



Coastal Protection and
Restoration Authority of Louisiana

**State of Louisiana
Coastal Protection and Restoration
Authority**

2015 Annual Inspection Report

for

**Raccoon Island Shoreline Protection/
Marsh Creation Project**

State Project Number TE-48

Priority Project List 11

**Raccoon Island Breakwater
Demonstration Project**

State Project Number TE-29

Priority Project List 5

October 1, 2015
Terrebonne Parish

Prepared by:

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I. Introduction

Raccoon Island is part of the Isle Dernieres island chain consisting of four (4) islands (Whiskey Island, Trinity Island, East Island and Raccoon Island) and is located approximately 50 miles south of Houma, Louisiana. These islands are separated from the mainland by Terrebonne Bay, Lake Pelto, and Caillou Bay, with the Gulf of Mexico as the southern boundary (Monitoring Plan, 2008).

The Isle Dernieres arc is part of the Lafourche deltaic complex formed as a result of the abandonment of the Caillou Headland approximately 500 years ago (Penland and Boyd, 1985). Following the abandonment of the river, headland sands deposits were moved and deposited along shore forming flanking barrier islands (Penland et al., 1988). Following the submergence of the abandoned delta, the headland was separated from the mainland and created the barrier islands. These islands have experienced narrowing and land loss as the consequence of the interactions among global sea level rise, subsidence, short supply of sediments, human disturbance, and wave and storm processes (Penland et al. 1988; McBride et al. 1989; Williams et al. 1992)

These islands play an important role in lessening the impact of tropical storms and hurricanes. The process of reducing impacts to Raccoon Island began with the Raccoon Island Segmented Breakwater Demonstration Project (TE-29) authorized on the 5th project priority list under the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA). The demonstration project consisted of the construction of eight (8) segmented breakwaters along the south side of the island along the shoreline in approximately 4 to 6 feet of water.

The second restoration project approved in the 11th Project Priority List of CWPPRA was the Raccoon Island Shoreline Protection and Marsh Creation Project (TE-48). During the design process, it was determined through a geotechnical investigation that material available for the construction of containment dikes was inadequate for the proposed design application. Rather than delay the project, the project was divided into two (2) phases: Phase A consisted of the shoreline protection features and Phase B included the marsh creation components of the project. The design of Phase A proceeded while further geotechnical and design alternatives were considered for the construction of the containment dikes.

The Raccoon Island Breakwater Demonstration Project (TE-29) and the Raccoon Island Shoreline Protection and Marsh Creation Project (TE-48) were co-sponsored by the Natural Resources Conservation Service (NRCS) and the Coastal Protection and Restoration Authority (CPRA) of Louisiana. The projects were authorized by Section 303(a) of Title III Public Law 101-646, the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) and enacted on November 29, 1990 as amended, and were approved on the 5th and 11th Priority Project List, respectively.

II. Inspection Purpose and Procedures

The purpose of performing an annual inspection is to evaluate the constructed project features, identify any deficiencies, prepare a report detailing the condition of such features, and to recommend corrective actions needed, if any. Should it be determined that corrective actions are needed, CPRA shall provide, in report form, a detailed cost estimate for engineering, design, supervision, inspection, construction contingencies, and an assessment of the urgency of such repairs. The annual inspection report also contains a summary of maintenance projects undertaken since the constructed features were completed and an estimated project budget for the upcoming three (3) years for operation, maintenance and rehabilitation. Initially, the Raccoon Island Breakwater Demonstration (TE-29) Project did not include any Phase 2 funds for operations and maintenance of the constructed features. However, in 2014, CWPPRA approved a request made by NRCS to include the project feature constructed under the Raccoon Island Demonstration Project (TE-29) in the Operations and Maintenance Plan for the Raccoon Island Shoreline Protection and Marsh Creation (TE-48) Project. The combined three (3) year budget projections for operation and maintenance for both projects are shown in Appendix C, and a summary of past operation and maintenance projects undertaken since the completion of the projects are outlined in Section IV of this report.

An inspection of both projects was held on March 31, 2015. In attendance were Adam Ledet, Travis Byland, and Glen Curole with CPRA, Loland Broussard, Doug Baker and Ron Boustany with NRCS, and Lance Cambell representing LDWF. All attendees met at the LUMCON facility in Cocodrie, Louisiana. and the inspection began at approximately 10:30 am on the eastern end of the containment dike on the north side of the island. The inspection team walked the length of the dike from east to west and then circled the island by boat to view the segmented breakwaters on the south side of the island. The inspection concluded at approximately 12:30 pm.

The field inspection included a complete visual inspection of the marsh fill area, fabric along the containment dike on the north side of the island and the segmented breakwaters along the beach on the south side of the island. Photographs of these features were taken during the field inspection and are shown in Appendix B.

III. Project Description and History

Raccoon Island has experienced significant narrowing and land loss due to a combination of global sea level rise, subsidence, reduction in sediment supply, and wave and storm processes. The island beach has eroded an average of -60 ft/yr. from 1988 to 2002 and narrowed from 368.2 acres to 99.2 acres over the last (15) fifteen years (US Army Corps, 2004).

In an attempt to slow shoreline erosion on Raccoon Island, the Raccoon Island Breakwater Demonstration (TE-29) project was implemented. The project consisted of

the construction of segmented breakwaters along the eastern end of the island. The segmented breakwaters were used to demonstrate the effectiveness of reducing shoreline erosion since they were designed to reduce wave energies and promote potential sediment transport and accretion along the beach (Armbruster, 1999). The Raccoon Island Demonstration (TE-29) Project included the construction of eight (8) breakwaters ranging in length from 227 ft. to 280 ft. long with a crest elevation of 4.5' NAVD, top width of 10' and 3(H):(1)V side slopes, constructed above a plastic filter cloth. Each breakwater has been assigned a number from 0 to 7, east to west, respectively. Settlement plates were installed at the center of the structure and approximately 50' from each end to monitor settlement.

Since the short term results of the breakwater demonstration project effectively protected the island from erosion, the Raccoon Island Shoreline Protection and Marsh Creation (TE-48) project was authorized by CWPPRA Task Force (Monitoring Plan, 2008). During the design phase of the project, the geotechnical investigation revealed that the in-situ material for the containment dikes and marsh fill area were not suitable material for the project's design application (Monitoring Plan, 2008). Subsequently, the project was divided into two (2) separate phases to allow for the breakwater component (Phase A) of the project to proceed while the further investigation can be conducted for the feasibility of Phase B, the marsh creation component (Monitoring Plan, 2008). As of April 2013, both components of the Raccoon Island Shoreline Protection and Marsh Creation (TE-48) project was completed and included the following features:

Phase A

Phase A was completed in September 2007 and consisted of eight (8) segmented breakwaters 300 feet long with a crest elevation of +4.5' NAVD88, top width of 10' and 3(H):(V) side slopes. The breakwaters were constructed above a geotextile fabric, spaced 160' to 280' apart in water depths of 3ft. to 8ft., depending on the location and tide. Each breakwater was assigned a number from 8 to 15, as shown in Appendix A. Settlement plates were installed 50' from each end of the breakwaters to monitor structure settlement (O&M Plan, 2014).

The second component of Phase A consisted of a terminal groin on the east end of the island. The groin was constructed to extend from the existing breakwater 0, constructed under the breakwater demonstration (TE-29) project due west approximately 926 ft. to the existing vegetative bankline. The terminal groin was constructed of rock riprap to an elevation of +4.5' NAVD with a 10' top width and 3(H):(V) side slopes above a woven geotextile fabric (O&M Plan, 2014).

Phase B

Phase B consisted of the construction of approximately 9,969 linear feet of containment dikes and placement of approximately 735,340 cu. yds. of material, by volume of fill, to create approximately 58 acres of back barrier marsh adjacent to the north side of Raccoon Island. Due to the intense wave action generated on the bay side of the project during

construction, an alternative method to conventional earthen dike construction was used to ensure adequate consolidation of the marsh platform by extending the life of the bay containment dikes (O&M Plan, 2014). The method included 400 linear feet of geotubes and 4,620 linear feet of protective geotextile cover on newly constructed earthen containment dikes.

IV. Summary of Past Operation and Maintenance Projects

To date, there have been no maintenance events or project features that have required routine maintenance. This section will be used to reference all maintenance activities on future inspection reports.

V. Inspection Results

Raccoon Island Demonstration (TE-29) Project

A visual inspection of the eight (8) segmented breakwaters constructed on the east end of the island revealed that the features were in fair condition. Several of the breakwaters appear to have settled since construction and the rock riprap was slightly displaced (Appendix B; Photos 29 through 38). A topographic survey was conducted in 2015 by T.Baker Smith of Houma, Louisiana to profile and cross section the breakwaters to determine the extent of settlement. The survey revealed that the breakwaters have settled at varying degrees with breakwaters 3 and 4 being the most severe with a total average settlement of -2.01', including the east groin which was constructed under the Raccoon Island Shoreline Protection and Marsh Creation (TE-48) project. Below are settlement averages of the breakwaters recorded during the 2015 survey:

<u>Breakwater</u>	<u>Settlement (ft.)</u>	<u>Volumes (cu.yds.)</u>	<u>Tons</u>
0	-1.88'	238	357.0
1	-1.60'	249	373.5
2	-1.54'	305	457.5
3	-4.26'	711	1,066.5
4	-3.09'	190	285.0
5	-1.64'	393	589.5
6	-1.59'	442	663.0
7	-1.19'	368	552.0
Eastern Groin	<u>-1.32</u>	<u>1,084</u>	<u>1,626</u>
Avg. Settlement:	-2.01'		
Total Volume:		3,980 cu.yds.	
Total Tons of Riprap:			5,970 tons

Based on the settlement observed, we are recommending a rock riprap lift of all breakwaters to bring the crest to designed elevations. It is estimated that a total of 5,970 tons of riprap will be required to complete the capping of breakwaters 0 through 7. We anticipate that the design of the maintenance project can begin by November 2015.

Raccoon Island Shoreline Protection and Marsh Creation (TE-48) Project

This project consists of eight (8) additional breakwaters (8 through 15), eastern groin, marsh creation and a protected containment dike on the north side of the island. The breakwaters appear to be in fair condition with no major settlement problems or rock displacement. While we are planning for a significant rock lift on the demonstration features, we will cap the low areas identified on breakwaters 8 through 15. Below are settlement averages of the breakwaters recorded during the 2015 survey.

<u>Breakwater</u>	<u>Settlement (ft.)</u>	<u>Volumes (cu.yds.)</u>	<u>Tons</u>
8	-1.74	681	1,021.5
9	-1.53	521	781.5
10	-1.87	694	1,041.0
11	-2.37	933	1,400.0
12	-2.18	657	985.5
13	-1.92	583	874.5
14	-1.87	605	907.5
15	<u>-1.99</u>	<u>506</u>	<u>759.0</u>
Avg. Settlement:	-1.93'		
Total Volume:		5,180 cu.yds.	
Total Tons of Riprap:			7,770.5 tons

Based on the settlement observed since construction, we are recommending that the rock breakwaters (8 through 15) be recapped at the same time at breakwaters 0 through 7, and the eastern groin. We estimated that a total of 7,771 tons of riprap will be required to raise the crest of the breakwaters to its design elevation.

After viewing the marsh creation area, our first observation was that the presence of marsh plants were severely lacking. Considering the time that had passed since construction, we would expect more plants to have emerged. After discussing the lack of vegetation on the marsh platform with NRCS, we are planning to perform vegetative plantings event in year 2016 and 2018. We also noticed that the fabric material covering the earthen embankment and geotubes on the north side of the marsh fill area was severely degraded and splitting at the seams. The fabric and geotubes were placed during construction to protect the containment dike from wave action from the bay and had a projected life span of 2 years. The intention was to remove this material once the marsh platform had begun to vegetate. Due to the poor condition of the fabric material at this time, we are planning to remove the fabric material and geotubes under the first maintenance event. We will also be removing the spill box located on the western end of the containment dike. We plan on proceeding with the design of the first maintenance event in late fall of 2015. (Appendix B; Photos 1 through 28; 39 & 40)

VI. Conclusions and Recommendations

Overall, The Raccoon Island Breakwater Demonstration (TE-29) project and the Raccoon Island Shoreline Protection and Marsh Creation (TE-48) projects were in fair condition. As noted in Section V, there were several deficiencies that will require immediate maintenance and repairs. The temporary geotextile fabric material covering the containment dike on the north side of the island has become degraded and will need to be removed to avoid large sections tearing off and floating into the bay. A survey of all sixteen (16) breakwaters in early 2015 indicated that all of the breakwaters have settled to a varying degree. We are recommending that the breakwaters and the eastern groin be capped with rock riprap to the original designed elevation. It is estimated that a total of 13,741 tons of rock will be required to complete this maintenance event. An area of concern is the lack of marsh vegetation on the marsh platform. NRCS is planning to conduct a soils analysis on various soil borings taken across the platform in an attempt to identify the cause of minimal succession of plants. We feel that the lack of vegetation will possibly cause some erosion of the marsh platform when the containment dikes are naturally degraded from bayside wave action. We also believe that it is important to allow the tidal flushing of the marsh platform which in turn should enhance vegetative growth. A combination of vegetative plantings and naturally formed gaps along the southern dike should allow the tidal exchange needed to promote vegetative growth.

There are no other issues that will require maintenance as a result of the 2015 Annual Inspection.

References:

Armburster, C.K. 1999. Monitoring Progress Report: Raccoon Island Breakwaters (TE-29). Monitoring Series NO. TE-29-MSPR-0899-1. Louisiana Department of Natural Resources, Coastal Restoration Division, Baton Rouge, La. 32 pp.

Coastal Protection and Restoration Authority. 2008. Monitoring Plan: Raccoon Island Shoreline Protection and Marsh Creation (TE-48) Project. Baton Rouge, La. 18 pp.

McBride, R.A., S. Penland, B.E., M.W. Hiland, S.J. Williams, K.A. Westphal, B.E. Jaffe, and A.H. Sallenger, Jr. 1992. Analysis of barrier island shoreline change in Louisiana from 1853 to 1989. In: Williams, S.J., S. Penland, and A.H. Sallenger, Jr. (eds), Atlas of shoreline change in Louisiana from 1853 to 1989. U.S. Geological Survey Miscellaneous Investigations Series I-2150-A.

Louisiana Department of Natural Resources. 2014. Operation, Maintenance and Rehabilitation Plan – Raccoon Island Shoreline Protection and Marsh Creation (TE-48) Project and Raccoon Island Breakwaters Demonstration (TE-29) Project. 8 PP. plus Appendices.

Penland, S and R. Boyd. 1985. Transgressive deposition environments of the Mississippi River delta plain: A guide to the barrier islands, beaches and shoals of Louisiana. Louisiana Geological Survey Guidebook Series No.3, 233 pp.

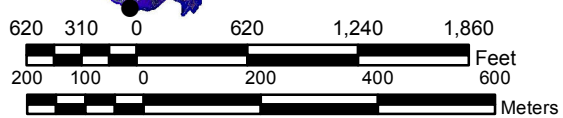
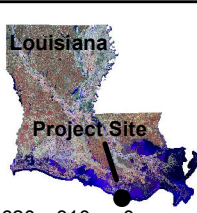
Penland, S. and R. Boyd. 1988. A transgressive depositional systems of the Mississippi River delta plain: A model for barrier island shoreline and shelf sand development. *Journal of Sedimentary Petrology* 58: 932-949

Appendix A

Project Features Map

Caillou Bay

Gulf of Mexico



Data Source:
Coastal Protection and
Restoration Authority of LA
Operations Division

2013 NAIP

Date: October 28, 2014
Map ID: 2014-TFO-048

- oooooo TE-29 Breakwaters
- oooooo TE-48 Breakwaters
- TE-48 Groin
- TE-48 Containment Dike
- TE-48 Marsh Creation Area

Appendix B

Photographs



Photo 1: (1228) – View of geotextile fabric and geotubes along back containment dike near Sta. 5+00 looking west.



Photo 2: (1230) – View of geotextile fabric and geotube along back containment dike near Sta. 5+00 looking east.



Photo 3: (1232) – View of geotextile fabric along back containment dike near Sta. 1+00 looking west.



Photo 4: (1234) – View of marsh fill area from back containment dike near Sta. 1+00.



Photo 5: (1235) – View of marsh fill area and geotextile fabric containment from Sta. 1+00 looking south.



Photo 6: (1236) – View of marsh fill area from Sta. 1+00 looking south.



Photo 7: (1245) – View of erosion along the geotextile fabric along containment near Sta. 4+00.



Photo 8: (1246) – View of geotextile fabric along containment near Sta. 4+00 looking west.



Photo 9: (1249) – Tear in geotextile fabric near Sta. 7+00



Photo 10: (1253) – View of geotextile fabric tear near Sta. 7+00 and erosion of containment.



Photo 11: (1260) – View of torn geotextile fabric and erosion near Sta. 8+00.



Photo 12: (1262) – View of torn geotextile fabric along back containment near Sta. 10+00



Photo 13: (1270) - View of torn geotextile fabric and erosion along back containment near Sta. 13+00.



Photo 14: (1272) – View of fill area near Sta. 13+00 looking south.



Photo 15: (1273) - View of tear in geotextile fabric along containment near Sta. 15+00.



Photo 16: (1278) - View of tear in geotextile fabric along containment near Sta. 15+00.



Photo 17: (1284) - View of tear in geotextile fabric and erosion of containment near Sta. 17+00.



Photo 18: (1285) - View of tear in geotextile fabric and erosion of containment near Sta. 17+00.



Photo 19: (1286) – View of large breach in containment near Sta. 20+00.



Photo 20: (1292) – View of tear in geotextile fabric along containment near Sta. 22+00.



Photo 21: (1294) – View of geotextile fabric along containment near Sta. 22+00 looking west.



Photo 22: (1298) – View of geotextile fabric along containment near Sta. 22+00 looking east.



Photo 23: 1306 – view of containment dike near Sta. 26+00 looking west.



Photo 24: 1314 – View of containment dike near Sta. 30+00 looking east.



Photo 25: 1316 – View of containment dike near Sta. 22+50 looking west.



Photo 26: 1336 – View of marsh creation area from Sta. 42+00 looking southward.



Photo 27: 1340 – View of the marsh creation area along containment dike near Sta. 43+00.



Photo 28: 1343 – View of spill box along containment dike near Sta. 44+00.



Photo 29: View of segmented breakwater 0 and the eastern groin from breakwater to island.



Photo 30: 1357 – View of segmented breakwater 0 and eastern groin looking north.



Photo 31: 1358 – View of segmented breakwater 2 looking northwest.



Photo 32: 1359 – View of segmented breakwater 2 looking northwest.



Photo 33: 1361 – View of segmented breakwater 4 looking north.



Photo 34: 1362 – View of segmented breakwater looking north.



Photo 35: 1363 – View of segmented breakwater 5 looking northwest.



Photo 36: 1364 – View of segmented breakwater 6 looking north.



Photo 37: 1365 – View of segmented breakwater 7 looking northwest.



Photo 38: 1366 – View of segmented breakwater 7 looking north.



Photo 39: 1367 – View of segmented breakwater 8 looking north.



Photo 40: 1368 – View of segmented breakwater 10 looking northwest.

2015 Annual Inspection Report

Raccoon Island Shoreline Protection/ Marsh Creation & Raccoon Island Breakwater Demo Project

State Project No. TE-48 & TE-29

Appendix C

Three Year Budget Projection

Raccoon Island/ TE-48 / PPL 11 (2015-2018)
Three-Year Operations & Maintenance Budgets

<u>Project Manager</u>	<u>O & M Manager</u>	<u>Federal Sponsor</u>	<u>Prepared By</u>
	<i>B.Babin</i>	NRCS	<i>B. Babin</i>

	2015/2016	2016/2017	2017/2018
Maintenance Inspection	\$ -		\$ 21,446.00
NRCS Administration	\$ 268,400.00	\$ 3,502.00	\$ 3,607.00
CPRA Administration	\$ 90,454.00	\$ 20,824.00	\$ 14,095.00
Maintenance/Rehabilitation	\$ -	\$ -	\$ -

15/16 Description: removal of geofabric material from containment dikes and recap rock breakwaters along shoreline and Plantings on the marsh platform

<i>E&D/Construction Oversight</i>	\$246,507.00
<i>Construction</i>	\$1,989,375.00
<i>Sub Total - Maint. And Rehab.</i>	<u>\$ 2,235,882.00</u>

16/17 Description:

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

17/18 Description: Plantings on Marsh Platform

<i>E&D</i>	\$ -
<i>Construction</i>	\$ 146,000.00
<i>Construction Oversight</i>	\$ -
<i>Sub Total - Maint. And Rehab.</i>	<u>\$ 146,000.00</u>

	2015/2016	2016/2017	2017/2018
<u>Annual O&M Budgets</u>	<u>\$ 2,594,736.00</u>	<u>\$ 24,326.00</u>	<u>\$ 185,148.00</u>

<u>2015 - 2018 O &M Budget (3 yr Total)</u>	<u>\$ 2,804,210</u>
<u>Unexpended O & M Funds</u>	<u>\$2,804,210</u>
<u>Remaining O & M Budget (Projected)</u>	<u>\$0</u>

OPERATIONS & MAINTENANCE BUDGET WORKSHEET

Project: TE-48/TE-29 Raccoon Island Breakwater and Marsh Creation

FY 15/16 –

CPRA Administration	\$ 90,454
NRCS Administration:	\$ 268,400
Operation/Navigational Aid:	\$ 0
Maintenance:	\$2,235,882
E&D Construction Oversight:	\$ 246,507
Construction:	\$1,989,375

Operation and Maintenance Assumptions:

Maintenance Event No.1

Removal of geotextile fabric protecting containment dike and recap existing breakwaters to original design elevation.

Removal of Geotextile Fabric

Assumption: 15 working days to remove fabric

Estimated Construction cost:

Mob/Demob (lump sum)	\$ 50,000
Equipment Barge: (160 hrs @ \$100/hr.)	\$ 16,000
Tug Boat: (60 hrs @ \$150/hr.)	\$ 9,000
Excavator: (15 days @ \$1,500/day)	\$ 22,500
Contractor personnel: (4 persons-12 hrs/day = 720 hrs @ \$50/hr (Avg.)	\$ 36,000
Estimated Construction Cost:	\$133,500
Contingencies (25% Const.)	<u>\$ 33,375</u>
Total Construction Cost:	\$166,875

Refurbish Existing Breakwaters to Design Elevation

Mob/Demob (Lump Sum):	\$ 150,000
Construction Surveys (Lump Sum):	\$ 75,000
Rock Riprap: (13,700 tons @ \$90/ton)	\$1,233,000
Estimated Construction Cost:	\$1,458,000
Contingencies (25% Const.)	<u>\$ 364,500</u>
Total Construction Cost:	\$1,822,500

Engineering and Design:

Plans and Specifications (7.138%):	\$ 142,007
Surveying: (7 days @ \$4,500/day)	\$ 31,500
Permitting:	\$ 5,000
Construction Admin: (200 hrs @ \$100/hr.)	\$ 20,000
Construction Inspection: (600 hrs. @ \$80/hr.)	\$ 48,000
Total E&D/Construction Oversight:	\$ 246,507

Maintenance Event No.1 Estimated Project Budget: \$2,236,482

Marsh Platform Plantings (NRCS): \$ 265,000

CPRA Direct Costs

Maintenance Event No.1

Engineer 7 – 20 hrs @ \$79/hr.	\$ 1,580
CPRA Engineer 6 – 40 hrs @ \$73/hr.	\$ 2,920
CPRA Engineer 4 – 300 hrs @ \$60/hr.	<u>\$18,000</u>
	\$22,500

Inspection:

CPRA Engineer 3 – 12 hrs@ \$60/hr.:	\$ 720
CPRA Engineer 6 – 12 hrs @ \$73/hr.	\$ 876
CPRA Scientist 4 – 10 hrs @ \$50/hr.	<u>\$ 500</u>
	\$ 2,096

Report:

CPRA Engineer 6 – 60 hrs. @ \$73/hr.	\$ 4,380
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Total Direct CPRA Costs: \$28,976

CPRA Indirect Costs

Maintenance Event No.1

Engineer 7 – 20 hrs @ \$167.61/hr.	\$ 3,352
CPRA Engineer 6 – 40 hrs @ \$154.88/hr.	\$ 6,195
CPRA Engineer 4 – 300 hrs @ \$127.30/hr.	<u>\$38,190</u>
	\$47,737

Inspection:

CPRA Engineer 3 – 12 hrs@ \$127.30/hr.:	\$ 1,528
CPRA Engineer 6 – 12 hrs @ \$154.88/hr.	\$ 1,859
CPRA Scientist 4 – 10 hrs @ \$106.08/hr.	<u>\$ 1,061</u>
	\$ 4,448

Report:

CPRA Engineer 6 – 60 hrs. @ \$154.88/hr.	\$ 9,293
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Total Indirect CPRA Costs: \$61,478

FY 16/17 –

NRCS Administration	\$ 3,502
O&M Inspection & Report	\$ 20,824
Operation/Navigational Aid:	\$ 0
Maintenance:	\$ 0
E&D:	\$ 0
Construction:	\$ 0
Construction Oversight:	\$ 0

Operation and Maintenance Assumptions:

O&M Inspection and Report – 3% inflation

CPRA Direct Costs

Inspection:

CPRA Engineer 3 – 12 hrs@ \$60/hr.:	\$ 720
CPRA Engineer 6 – 12 hrs @ \$73/hr.	\$ 876
CPRA Scientist 4 – 10 hrs @ \$50/hr.	<u>\$ 500</u>
	\$ 2,096

Report:

CPRA Engineer 6 – 60 hrs. @ \$73/hr.	\$ 4,380
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Total Direct CPRA Costs: \$ 6,476 x 3% = \$ 6,670

CPRA Indirect Costs

Inspection:

CPRA Engineer 3 – 12 hrs@ \$127.30/hr.:	\$ 1,528
CPRA Engineer 6 – 12 hrs @ \$154.88/hr.	\$ 1,859
CPRA Scientist 4 – 10 hrs @ \$106.08/hr.	<u>\$ 1,061</u>
	\$ 4,448

Report:

CPRA Engineer 6 – 60 hrs. @ \$154.88/hr. **\$ 9,293**

Total Indirect CPRA Costs: **\$13,741 x 3% = \$14,153**

FY 17/18 –

NRCS Administration:		\$ 149,607
CPRA Administration:		\$ 14,095
O&M Inspection & Report		\$ 21,446
Operation/Navigational Aid:		\$ 0
Maintenance:		\$
E&D:	\$ 0	
Construction:	\$ 0	
Construction Oversight:	\$ 0	

Operation and Maintenance Assumptions:

O&M Inspection and Report – 3% Inflation

CPRA Direct Costs

Total Direct CPRA Costs: \$ 6,670 x 3% Inflation = **\$ 6,870**

CPRA Indirect Costs

Total Indirect CPRA Costs: \$14,153 x 3% Inflation = **\$14,576**

CPRA Administration for Plantings: **\$ 14,095**

Marsh Platform Plantings (NRCS): **\$ 146,000**

2015-2018 Accounting

Expenditures (LaGov):	\$ 74,503.22
NRCS MIPR:	\$ 11,007.00
COE Administration:	\$ 9,380.00
Total Expenditures:	\$ 94,890.22

Current O&M Funding (LANA Report):	\$ 2,899,100
Current Unexpended O&M Funds:	\$ 2,804,210

Annual Inspections: (Based on new CPRA rates and 3% inflation annually)

Note: \$3,400 included for NRCS plus inflations

Year 0	2013	
Year 1	2014	
Year 2	2015	\$ 23,617
Year 3	2016	\$ 24,326
Year 4	2017	\$ 25,055
Year 5	2018	\$ 25,807
Year 6	2019	\$ 26,581
Year 7	2020	\$ 27,379
Year 8	2021	\$ 28,200
Year 9	2022	\$ 29,045
Year 10	2023	\$ 29,917
Year 11	2024	\$ 30,815
Year 12	2025	\$ 31,739
Year 13	2026	\$ 32,691
Year 14	2027	\$ 33,672
Year 15	2028	\$ 34,682
Year 16	2029	\$ 35,772
Year 17	2030	\$ 36,791
Year 18	2031	\$ 37,898
Year 19	2032	\$ 39,035
Remaining 20 yr. Inspection Budget:		\$553,022

Estimated Cost for Settlement Plate Data Surveys (Years 3, 5, 10 & 15 – Not included in 3 year budget. Calculations for 20 year budget)

CPRA Direct Cost:

Surveys:

1 day @ \$4,500/day =	\$4,300
Data Processing/Report:	<u>\$1,500</u>
	\$5,800

CPRA Administration:

Engineer 7 – 3 hrs @ \$79/hr.:	\$ 237
Engineer 6 – 5 hrs @ \$73/hr.:	\$ 365
Engineer 4 – 30 hrs @ \$60/hr.:	<u>\$1,800</u>
	\$2,402

CPRA Indirect Cost:

CPRA Administration:

Engineer 7 – 3 hrs @ \$167.61/hr.:	\$ 503
Engineer 6 – 5 hrs @ \$154.88/hr.:	\$ 774
Engineer 4 – 30 hrs @ \$127.30/hr.:	<u>\$3,819</u>
	\$5,096

Total Cost: \$13,298

Post Tropical Storm Surveys (Years 7 & 12 – Not included in 3 year budget. Calculated for 20 year budget)

CPRA Direct Cost:

Surveys:

4 days @ \$4,500/day =	\$18,000
Data Processing/Report:	<u>\$ 3,000</u>
	\$21,000

CPRA Administration:

Engineer 7 – 5 hrs @ \$79/hr.:	\$ 395
Engineer 6 – 15 hrs @ \$73/hr.:	\$ 1,095
Engineer 4 – 50 hrs @ \$60/hr.:	<u>\$ 3,000</u>
	\$ 4,490

CPRA Indirect Cost:

CPRA Administration:

Engineer 7 – 5 hrs @ \$167.61/hr.:	\$ 838
Engineer 6 – 15 hrs @ \$154.88/hr.:	\$ 2,223

Engineer 4 – 50 hrs @ \$127.30/hr.: \$ 6,365
\$ 9,456

Total Cost: \$34,946