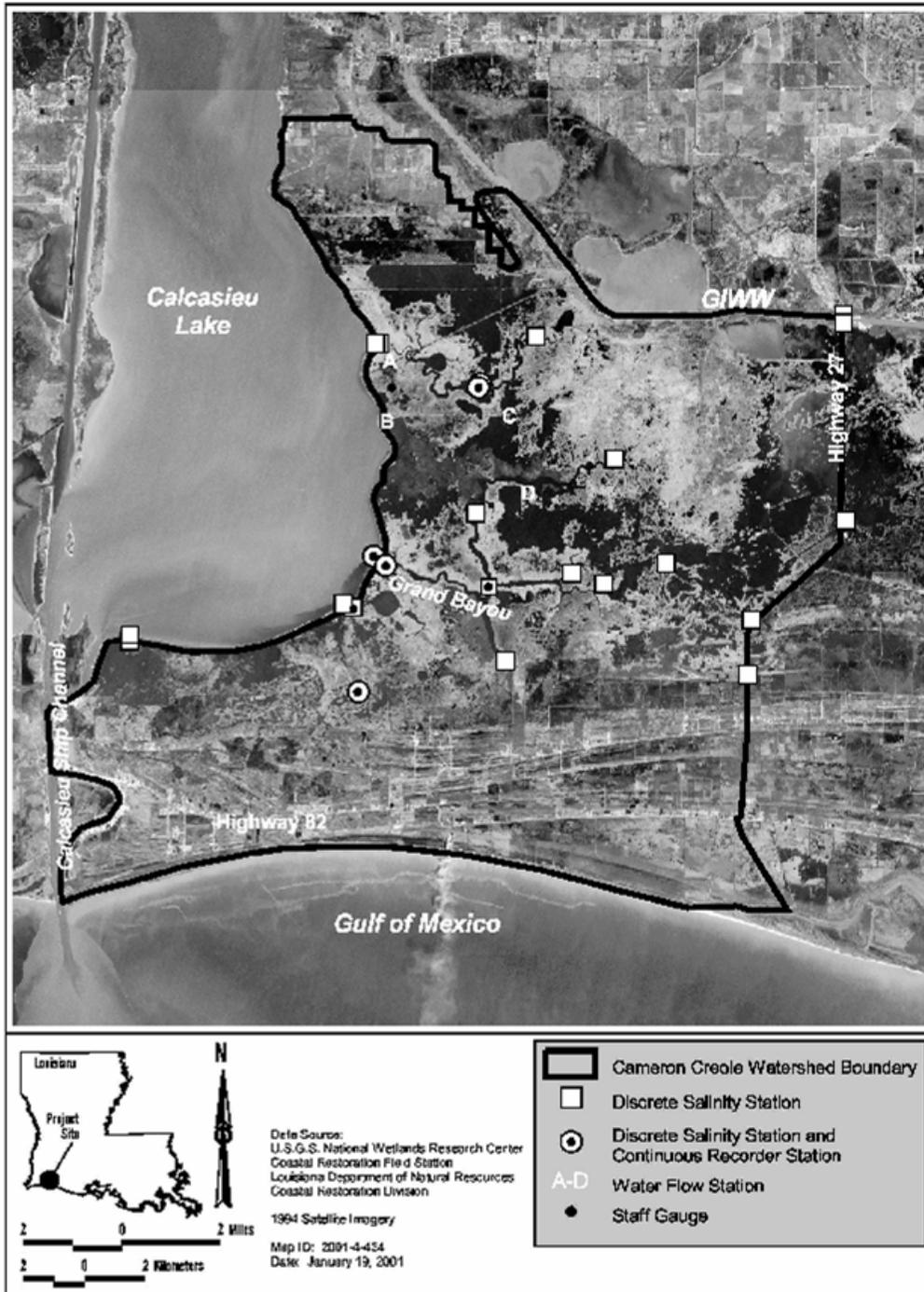


Figure 3. Cameron Creole Plugs (CS-17) permanent and discrete station locations.

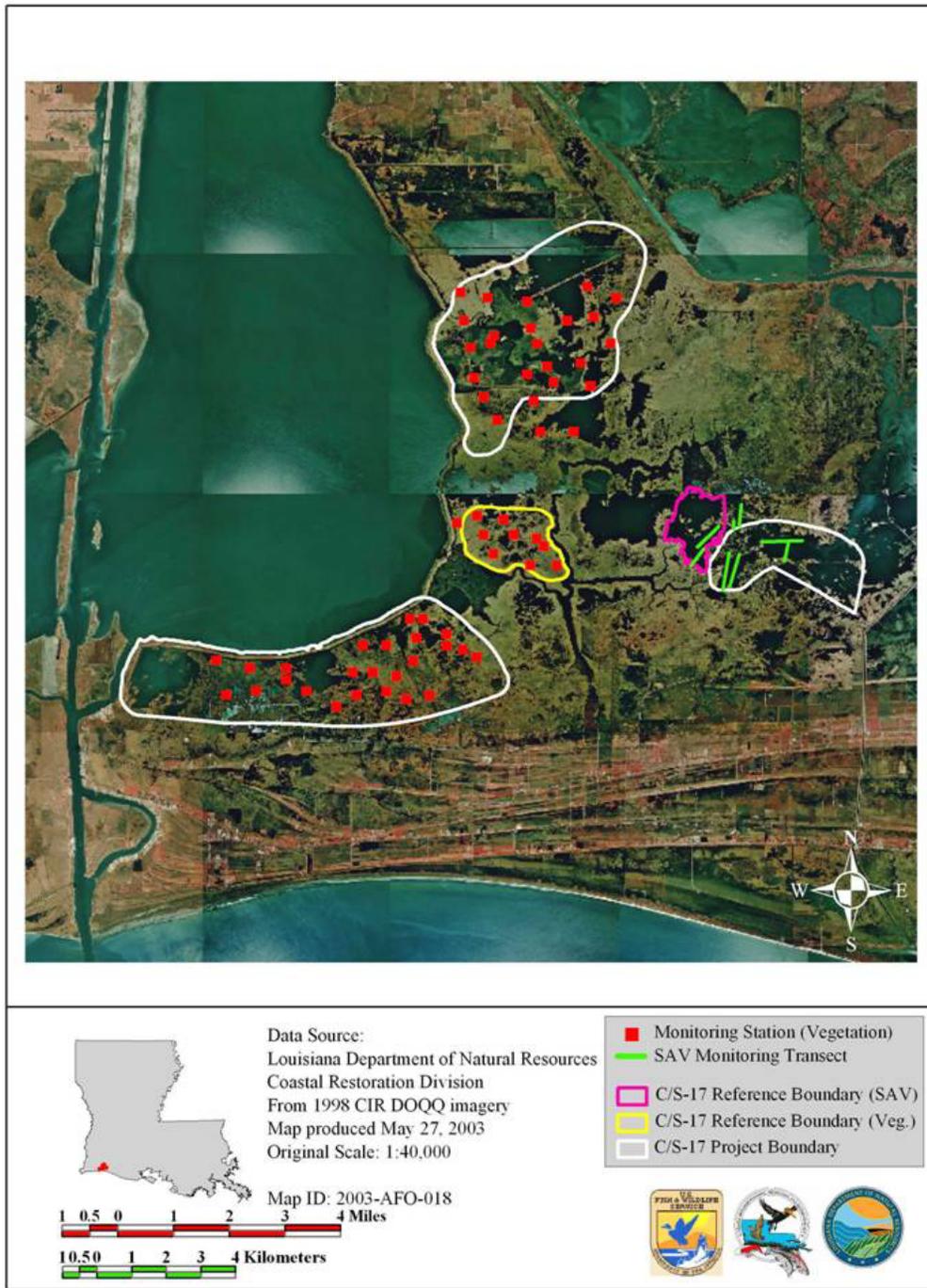


Figure 4. Cameron Creole Plugs (CS-17) vegetation and SAV sampling transects.

IV. Monitoring Activity (continued)

c. Preliminary Monitoring Results and Discussion

Data collected up to July 2004 has been included in the following results and discussion. Project results using data collected through 2002 were discussed in detail in the 2003 CS-17 Comprehensive Report (Sharp et al. 2004).

Aerial Photography:

Aerial photography was obtained pre-construction in 1993 and has not been obtained post-construction. Using the National Wetlands Inventory (NWI) classification system, the photography was photo interpreted by NWRC personnel and classified to the subclass habitat level (Cowardin et al. 1992). A habitat map and the acreages of each habitat are presented in figure 5 and table 1. The post-construction flight has not been scheduled.

Salinity and Water Level:

Hourly salinity and water level data have been collected at the following continuous recorder stations:

Station	Data collection period
CS17-01R	5/10/1994 – 7/24/2004
CS17-02R	3/10/1994 – 7/28/2004
CS17-11	2/23/1994 - 7/28/2004
CS17-12	2/23/1995 - 7/28/2004

Salinity and water level for 2004 are summarized in figures 6-9.

Emergent Vegetation:

Emergent vegetation surveys were conducted in 1996 pre-construction, and in 1997, 2000, and 2002 post-construction. Species found each year and the frequency of each species that occurred each year can be found in table 2. Analysis of Variance (ANOVA) of total percent cover over years in the project and reference areas revealed that cover was lower in both the project and reference areas in 2002 than during the other three years (figure 10). Cover decreased in both the project and reference areas, which suggests that the reason for the decline was not the CS-17 project but rather some other factor. The most likely cause of that decrease is water level but it could be a combination of factors. Note that total cover is skewed and does not meet the assumptions of ANOVA.

Submerged Aquatic Vegetation (SAV):

Submerged aquatic vegetation surveys were conducted in 1996 pre-construction, and in 1997, 2000, and 2002 post-construction. The frequency of occurrence of SAV species for each year can be found in table 3. Frequency decreased in 2000 in both the project and reference areas, most likely due to drought. SAV cover had recovered in 2002. Species richness was the



same in the project area and reference area over the years. Richness decreased in 2000 and recovered in 2002 to five species per plot.



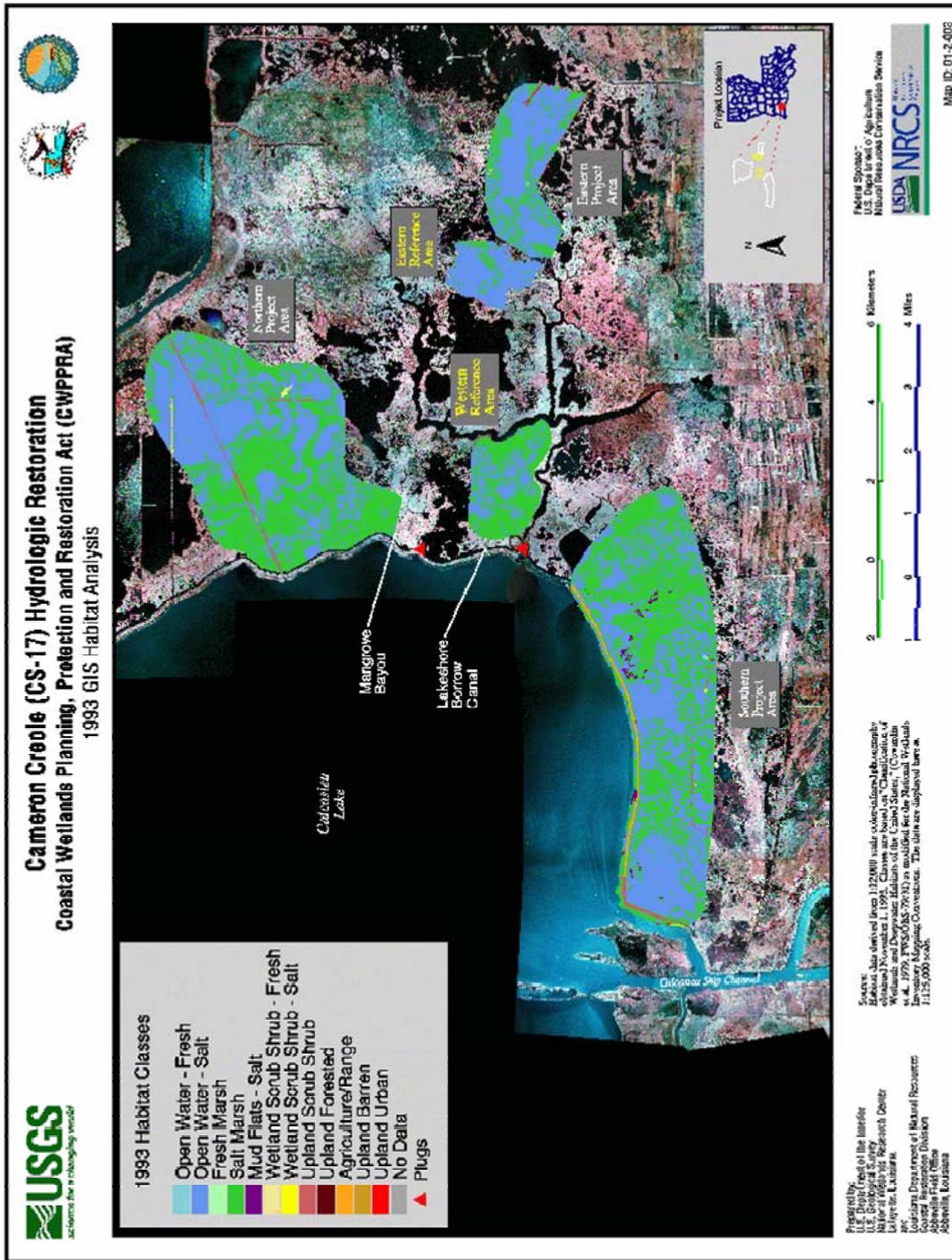


Figure 5. 1993 GIS habitat analysis of the Cameron Creole Plugs (CS-17) project area.

Table 1. Acreages of habitat types from the 1993 habitat analysis of the Cameron Creole Plugs (CS-17) project area.

Habitat Class	Northern Project Area	Southern Project Area	Eastern Project Area (SA)	Vegetation Referenc Are	SA Referenc Are
	Acre (Hectares) % of total area	Acres (Hectares) % of total area			
Open Water - Fresh	0	3 (1.2)	1.7 (0.7)	0	0
Open Water - Salt	2718 (1100.8) 45.1%	3151	(527.4) 73.7%	565.1 (228.9) 90.1%	310.6 (125.8) 27.2%
Fresh Marsh	0	0.2	0	0	0
Salt Marsh	3233.2 (1309.4) 53.7%	3220.4 (1304.3) 48.7%	453.5 (183.7) 25.7%	62.2 (25.2) 9.9%	831.6 (336.8) 72.8%
Mud Flats - Salt	0	35.9 (14.5) 0.5%	0	0	0
Wetland Shrub Scrub -Fresh	7.9 (3.2)	1.5 (0.6)	0	0	0
Wetland Shrub Scrub -Salt	8.6 (3.5)	2.6 (1.1)	1.1 (0.4)	0	0
Upland Shrub Scrub	57.5 (23.3) 1%	58 (23.5) 0.9%	0	0	0
Upland Forested	0.5 (0.2)	0	0	0	0
Agriculture/Range	0.6 (.2)	125.2 (50.7) 2%	0	0	0
Upland Barren	0	5.5 (2.2)	0	0	0
Upland Urban	0	3 (1.2)	8.2 (3.3) 0.6%	0	0
TOTA	6026.3 (2440.7)	6606.3 (2675.6)	1766.7 (715.5)	627.3 (254.1)	1142.2 (462.6)
% Open Water	45.1	48.3	73.8	90.1	27.2
% Land	54.9	51.7	26.2	9.9	72.8



CS17-01R

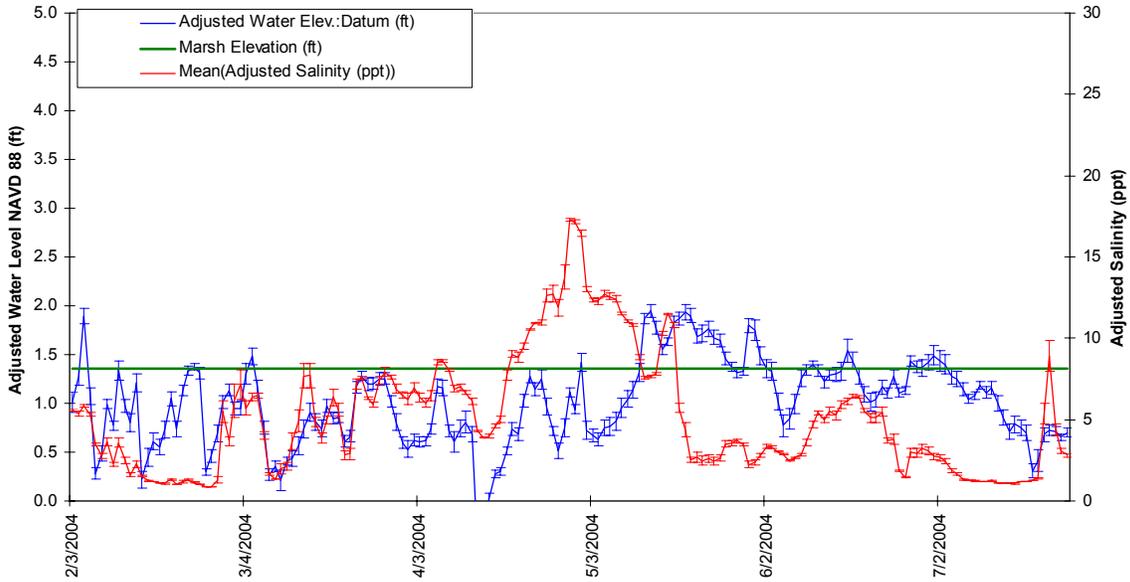


Figure 6. Daily Mean Water Level at CS17-01R from 2-3-04 to 7-24-04. The sonde was down from December to February 2004.

CS17-02R

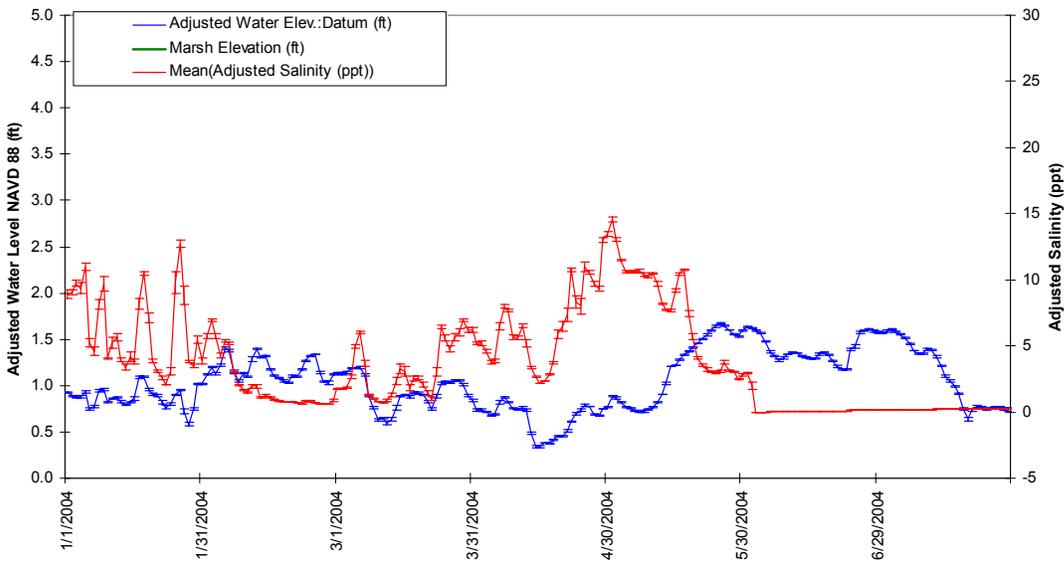


Figure 7. Daily Mean Water Level at CS17-02R from 1-1-04 to 7-28-04.



CS17-11

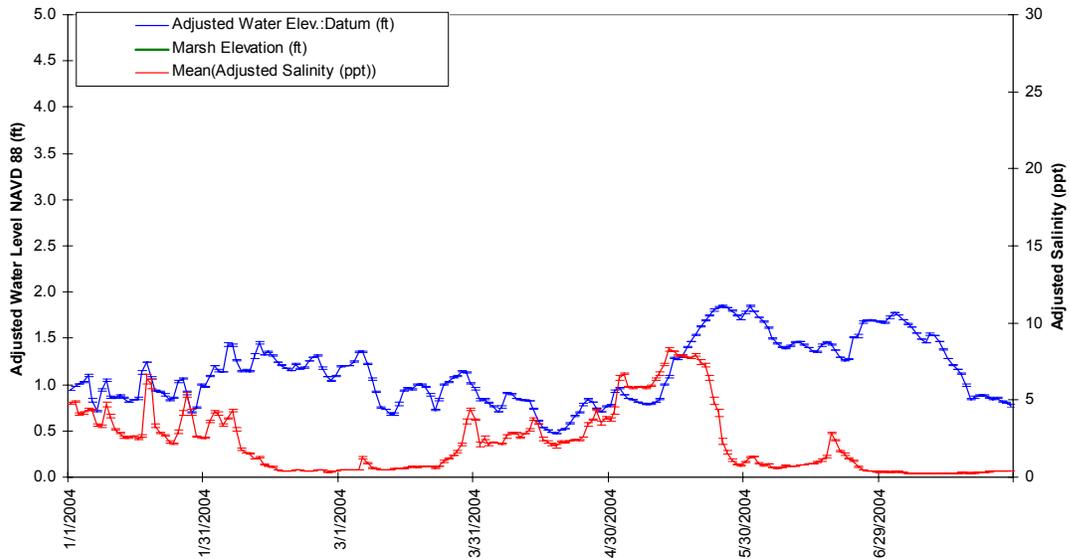


Figure 8. Daily Mean Water Level at CS17-11 from 1-1-04 to 7-28-04.

CS17-12

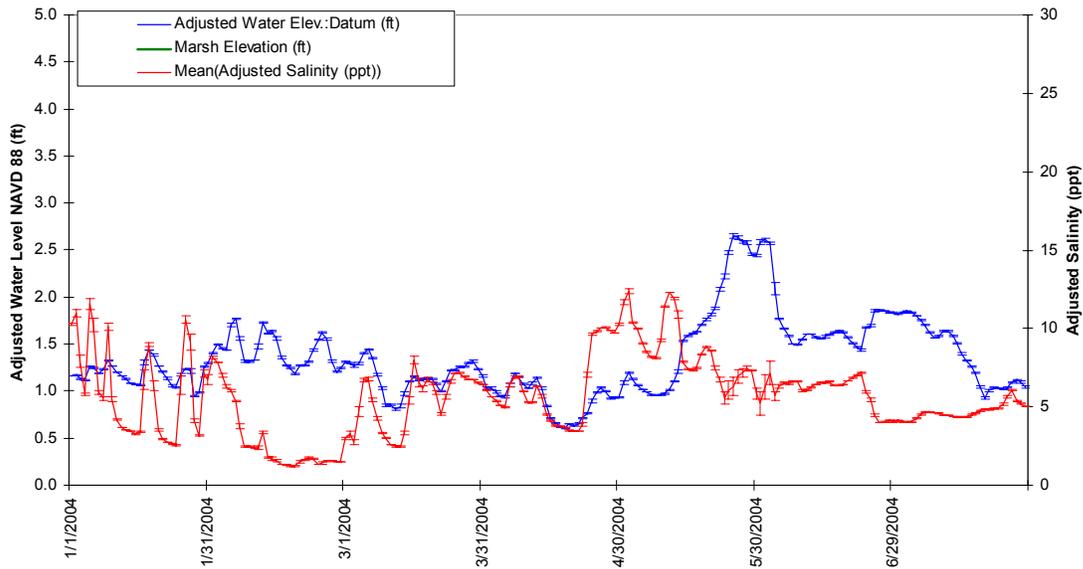


Figure 9. Daily Mean Water Level at CS17-12 from 1-1-04 to 7-28-04.



Table 2. Frequency of occurrence (%) of each species found in the CS-17 project and reference area. (n plots species present in/total plots)*100))

Species	Reference Area				Northern Project Area				Southern Project Area			
	1996	1997	2000	2002	1996	1997	2000	2002	1996	1997	2000	2002
<i>Spartina patens</i>	100	100	100	100	100	96.0	86.7	95.8	100	92.0	95.2	100
<i>Schoenoplectus pungens</i>	70.0	80.0	88.9	77.8	32.0	44.0	53.3	45.8	12.0	4.0	14.3	16.0
<i>Spartina alterniflora</i>	.	.	.	.	.	.	.	.	16.0	20.0	33.3	28.0
<i>Distichlis spicata</i>	.	.	.	.	.	.	.	.	8.0	24.0	19.0	16.0
<i>Amaranthus australis</i>	.	10.0	.	.	8.0	16.0	.	.	16.0	24.0	.	.
<i>Aster tenuifolius</i>	.	.	.	11.1	.	.	.	4.2	.	.	.	.
<i>Baccharis halimifolia</i>	10.0	.	.	.	8.0	.	.	.	.	.	.	.
<i>Bacopa monnieri</i>	.	.	.	.	.	.	.	.	.	4.0	.	.
<i>Cyperus odoratus</i>	.	.	.	.	4.0	4.0	.	.	4.0	20.0	.	8.0
<i>Erechtites hieraciifolia</i>	.	.	22.2	.	.	.	.	.	.	.	.	.
<i>Eupatorium capillifolium</i>	10.0	.	.	.	4.0	.	.	.	.	.	.	.
Green algae	.	.	.	.	.	4.0	.	.	.	.	.	.
<i>Ipomoea sagittata</i>	.	.	.	11.1	8.0	8.0	6.7	12.5	.	.	.	.
<i>Juncus roemerianus</i>	.	.	.	.	.	.	6.7	.	.	.	.	.
<i>Kosteletzkya virginica</i>	.	.	.	.	4.0	.	.	.	.	4.0	.	.
<i>Lythrum lineare</i>	10.0	.	.	.	4.0	.	.	.	.	.	.	.
<i>Mikania scandens</i>	.	.	.	.	.	.	6.7	.	.	.	.	.
<i>Paspalum vaginatum</i>	.	.	.	.	.	4.0	.	.	.	.	.	.
<i>Phytolacca americana</i>	.	.	.	.	.	.	.	.	.	.	4.8	.
<i>Pluchea camphorata</i>	.	.	.	.	.	.	.	.	.	4.0	.	.
<i>Schoenoplectus americanus</i>	.	.	.	.	.	.	.	4.2	.	.	.	.
<i>Schoenoplectus robustus</i>	.	10.0	11.1	.	.	8.0	.	.	8.0	12.0	.	.
<i>Sonchus</i> sp.	.	.	.	.	.	.	.	.	.	4.0	.	.
<i>Symphytotrichum subulatum</i>	.	.	.	.	.	.	.	.	8.0	8.0	.	.
<i>Symphytotrichum tenuifolium</i>	.	.	.	.	.	.	13.3	.	.	.	9.5	.
<i>Typha</i> sp.	10.0	.	.	33.3	.	4.0	26.7	29.2	.	12.0	4.8	8.0
<i>Vigna luteola</i>	.	.	.	11.1	12.0	12.0	26.7	12.5	.	.	.	0.0



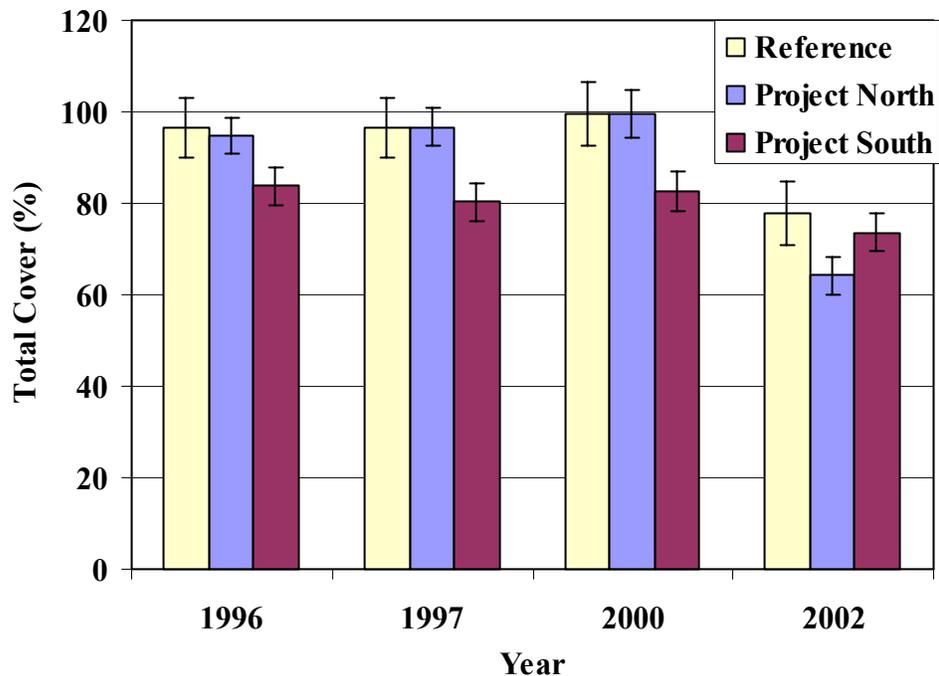


Figure 10. Total percent cover in the two project and reference areas for each sampling year for the CS-17 Cameron Creole Plugs project (LS Mean \pm SE). Cover in 2002 was significantly lower than in the other sampling years ($p < 0.0001$). There was also a significant interaction between project/reference areas and years ($p = 0.0211$). Post-ANOVA contrasts showed that the southern Project area was significantly lower than the Reference area in both 1997 and 2000. The low cover values in 2002 could be due to increased frequency of inundation in 2001 and 2002.

Table 3. Frequency of occurrence of SAV species in the CS-17 project and reference areas for each sampling year.

Specie	Project				Reference			
	1996	1997	2000	2002	1996	1997	2000	2002
Algae	36.50	53.50	7.25	40.41	63.25	12.50	9.75	48.04
<i>Ceratophyllu demersu</i>	.	7.50	.	17.26	.	8.00	.	9.62
<i>Chara</i> sp.	.	.	.	10.75	.	.	.	11.31
<i>Myriophyllu spicatu</i>	2.50	1.00	.	69.74	.	1.50	.	70.18
<i>Najas carolinian</i>	18.75	41.75	.	.	42.25	32.50	.	5.88
<i>Potamogeton</i> sp.	.	.	.	11.75	.	.	.	5.79
<i>Ruppia maritima</i>	44.00	1.50	10.00	.	45.75	.	1.50	2.78
<i>Vallisneri american</i>	14.75	23.25	0.50	56.30	23.00	69.50	.	75.97



V. Conclusions

a. Project Effectiveness

As described in the 2003 CS-17 comprehensive report, it has been difficult to assess effectiveness of this project due to the fact that drought conditions were present throughout most of the pre-construction period. All of the data (water level, vegetation, and SAV) show changes over time, but in most cases, the project and reference areas have changed in the same manner over time. Salinity increased and decreased at all four recorders from year to year but the stations did not change relative to each other (figures 6-9). Water level has increased south of Calcasieu Lake relative to the reference stations. This increase was the greatest from 1997 to 1999. Water level in the northern project area has not changed relative to the reference stations. These data suggest that the plugs did not result in lower water levels south of Lake Calcasieu. Water level and salinity data tend to track climatic trends and do not differ significantly in the project areas.

Percent cover of emergent vegetation was relatively similar in the northern project and reference area until 2002 (figure 10), when cover decreased in both the northern and southern project areas. Cover in the southern project area has been lower than in the reference area throughout the project. The decrease in cover could be due to increased frequency of inundation in 2001 and 2002, but that alone would not explain loss of cover in the northern project area because inundation there was approximately the same as the reference area, which did not decrease as much as the northern project area did. SAV decreased in 2000, then recovered, increasing in 2002 (table 3). Changes in SAV are most likely due to changes in salinity from year to year.

Flow was only measured once (pre-construction) so there are no data to evaluate whether the plugs slowed water flow into the marsh. Mr. Glenn Harris, Refuge Manager of Cameron Creole Wildlife Refuge, indicated on April 28, 2004, that the plugs were very effective in slowing the rapid exchange of water through the borrow canals. He has observed that when a strong wind is blowing, the head difference can differ by up to 6 inches at the plugs. LDNR/Coastal Engineering Division personnel have also noted this difference during field trips to the project.

With existing data, it is impossible to differentiate the hydrologic impacts of the plugs from the manipulations of the five water control structures along Calcasieu Lake. The reference areas for vegetation and SAV are not independent of the structure manipulations, and one of the reference areas has been used for a terrace project area.

b. Recommended Improvements

It was recommended in the comprehensive report (2003) that monitoring on this project as outlined in the original monitoring plan be discontinued due to the inability to discern project effects from environmental trends and from the five water control structures along Calcasieu



Lake. Continuous recorders were removed from the project and reference areas in July 2004 as a result of this recommendation. The Cameron Creole Watershed will be monitored by 7 CRMS-*Wetlands* stations within its boundaries.

c. Lessons Learned

Placement of reference areas within project areas that are influenced by pre-existing hydrologic structure manipulations is not recommended. This issue will be addressed through the implementation of CRMS – *Wetlands*.



VI. REFERENCES

- Delany, B. 1991. Cameron-Creole watershed management, 1988-1990. Creole, Louisiana: unpublished report prepared for the U.S. Army Corps of Engineers (USACE) and LDNR/Coastal Management Division, Baton Rouge.
- Chabreck, R. H., and C. M. Hoffpauir 1962. The use of weirs in coastal marsh management in coastal Louisiana. Proceedings of the Annual Conference of the Southeastern Association of Game Fish Commissioners. 16:103-12. Columbia, South Carolina.
- Cowardin, L. M., V. Carter, F.C. Golet, and E.T. LaRoe. 1992. Classification of wetlands and deepwater habitats of the United States. Washington, D.C.: Fish and Wildlife Service, U.S. Department of the Interior. 131 pp.
- Menard, C. 2002. Operation and maintenance plan for the Cameron Creole Plug Project (CS-17). Baton Rouge: Louisiana Department of Natural Resources, Coastal Restoration Division.
- Nyman, J. A., and R. H. Chabreck 1996. Some effects of 30 years of weir-management on coastal marsh aquatic vegetation and implications in waterfowl management. Gulf of Mexico Science 14:16-25.
- Sharp, L. A., and D. Billodeau 2007. 2004 Operations, maintenance and monitoring Report for Cameron Creole hydrologic restoration project (CS-17). Baton Rouge: Louisiana Department of Natural Resources, Coastal Restoration Division and Coastal Engineering Division.
- Sharp. L., D. K. Weifenbach, and N. C. Clark. 2004. Coast 2050 Region 4 Cameron Creole Plug Project (CS-17), three year monitoring report. Baton Rouge: Louisiana Department of Natural Resources, Coastal Restoration Division. 48 pp.
- Steyer, G. D., R. C. Raynie, D. L. Steller, D. Fuller, and E. Swensen 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. 97 pp.
- United States Fish and Wildlife Service (USFWS), Sabine National Wildlife Refuge 1991. Cameron-Creole Watershed borrow canal plug project. [Proposed project information sheet for wetland value assessment.] Hackberry, Louisiana: Sabine National Wildlife Refuge.



Appendix A (Inspection Photographs)

No inspection was conducted in calendar year 2005 because this project is currently under a maintenance event, therefore no photographs are available.



Appendix B (Three-Year Budget Projection)

CAMERON CREOLE STRUCTURES / CS17 / PPL1 Three-Year Operations & Maintenance Budgets 07/01/2005 - 06/30/08

	Project Manager	O & M Manager	Federal Sponsor	Prepared By
			FWS	
	2005/2006		2006/2007	
Maintenance Inspection	\$ 4,955.00	\$ 5,119.00	\$ 5,288.00	
Structure Operation	\$ -	\$ -	\$ -	
Administration	\$ 4,000.00	\$ 3,000.00	\$ 1,000.00	

Maintenance/Rehabilitation

05/06 Description: General Structure Maintenance

<i>E&D</i>	\$ 1,812.00
<i>Construction</i>	\$ 47,177.00
<i>Construction Oversight</i>	\$ 3,082.00
<i>Sub Total - Maint. And Rehab.</i>	<u>\$ 52,071.00</u>

06/07 Description:

<i>E&D</i>	\$ -
<i>Construction</i>	\$ -
<i>Construction Oversight</i>	\$ -
<i>Sub Total - Maint. And Rehab.</i>	<u>\$ -</u>

07/08 Description:

<i>E&D</i>	\$ -
<i>Construction</i>	\$ -
<i>Construction Oversight</i>	\$ -
<i>Sub Total - Maint. And Rehab.</i>	<u>\$ -</u>

	2005/2006	2006/2007	2007/2008
<u>Total O&M Budgets</u>	<u>\$ 61,026.00</u>	<u>\$ 8,119.00</u>	<u>\$ 6,288.00</u>



OPERATION AND MAINTENANCE BUDGET 07/01/2005-06/30/2006
CAMERON CREOLE STRUCTURES/ CS-17 / PPL NO.1

DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
O&M Inspection and Report	EACH	1	\$4,955.00	\$4,955.00
General Structure Maintenance	LUMP	1	\$47,177.00	\$47,177.00
Engineering and Design	LUMP	1	\$1,812.00	\$1,812.00
Operations Contract	LUMP	1	\$0.00	\$0.00
Construction Oversight	LUMP	1	\$3,082.00	\$3,082.00

ADMINISTRATION

LDNR / CRD Admin.	LUMP	1	\$3,000.00	\$3,000.00
FEDERAL SPONSER Admin.	LUMP	1	\$1,000.00	\$1,000.00
SURVEY Admin.	LUMP	0	\$0.00	\$0.00
OTHER				\$0.00
TOTAL ADMINISTRATION COSTS:				\$4,000.00

MAINTENANCE / CONSTRUCTION

SURVEY

SURVEY DESCRIPTION:	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
Secondary Monument	EACH	0	\$0.00	\$0.00
Staff Gauge / Recorders	EACH	0	\$0.00	\$0.00
Marsh Elevation / Topography	LUMP	0	\$0.00	\$0.00
TBM Installation	EACH	0	\$0.00	\$0.00
OTHER				\$0.00
TOTAL SURVEY COSTS:				\$0.00

GEOTECHNICAL

GEOTECH DESCRIPTION:	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
Borings	EACH	0	\$0.00	\$0.00
OTHER				\$0.00
TOTAL GEOTECHNICAL COSTS:				\$0.00

CONSTRUCTION

CONSTRUCTION DESCRIPTION:	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
Rip Rap	LIN FT	0	\$0.00	\$0.00
	TON / FT	0.0	\$0.00	\$0.00
	TONS	0	\$0.00	\$0.00
		0	\$0.00	\$0.00
Filter Cloth / Geogrid Fabric	SQ YD	0	\$0.00	\$0.00
Navigation Aid	EACH	0	\$0.00	\$0.00
Signage	EACH	0	\$0.00	\$0.00
General Excavation / Fill	CU YD	0	\$0.00	\$0.00
Dredging	CU YD	0	\$0.00	\$0.00
Sheet Piles (Lin Ft or Sq Yds)		0	\$0.00	\$0.00
Timber Piles (each or lump sum)		0	\$0.00	\$0.00
Timber Members (each or lump sum)		0	\$0.00	\$0.00
Hardware	LUMP	1	\$0.00	\$0.00
Materials	LUMP	1	\$0.00	\$0.00
Mob / Demob	LUMP	1	\$0.00	\$0.00
Contingency	LUMP	1	\$0.00	\$0.00
General Structure Maintenance	LUMP	1	\$0.00	\$0.00
OTHER			\$0.00	\$0.00
OTHER			\$0.00	\$0.00
OTHER			\$0.00	\$0.00
TOTAL CONSTRUCTION COSTS:				\$0.00

TOTAL OPERATIONS AND MAINTENANCE BUDGET: **\$61,026.00**



OPERATION AND MAINTENANCE BUDGET 07/01/2005 - 06/30/2006
CAMERON CREOLE STRUCTURES / CS-17 / PPL NO.1

DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
O&M Inspection and Report	EACH	1	\$5,119.00	\$5,119.00
General Structure Maintenance	LUMP	1	\$0.00	\$0.00
Engineering and Design	LUMP	1	\$0.00	\$0.00
Operations Contract	LUMP	1	\$0.00	\$0.00
Construction Oversight	LUMP	1	\$0.00	\$0.00

ADMINISTRATION

LDNR / CRD Admin.	LUMP	1	\$2,000.00	\$2,000.00
FEDERAL SPONSER Admin.	LUMP	1	\$1,000.00	\$1,000.00
SURVEY Admin.	LUMP	0	\$0.00	\$0.00
OTHER				\$0.00
TOTAL ADMINISTRATION COSTS:				\$3,000.00

MAINTENANCE / CONSTRUCTION

SURVEY

SURVEY DESCRIPTION:	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
Secondary Monument	EACH	0	\$0.00	\$0.00
Staff Gauge / Recorders	EACH	0	\$0.00	\$0.00
Marsh Elevation / Topography	LUMP	0	\$0.00	\$0.00
TBM Installation	EACH	0	\$0.00	\$0.00
OTHER				\$0.00
TOTAL SURVEY COSTS:				\$0.00

GEOTECHNICAL

GEOTECH DESCRIPTION:	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
Borings	EACH	0	\$0.00	\$0.00
OTHER				\$0.00
TOTAL GEOTECHNICAL COSTS:				\$0.00

CONSTRUCTION

CONSTRUCTION DESCRIPTION:	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
Rip Rap	LIN FT	0	\$0.00	\$0.00
	TON / FT	0.0	0	\$0.00
	TONS	0	\$0.00	\$0.00
		0	\$0.00	\$0.00
Filter Cloth / Geogrid Fabric	SQ YD	0	\$0.00	\$0.00
Navigation Aid	EACH	0	\$0.00	\$0.00
Signage	EACH	0	\$0.00	\$0.00
General Excavation / Fill	CU YD	0	\$0.00	\$0.00
Dredging	CU YD	0	\$0.00	\$0.00
Sheet Piles (Lin Ft or Sq Yds)		0	\$0.00	\$0.00
Timber Piles (each or lump sum)		0	\$0.00	\$0.00
Timber Members (each or lump sum)		0	\$0.00	\$0.00
Hardware	LUMP	1	\$0.00	\$0.00
Materials	LUMP	1	\$0.00	\$0.00
Mob / Demob	LUMP	1	\$0.00	\$0.00
Contingency	LUMP	1	\$0.00	\$0.00
General Structure Maintenance	LUMP	1	\$0.00	\$0.00
OTHER			\$0.00	\$0.00
OTHER			\$0.00	\$0.00
OTHER			\$0.00	\$0.00
TOTAL CONSTRUCTION COSTS:				\$0.00

TOTAL OPERATIONS AND MAINTENANCE BUDGET: \$8,119.00



OPERATION AND MAINTENANCE BUDGET 07/01/2007 - 06/30/2008
CAMERON CREOLE STRUCTURES / CS-17 / PPL NO.1

DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
O&M Inspection and Report	EACH	1	\$5,288.00	\$5,288.00
General Structure Maintenance	LUMP	1	\$0.00	\$0.00
Engineering and Design	LUMP	1	\$0.00	\$0.00
Operations Contract	LUMP	1	\$0.00	\$0.00
Construction Oversight	LUMP	1	\$0.00	\$0.00

ADMINISTRATION

LDNR / CRD Admin.	LUMP	1	\$500.00	\$500.00
FEDERAL SPONSER Admin.	LUMP	1	\$500.00	\$500.00
SURVEY Admin.	LUMP	0	\$0.00	\$0.00
OTHER				\$0.00
TOTAL ADMINISTRATION COSTS:				\$1,000.00

MAINTENANCE / CONSTRUCTION

SURVEY

SURVEY DESCRIPTION:	DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
	Secondary Monument	EACH	0	\$0.00	\$0.00
	Staff Gauge / Recorders	EACH	0	\$0.00	\$0.00
	Marsh Elevation / Topography	LUMP	0	\$0.00	\$0.00
	TBM Installation	EACH	0	\$0.00	\$0.00
	OTHER				\$0.00
TOTAL SURVEY COSTS:				\$0.00	

GEOTECHNICAL

GEOTECH DESCRIPTION:	DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
	Borings	EACH	0	\$0.00	\$0.00
	OTHER				\$0.00
TOTAL GEOTECHNICAL COSTS:				\$0.00	

CONSTRUCTION

CONSTRUCTION DESCRIPTION:	DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
	Rip Rap	LIN FT	0	\$0.00	\$0.00
		TON / FT	0	\$0.00	\$0.00
		TONS	0	\$0.00	\$0.00
	Filter Cloth / Geogrid Fabric	SQ YD	0	\$0.00	\$0.00
	Navigation Aid	EACH	0	\$0.00	\$0.00
	Signage	EACH	0	\$0.00	\$0.00
	General Excavation / Fill	CU YD	0	\$0.00	\$0.00
	Dredging	CU YD	0	\$0.00	\$0.00
	Sheet Piles (Lin Ft or Sq Yds)		0	\$0.00	\$0.00
	Timber Piles (each or lump sum)		0	\$0.00	\$0.00
	Timber Members (each or lump sum)		0	\$0.00	\$0.00
	Hardware	LUMP	1	\$0.00	\$0.00
	Materials	LUMP	1	\$0.00	\$0.00
	Mob / Demob	LUMP	1	\$0.00	\$0.00
	Contingency	LUMP	1	\$0.00	\$0.00
	General Structure Maintenance	LUMP	1	\$0.00	\$0.00
	OTHER			\$0.00	\$0.00
	OTHER			\$0.00	\$0.00
	OTHER			\$0.00	\$0.00
TOTAL CONSTRUCTION COSTS:				\$0.00	

TOTAL OPERATIONS AND MAINTENANCE BUDGET: \$6,288.00



Appendix C (Field Inspection Notes)

No inspection was conducted in calendar year 2005 because this project is currently under a maintenance event, therefore no field inspection notes are available.

