



Coastal Protection and
Restoration Authority of Louisiana

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

2011 Annual Inspection Report

for

**TERREBONNE BAY SHORE
PROTECTION
DEMONSTRATION**

State Project Number TE-45
Priority Project List 10

February 2011
Terrebonne Parish

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Table of Contents

| | |
|---|---|
| I. Introduction..... | 1 |
| II. Inspection Purpose and Procedures | 1 |
| III. Project Description and History | 1 |
| IV. Summary of Past Operations and Maintenance Projects | 3 |
| V. Inspection Results | 3 |
| VI. Conclusions and Recommendations | 3 |

Appendices

| | |
|------------|-------------------------------|
| Appendix A | Project Features Map |
| Appendix B | Photographs |
| Appendix C | Three Year Budget Projections |

I. Introduction

The Terrebonne Bay Shore Protection Demonstration Project (TE-45) is an 8-year demonstration project located north of Terrebonne Bay and east of Bayou Terrebonne along the shoreline of Lake Barre in Terrebonne Parish, Louisiana.

The Terrebonne Bay Shore Protection Demonstration Project (TE-45) is co-sponsored by the United States Fish and Wildlife Service (FWS) and the Louisiana Office of Coastal Protection and Restoration (OCPR). The 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. The project was approved on the tenth (10th) Priority Project List.

II. Inspection Purpose and Procedures

The purpose of the annual inspection of the Terrebonne Bay Shore Protection Demonstration (TE-45) Project is to inspect the physical condition of each treatment technique and determine if any deficiencies exist that would affect or alter the evaluation of the shoreline protection treatments. The inspection results are then used to produce an annual inspection report containing description of treatments, field inspection findings, an overall project features map, photographs taken during the inspection and an updated operations and maintenance budget for the upcoming three (3) years. The overall project features map can be found in Appendix A, field inspection photographs in Appendix B and a summary of the three (3) year O&M budget in Appendix C.

Since this project is a demonstration project, no provisions were included for operations, maintenance and rehabilitation of any of the project features other than to conduct annual inspections during the eight (8) year demonstration period. (O&M Plan 2009). The 2011 inspection was the fourth (4th) of eight inspections performed since the project was completed in December 2007.

The annual inspection of the Terrebonne Bay Shore Protection Demonstration Project (TE-45) took place on February 17, 2011. In attendance were Brian Babin, Adam Ledet and Glen Curole from OCPR. The inspection began at approximately 10:00 a.m. at Reach A and ended at approximately 11:30 a.m. at Reach E. The field trip included a visual inspection of the nine shoreline protection structure installations (three treatment types at each of the three Reaches), the tie-in units, all warning signs, and the two project monitoring stations (continuous recorders and staff gauges). Photographs of the structures are included in Appendix B.

III. Project Description and History

Because of marsh loss in the area, Lake Barre is no longer a distinct feature from Terrebonne Bay to the south. Consequently, the interior salt marshes have become exposed to the forces

of waves and tides causing higher saline waters to enter into the fragile less saline ecosystems further inland, causing extensive marsh loss (O&M Plan, 2009)

The purpose of the demonstration project is to demonstrate, evaluate, and document the effectiveness of three (3) different shoreline and foreshore protection techniques designed to reduce erosion and promote the growth of oyster reefs along the northern marshes of Lake Barre. The project consists of three (3) shoreline sites, Reaches A, B, and E. Each of the three (3) shoreline protection treatments, Triton Gabion Mats filled with rock, A-Jacks Concrete Armor Units, and Reefblks Steel Rebar Triangular Units with Oyster Shell Bags, were installed in 300' lengths at each of the three (3) shoreline reaches. Reaches A and B are located along the western shoreline of Lake Barre just east of Bayou Terrebonne. Reach E is located to the east of Reaches A and B along a marsh island remnant of the northern shoreline of Lake Barre. (O&M Plan 2009)

Construction of the project began in September 2007 and was completed in December 2007. The project has an 8-year demonstration period that began in December 2007.

The principal project features (see Appendix A) include:

TritonTM Gabion Mats Filled with Rock

Gabion mats are pre-fabricated with geotextile grid materials formed into baskets and interconnected to form a mat. The mats are filled with rock. Each mat is 20-foot long by 5-foot wide by 12 inches thick and anchored at the corners. Mats are installed alongside each other on the bank to form the shoreline protection feature.

A-JacksTM

A-Jacks are individual, pre-fabricated, concrete barrier units that have the shape of toy jacks. Each unit measures 24 inches and weighs 78 pounds. The individual units are tied together in groups with galvanized steel cable. The units are installed in an interlocking double row in shallow water adjacent to the eroding shoreline bank and are placed on a base comprised of a geotextile layer and 6 inches of crushed stone. The units are anchored every 10 feet with galvanized steel cable and 20' galvanized steel rod with anchor.

ReefBlksTM

ReefBlks are pre-fabricated, double-frame, steel, triangular units that hold mesh bags filled with oyster shells. They are designed to emulate and create new artificial oyster reef. Each unit has a 5-foot triangular base and measures 2 feet high. Each unit is welded to another unit at a corner to form 10-foot wide unit pairs. The units are installed on a base comprised of a geotextile layer and 6 inches of crushed stone. The units are installed in shallow water adjacent to the eroding shoreline bank. The units are anchored every 10 feet with galvanized steel cable and 20' galvanized steel rod with anchor.

IV. Summary of Past Operation and Maintenance Projects

No maintenance projects or operation tasks have been performed since completion of the Terrebonne Bay Shore Protection Demonstration Project (TE-45). As a demonstration project, there are no funding provisions in the project O&M budget for maintenance events. Only the costs associated with annual inspections are provided in the project O&M budget.

V. Inspection Results

Water level was low during the time of the inspection. A staff gage reading of 0.0' NAVD88 at 10:00 a.m. was taken from staff gage TE45-SG-01 near Reaches A and B. A second reading of -0.2' NAVD88 at 10:30 a.m. was taken from staff gage TE45-SG-02 near Reach E.

Reaches A, B, and E

All of the shoreline structures at the three sites appear to be in good condition. All gabion mats were intact. The A-Jacks and ReefBlks were upright with no rollover observed. Oyster growth was noted on all structures. No tie-units (A-Jacks) appeared to have any damage. The two monitoring stations also appeared to be intact with no apparent damage. There was some apparent damage to the shoreline vegetation at the south end of Reach E, but it is believed to be a result of the recent oil spill in the area and should not affect the performance of the structure.

VI. Conclusions and Recommendations

There is no apparent damage to the shoreline protection project features, therefore no rehabilitation of existing structures are necessary. There was some discoloration and burnt marsh along the shoreline at the southern end of Reach E, believed to be damage from the recent oil spill and not a result of salinity spikes or other natural occurrences.

Appendix A
Project Features Map

PROPOSED ACCESS ROUTE

| PT. | EASTING | NORTHING |
|-----|--------------|------------|
| 1 | 3,525,417.00 | 282,847.00 |
| 2 | 3,519,781.00 | 286,266.00 |
| 3 | 3,515,417.47 | 284,890.84 |
| 4 | 3,510,963.49 | 285,698.91 |
| 5 | 3,509,757.60 | 287,689.42 |
| 6 | 3,520,415.46 | 287,799.08 |
| 7 | 3,520,965.95 | 293,976.39 |
| 8 | 3,523,120.64 | 293,724.29 |
| 9 | 3,523,236.51 | 295,048.15 |

PLACID PIPELINE

TE-45-SM-01
N 297,516.43
E 3,510,866.28
ELEV. 4.009'

BAYOU COURANT

24 TENNESSEE GAS PIPELINE

BAYOU TERREBONNE

LAKE BARRE

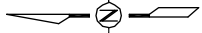
PLACID PIPELINE

4" TEXACO PIPELINE

NOTES:

- DNR HAS ACQUIRED ALL OR PORTIONS OF TWO OYSTER LEASES IN REACH E THAT WILL BE IMPACTED BY CONSTRUCTION AS PRESENTED BELOW:
LEASE NO. 33135 - 7 ACRES ACQUIRED BY DNR FROM G.I. JOE, INC., EMPIRE LA LEASE NO. 31661 - 14 ACRES ACQUIRED BY DNR
- THERE ARE NO OYSTER LEASES THAT WILL BE IMPACTED IN REACH A
- ALL BARGES SHALL BE LIGHT LOADED FOR TRANSPORTATION OF EQUIPMENT AND MATERIALS. NO PROP WASHING OR DREDGING SHALL BE ALLOWED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MOBILIZING, COMPLETING THE REQUIRED CONSTRUCTION ACTIVITIES, AND DEMOBILIZING WITHOUT CROSSING OR OTHERWISE IMPACTING UNACQUIRED OYSTER LEASES SHOWN ON SHEET 3.
- THE AERIAL PHOTOGRAPHY WAS TAKEN IN THE FALL OF 2005.

AS-BUILT



LEGEND

| | |
|--|-----------------------|
| | REACH |
| | PIPELINE |
| | OYSTER LEASE |
| | BENCHMARK |
| | PROPOSED ACCESS ROUTE |

LOUISIANA DEPARTMENT OF NATURAL RESOURCES
COASTAL ENGINEERING DIVISION

617 NORTH 3RD STREET
BATON ROUGE, LOUISIANA 70802

TERREBONNE BAY SHORE PROTECTION
DEMONSTRATION PROJECT

STATE PROJECT NUMBER: TE-45

FEDERAL PROJECT NUMBER:

APPROVED BY: MAURY CHATELIER, P.E.

DESIGNED BY: DAIN GILLIN, E.I.

DRAWN BY: KRISTI CANTU

AS-BUILT DETAILS

DESCRIPTION

DATE

REV.

4/18/08

BY

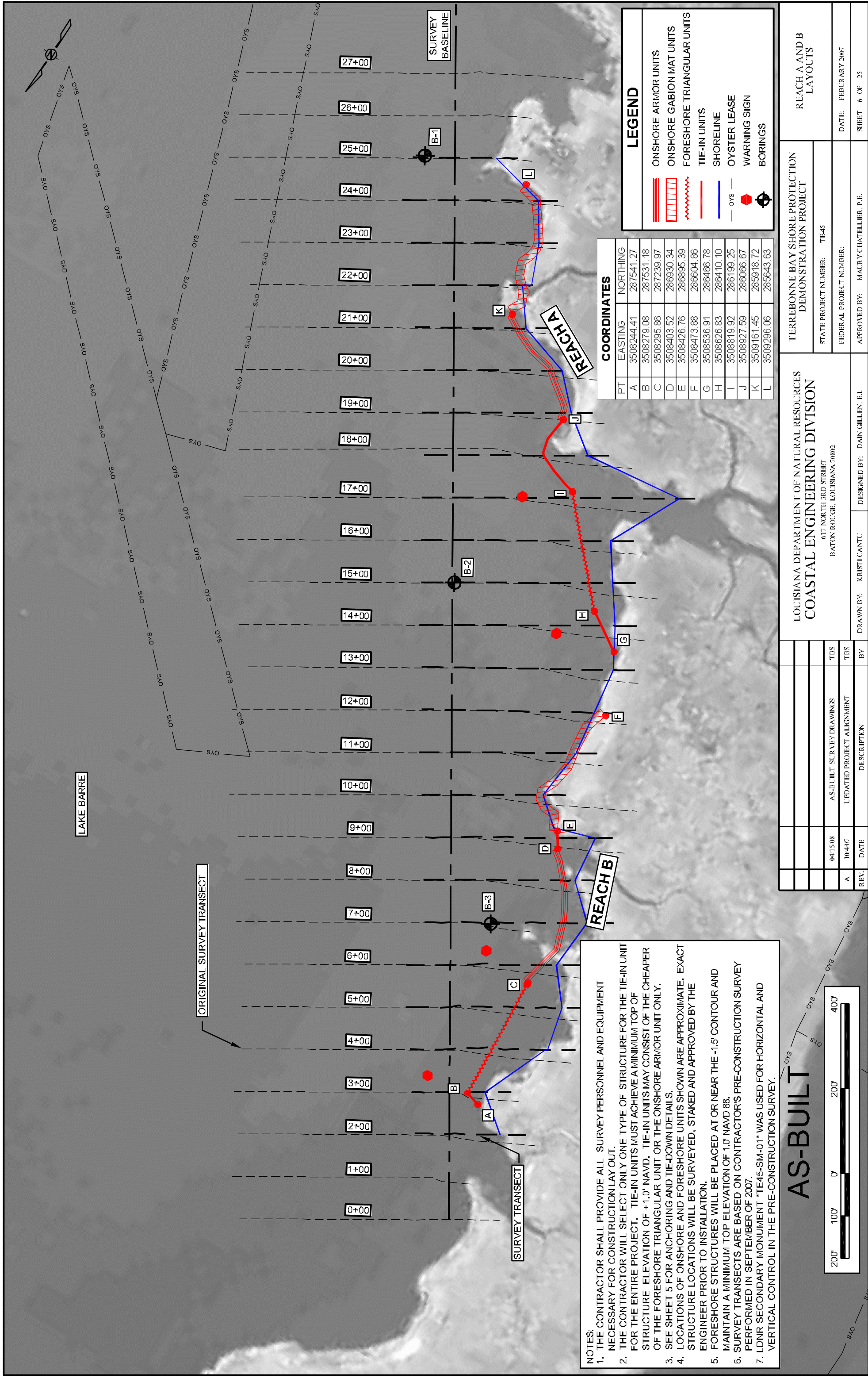
TBS

ADDED

PLAN VIEW

DATE: FEBRUARY 2007

SHEET 3 OF 25



Appendix B

Photographs



Reach A: Gabion Mats and A-Jacks tie-in



Reach A: A-Jacks tie-in to ReefBlks



Reach A: Close-up view of ReefBlks



Reach A: A-Jacks tie-in to shoreline

Annual Inspection Report
TERREBONNE BAY SHORE PROTECTION DEMONSTRATION PROJECT
State Project No. TE-45



TE45-SG-01 Monitoring Station



Reach B: Gabion Mats



Reach B: Gabion Mats and A-Jacks tie-in

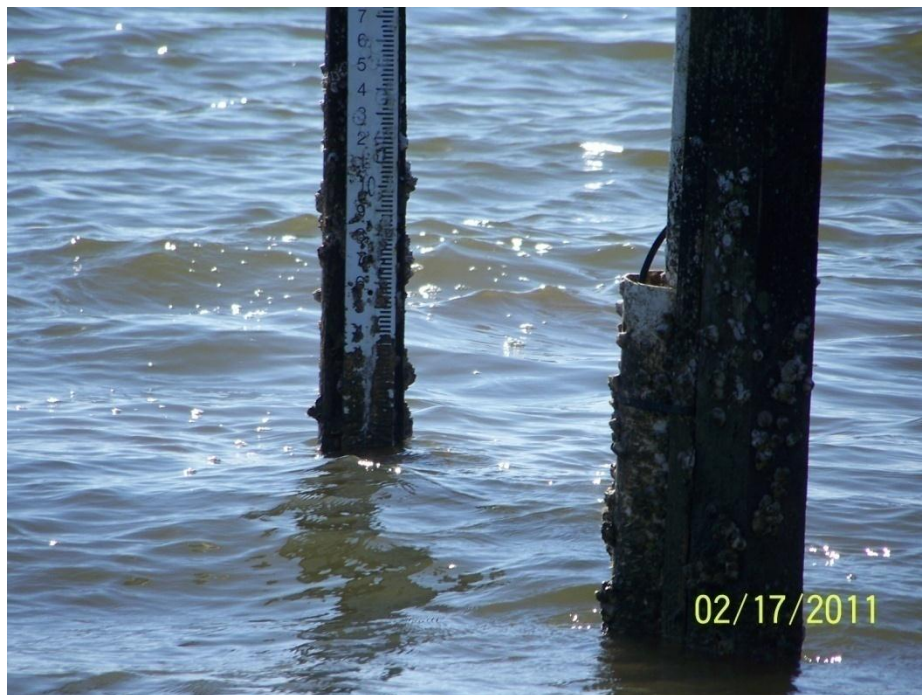


Reach B: A-Jacks tie-in to ReefBlks

Annual Inspection Report
TERREBONNE BAY SHORE PROTECTION DEMONSTRATION PROJECT
State Project No. TE-45



Reach B: ReefBlks and A-Jacks Tie-in to shoreline



Water level at TE45-SG-02



Reach E: A-Jacks tie-in to shoreline



Reach E: Partially submerged A-Jacks tie-in to ReefBlks



Reach E: Close-up view of ReefBlks



Reach E: Close-up view of ReefBlks



Reach E: A-Jacks tie-in to Gabion Mats



Reach E: Gabion Mats



Reach E: Apparent damage to shoreline vegetation due to oil spill



Reach E: Oil damage behind Gabion Mats on South end of section



Close-up view of oil spill damage



Reach E: Due to oil damage, Gabion mats no longer follow shoreline

Appendix C

Three Year Budget Projection

Terrebonne Bay Shore Protection Demonstration / TE45 / PPL10
Three-Year Operations & Maintenance Budgets 07/01/2011 - 06/30/2012

| | | | |
|------------------------|--------------------------|------------------------|--------------------|
| <u>Project Manager</u> | <u>O & M Manager</u> | <u>Federal Sponsor</u> | <u>Prepared By</u> |
| | Dearmond | USFWS | Ledet |

| | 2011/2012 | 2012/2013 | 2013/2014 |
|-------------------------------|-------------|-------------|-------------|
| Maintenance Inspection | \$ 5,977.00 | \$ 6,168.00 | \$ 6,365.00 |
| Structure Operation | \$ - | \$ - | \$ - |
| Administration | \$ - | | \$ - |
| USACE Administration | \$ - | \$ - | \$ - |

Maintenance/Rehabilitation

| | |
|---------------------------|--|
| 09/10 Description: | |
| | |

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

| | |
|--------------------------|--|
| 10/11 Description | |
| | |

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

| | |
|---------------------------|--|
| 11/12 Description: | |
| | |

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

| | 2009/2010 | 2010/2011 | 2011/2012 |
|------------------------------|-------------|-------------|-------------|
| Total O&M Budgets | \$ 5,977.00 | \$ 6,168.00 | \$ 6,365.00 |

| | |
|---|--------------|
| O&M Budget (3 yr Total) | \$ 18,510.00 |
| Unexpended O&M Funds | \$ 55,243.00 |
| Remaining O&M Budget (Projected) | \$ 36,733.00 |