



Coastal Protection and  
Restoration Authority of Louisiana

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

**2015 Annual Inspection Report**

for

**BARATARIA LANDBRIDGE  
SHORELINE PROTECTION PROJECT  
Phase 1, 2, 3 & 4 (Construction Units 1, 2,  
3, 4, 5 and 6)**

State Project Number (BA-27), (BA-27c) and (BA-27d)  
Priority Project Lists 7, 9 and 11

September 10, 2015  
Lafourche and Jefferson Parishes

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## **Table of Contents**

I. Introduction.....1

II. Inspection Purpose and Procedures .....4

III. Project Description and History .....4

IV. Summary of Past Operation and Maintenance Projects.....7

V. Inspection Results .....7

VI. Conclusions and Recommendations .....9

## **Appendices**

Appendix A ..... Inspection Photos

Appendix B ..... Three Year Budget Projections and Worksheets

## I. Introduction

The Barataria Landbridge Shoreline Protection (BA-27) Project (Phases 1, 2, 3 and 4) is located approximately 14 miles south of the town of Lafitte in Jefferson and Lafourche Parishes, Louisiana and is separated into eight (8) construction units (CU's). Phase 1 identified as (BA-27) consists of CU # 1, CU #2, a portion of CU #4 and all of CU #5. Phase 2, also identified as (BA-27), encompasses another segment of CU#4. Phase 3 is identified as (BA-27c) and includes all of CU #3, a portion of CU #4, and all of CU #7 and CU #8. Phase 4 designated (BA-27d) includes the entire segment of CU #6 (Figure 1). A brief description, location and status of all construction units associated with the Barataria Landbridge Shoreline Protection Project (BA-27), (BA-27c) and (BA-27d) is outlined below:

Construction Unit No. 1 (CU #1) – CU #1 is a demonstration project completed in July 2001 and consist of approximately 3,200 linear feet of shoreline protection treatments along the east bank of Bayou Rigolettes and the west bank of Bayou Perot. The shoreline treatments of CU #1 utilizes various methods of shoreline protection to reduce shoreline erosion along the existing banks of Bayou Perot and Bayou Rigolettes and assesses the constructability and economic feasibility of constructing future projects using these techniques on the Barataria Landbridge Shoreline Protection Project (Figure 1).

Construction Unit No. 2 (CU #2) – CU #2 was completed in October 2002 and consist of approximately 6,403 linear feet of shoreline protection (rock dike) parallel to the southeast shoreline of Bayou Rigolettes and Bayou Perot west of the Harvey Cutoff Canal (Figure 1) (O&M Plan, 2002).

Construction Unit No. 3 (CU #3) – CU #3 was completed in May 2004 and consist of approximately 10,865 linear feet of rock dike along the northeast shoreline of Little Lake. (Figure 1) (O&M Plan, 2005).

Construction Unit No.4 (CU #4) – CU #4 was completed in July 2009 and included the construction of approximately 30,500 linear feet of concrete pile and wall panels along the southeast shoreline of Bayou Rigolettes, both sides of the mouth of the Harvey Cutoff Canal and a segment between CU #'s 2 and 3 along the south bank of the channel connecting Bayou Perot to Little Lake (Figure 1).

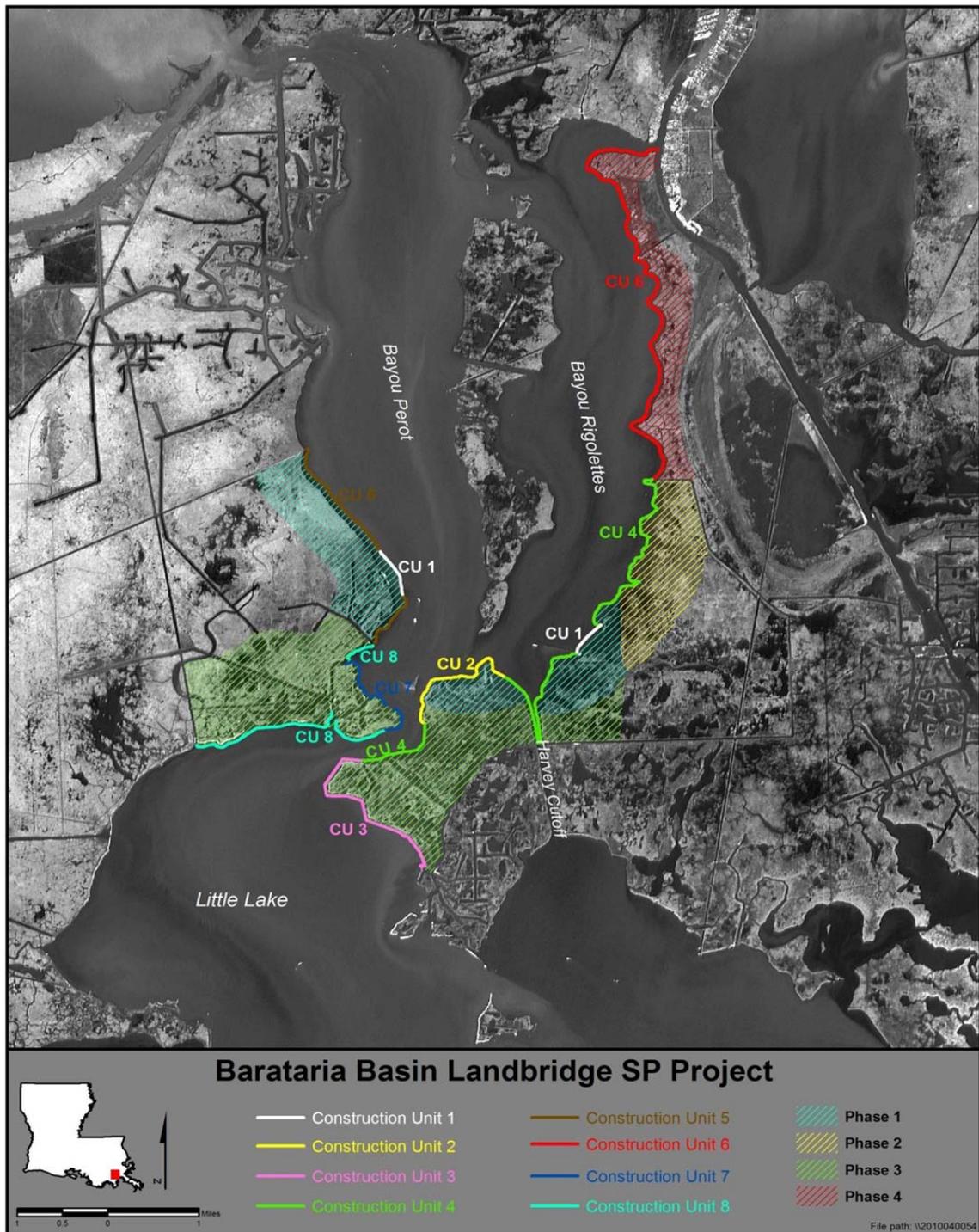
Construction Unit No. 5 (CU #5) – CU #5 was completed in October 2008 and included approximately 14,000 linear feet of concrete pile and wall panels along the southwest shoreline of Bayou Perot and repair of the CU #1 segments along the shorelines of bayous Perot and Rigolettes. (Figure 1).

Construction Unit No. 6 (CU #6) – CU #6 was completed in late 2005 and included the construction of 29,500 linear feet of shoreline protection (rock revetment) along northern reach along the east bank of Bayou Rigolettes (Figure 1).

Construction Unit No. 7 (CU #7) – CU #7 is scheduled to begin construction in the fall of 2015 and includes approximately 8,000 linear feet of rock revetment along the southwestern bank of Bayou Perot beginning near the entrance of the channel connecting Bayou Perot to Little Lake northward to an existing oilfield location canal along the west bank of Bayou Perot (Figure 1).

Construction Unit No. 8 (CU #8) – CU #8 will be under construction at the same time as CU #7 and consist of approximately 12,000 linear feet of rock revetment and 2,800 linear feet of rock dikes along the north bank of Little Lake and the north bank of the channel connecting Bayou Perot to Little Lake (Figure 1).

The Barataria Landbridge Shoreline Protection (BA-27) Project is co-sponsored by the Natural Resources Conservation Service (NRCS) and the Coastal Protection and Restoration Authority (CPRA) of Louisiana. 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. Phases 1 & 2 (BA-27), Phase 3 (BA-27c) and Phase 4 (BA-27d) of the Barataria Landbridge Shoreline Protection Project were approved on the 7<sup>th</sup>, 9<sup>th</sup> and 11<sup>th</sup> Priority Project List, respectively.



**Figure 2. Project infrastructure map for the Barataria Landbridge Shoreline Protection Project (BA-27-Phase 1 &2, BA-27c – Phase 3 and BA-27d – Phase 4) – Construction Units #1 through #8**

## **II. Inspection Purpose and Procedure performance**

The purpose of the annual inspection of the Barataria Landbridge Shoreline Protection Projects (BA-27), (BA-27c) and (BA-27d) 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 (O&M Plan, 2002 & 2005). 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 (O&M Plan, 2002 & 2005). The 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 and maintenance and rehabilitation. The three (3) year projected operation and maintenance budgets for CU #1, CU #2, CU #3, CU #4, CU #5 and CU #6 are based on the outcome of this inspection and are compiled in Appendix B. Prior to construction of CU #4 and CU #5, all of the project features constructed under CU#1 were removed with exception of the concrete pile wall panels. These concrete pile wall panels have been incorporated into the features of CU #4 and CU #5 and will be maintained under their respective construction units. Any future reference to CU #4 and CU #5 shall include the concrete panel walls constructed under CU #1 as well. A summary of past operation and maintenance projects undertaken since the completion of the Barataria Landbridge Shoreline Protection (CU #1, CU #2, CU #3, CU #4, CU #5 and CU #6) project are outlined in Section IV of this report.

An inspection of the Barataria Landbridge Shoreline Protection Project (BA-27), (BA-27c), and (BA-27d) was held on May 21, 2015 and included Construction Units 1, 2, 3, 4, 5 and 6. In attendance were Travis Byland, Adam Ledet from CPRA, and Quin Kinler with NRCS. The attendees met at the Clovelly Farms boat launch in Golden Meadow, Louisiana and traveled to the project site by boat. The inspection began at the southern extent of CU #3 in Little Lake and proceeded northward into Bayou Rigolettes, encompassing all of CU #2, CU #3, CU #4, and CU #6. The inspection continued on the western shoreline of Bayou Perot where CU #5 was inspected and the field trip concluded.

The field inspection included a visual inspection of all constructed features of CU #1, CU #2, CU #3, CU #4, CU #5 and CU #6. Staff gauge readings, where available, were used to estimate water elevations, elevations of rock dikes, earthen embankments tie-in and other constructed features.

## **III. Project Description and History**

The Barataria Basin Landbridge Shoreline Protection Project area is located within the Barataria Basin, which is bounded on the north and east by the Mississippi River, on the west by Bayou Lafourche, and on the south by the Gulf of Mexico. The upper portion of the Barataria Basin is largely a freshwater-dominated system of natural levee ridges, bald-cypress, water tupelo swamps, and fresh marsh habitats (Monitoring Plan, October 2003). The lower portion of the basin is dominated by marine/tidal processes, with barrier islands, saline marsh, brackish marshes, tidal channels, and large bays and lakes (Monitoring Plan, October 2003).

Historically, a small meandering Bayou Perot, and the longer, narrower Bayou Dupont, Bayou Barataria and Bayou Villars channels provided limited hydrologic connection between the upper and lower basin. The hydrologic connections between the upper and lower basin are much greater today due to the Barataria Waterway, Bayou Segnette Waterway, Harvey Cutoff, and substantial erosion and interior marsh loss along and between the now-enlarged Bayou Perot and Bayou Rigolettes (Monitoring Plan, October 2003). Fortunately, there is still a landmass that extends southwest to northeast across the basin, roughly between Lake Salvador and Little Lake. This landmass can be referred to as the “Barataria Basin Landbridge.” The shoreline protection project aims to protect the functional integrity of this critical area of the Barataria Basin (Monitoring Plan, October 2003)

Major factors contributing to the excessive marsh loss in this area included the elimination of overbank flooding of the Mississippi River; closure of Bayou Lafourche and the Mississippi River; dredging of the Gulf Intracoastal Waterway, Barataria Waterway, Harvey Cutoff Canal, and oilfield access channels; physical erosion due to wind, boat wake, and tidal energy, subsidence, and sea level rise (Monitoring Plan, October 2003).

The project objective for the Barataria Basin Landbridge Project as a whole is to provide 107,500 linear feet of shoreline protection to areas along the west and south banks of Bayou Perot, the east and south banks of Bayou Rigolettes, the north and northeast banks of Little Lake, and the east and west banks of the Harvey Cutoff Canal in order to reduce or eliminate shoreline/bankline erosion of the Barataria Basin Landbridge (Monitoring Plan, 2003).

The specific goal of the project is to decrease the mean rate of shoreline/bankline erosion along selected reaches of Bayous Perot and Rigolettes, Little Lake, and Harvey Cutoff. This was accomplished through the use of one or more of the following shoreline protection techniques:

- a) traditional rock dike
- b) traditional rock revetment
- c) rock dike or revetment with encapsulated lightweight aggregate core
- d) pre-stressed concrete pile and panel wall

### **Construction Unit No. 1 (CU #1)**

CU #1 of the Barataria Landbridge Shoreline Protection Project consisted of the installation of a total of 3,200 linear ft. of shoreline protection along the west bank of Bayou Perot and southeast bank of Bayou Rigolettes (Figure 2). The shoreline features at each location included four different types of shoreline protection treatments measuring 400 feet in length, spaced 50 to 75 feet apart. Identified below are the tested techniques constructed along the shoreline at each location:

- Section A and A1 – consisted of approximately 200 linear foot of rock dike and 200 linear ft. of rock dike placed on freshly excavated spoil material.

- Section B – consisted of approximately 400 linear ft. of composite rock dike with a lightweight aggregate core encapsulated in geotextile fabric.
- Section C – consisted of approximately 400 linear ft. of composite rock dike using a furrow method to place and encapsulate the lightweight aggregate core.
- Section D – consisted of approximately 400 linear ft. of pre-stressed concrete pile and panel wall.

The purpose of the Barataria Landbridge Shoreline Protection Project (Phase I – CU #1) was to evaluate several methods of shoreline protection that would reduce or minimize shoreline/bankline erosion along Bayou Perot and Bayou Rigolettes. The performance of these test sections were monitored and assessed by the Natural Resource Conservation Service (NRCS). The evaluation of the test sections included the constructability, construction cost, short-term stability, maintenance cost, and aesthetic quality.

### **Construction Unit No. 2 (CU #2)**

CU #2 of the Barataria Landbridge Shoreline Protection Project consisted of a 2,712 linear foot rock dike on the west side of an existing oil field canal opening on the southern bank of Bayou Rigolettes and 3,691 linear foot rock dike from the east bank of the existing oil field canal toward the opening of the Harvey Cutoff Canal. The rock dike was constructed to an elevation of +3.5' NAVD with a 2.0 ft. wide crest and 2:1 side slopes (O&M Plan, 2002). CU# 2 of the Barataria Landbridge Project has a twenty (20) year project life, which began in October 2002.

### **Construction Unit No. 3 (CU #3)**

CU #3 consisted of approximately 10,865 linear feet of rock dike along the northeast shoreline of Little Lake. The rock riprap structure was constructed to an elevation of +3.5' NAVD with a 4' wide top width and 3:1 side slopes. The rock dike was constructed over a geotextile fabric. Two (2) fish dips were constructed at Sta. 43+05 and Sta. 74+79 consisting of a 60' wide (bottom width) opening in the rock dike to allow access for marine organisms. Warning signs were installed at both fish dips and at the entrance of an existing oilfield canal plugged with rock riprap near Sta. 96+00 (O&M Plan, 2005). CU#3 also included a beneficial use of dredge material component in which spoil material resulting from flotation channel excavation was used to fill seven (7) small ponds in the marsh behind the rock dike creating a total of 30 acres of marsh. CU #3 of the Barataria Landbridge Project has a twenty (20) year project life which began in May 2004.

### **Construction Unit No.4 (CU#4)**

CU #4 was constructed in three (3) reaches and consisted of the construction of approximately 30,500 linear feet of reinforced concrete pile and panel sections. Reach 1 began at the end of CU #6 near an existing location canal and extended southward along the southeast bank of Bayou Rigolettes to the mouth of the Harvey Cutoff Canal (HCC), and proceeded along the east bank of the HCC to the first channel south of the mouth of the HCC. Reach 2 commenced along the west bank of the HCC near the intersection of the east-west channel and

runs along the west bank of the HCC and south bank of Bayou Rigolettes to the beginning of CU #2. Reach 3 begins at the termination point of CU #2, followed the south bank of the channel connecting Bayou Perot to Little Lake and ended at the beginning point of CU #3. The reinforced concrete pile sizes ranged from 20" x 20" to 24" x 24" square and 70 feet long with a finished top elevation of +4.0' NAVD. The reinforced concrete wall sections were 6 ft. high and ranged in length from 11'-10" to 19'-4" with a finished elevation of +3.5' NAVD. The rock tie-ins were constructed of rock riprap to an elevation of +3.5' NAVD with 3:1 side slopes and a 2 ft. top width.

#### **Construction Unit No.5 (CU#5)**

Construction of CU#5 consisted of approximately 14,000 linear feet of reinforced concrete pile and wall sections along the southwest shoreline of Bayou Perot. The reinforced concrete piles were 24" x 24" square with lengths ranging from 63' to 79' long. The reinforced concrete panel lengths 6' high and ranged from 13'-8" to 19'-4" in length. The bank tie-ins were constructed of rock riprap to an elevation of +3.5' NAVD with 3:1 side slopes and a 2' wide top width. After installation of the concrete piles and walls, a one (1) foot thick blanket of surface course aggregate was installed, extending ten (10) feet in front, back and around the ends of the concrete wall panels.

#### **Construction Unit No.6 (CU #6)**

CU #6 consists of approximately 29,500 linear feet of rock shoreline revetment along the east bank of Bayou Rigolettes. The rock revetment was constructed to an elevation of 3.5 ft NAVD with a top width of 4 ft. and 3:1 side slopes. At seven locations along the rock revetment, organism access openings were constructed to allow continued aquatic organism ingress and egress and provide adequate discharge of surface water flow. Each opening was lined with two (2) ft of rock to a sill elevation two (2) ft below the average water elevation (-0.8 ft NAVD). CU #6 of the Barataria Landbridge Project has a twenty (20) year project life which began in April 2006.

### **IV. Summary of Past Operation and Maintenance Projects**

Since the completion of Construction Units 1, 2, 3, 4, 5 and 6, no maintenance, rehabilitation or corrective actions have been required.

### **V. Inspection Results**

#### **BA-27 -Construction Unit No. 1 (CU #1)**

Prior to construction of CU #4 and CU #5, all of the project features constructed under CU #1 were removed with exception of the concrete pile wall panels. These concrete pile wall panels have been incorporated into the features of CU #4 and CU #5 and are inspected and described along with their respective construction units.

**BA-27 - Construction Unit No. 2 (CU #2)**

The inspection of CU #2 began at the west end near Sta. 0+42 and proceeded to the east end of the reach near Sta. 36+83. As previously reported, a low area of the rock dike approximately 200 feet wide exists from Sta. 31+50 to Sta. 29+50. We have been monitoring this area for several years now and have not noticed any further settlement or erosion of the marsh behind the structure. Also previously reported was a slight dip in the rock dike above the Exxon/Humble pipeline right-of-way located near Sta. 12+33. Again, there is no indication of further settlement of the rock dike or deterioration of the containment dike directly behind it. Since there is no noticeable change in the condition of the rock dike or the marsh behind the structure at these two (2) locations, we are not recommending corrective actions at this time. (Appendix A, Photos 13 through 20)

**BA-27c - Construction Unit No. 3 (CU #3)**

The inspection of CU #3 began on the east bank of Little Lake at Sta. 108+65 and progressed along the northeast bank of Little Lake to the mouth of Bayou Perot at Sta. 0+00. As noted during previous inspections, the rock dike is in good condition with only minor settlement near the BP pipeline crossing near Sta. 67+00. The embankment tie-ins on both ends of the project appear to be in good condition with no obvious erosion or breaching. Overall, the rock revetment (CU #3) is in good condition and marsh behind the structure is very healthy. Despite the settlement that we have observed over the past few years near the BP pipeline, we consider this a minor defect and will not be recommending repairs or maintenance at this time. (Appendix A, Photos 1 through 8)

**BA-27 & BA-27c - Construction Unit No. 4 (CU #4)**

The inspection of CU #4 began with the concrete pile and wall structure of Reach 3 located between CU #2 and CU #3. From there the inspection continued along the south bank of Bayou Rigolettes and the west bank of Harvey Cutoff at Reach 2. The inspection of CU #4 concluded as we traveled north from the east bank of Harvey Cutoff and the east bank of Bayou Rigolettes along Reach 1. All of the transitions from rock riprap to concrete wall were in good condition. The rock riprap embankment tie-ins were also in good condition. A warning sign and support marking the concrete pile on the west side of the oilfield canal in Reach 3 is missing. Due to the extremely high cost for mobilizing equipment to repair a single timber piling and sign, we are recommending that reflective tape be placed directly on the concrete pile and pile wall in this location to notify boaters of impending danger until a new pile and sign can be installed. CPRA shall install the reflective tape during our next site visit. (Appendix A, Photos 9 through 12, and 21 through 29)

**BA-27 - Construction Unit No. 5 (CU #5)**

The inspection of Construction Unit #5 began at the northernmost point of CU #5 on the west bank of Bayou Perot near the Enbridge Pipeline Canal and progressed southward along the shoreline to the southernmost point of CU #5 at an existing canal. Overall, CU #5 is in good condition with only one (1) concrete panel that had slipped from the channel guide and was positioned lower on one side near the intersection of wall 5 and 6a. The rock to concrete panels and earthen embankments tie-ins were in very good condition with no obvious washouts or erosion. We will continue to monitor the condition of the concrete panel that has slipped from its guide channel and recommend repairs if the condition worsens. There are no recommendations for maintenance of CU #5 at this time. (Appendix A, Photos 43 through 51)

**BA-27d – Construction Unit No.6 (CU #6)**

The inspection of Construction Unit #6 began at Sta. 0+00 near an existing oilfield access canal and proceeded along the east bank of Bayou Rigolettes to Sta. 307+78 near the Barataria Waterway. Overall, the rock dike appeared to be in good condition with no visual displacement or settlement of rock material. All signs and supports at the fish dip locations are also in good condition. We are not recommending any corrective actions at this time. (Appendix A, Photos 30 through 42)

**VI. Conclusions and Recommendations**

Overall, the Barataria Landbridge Shoreline Protection Project (BA-27, BA-27c, and BA-27d) was in good condition with only previously reported minor deficiencies in isolated locations. The structural features of this project appear to be stable, with no additional deficiencies identified during this inspection and no noticeable change in condition of the deficiencies already recorded. These deficiencies included a low area in the rock dike in CU #2, a single warning sign down from broken timber support on CU #4, and a concrete panel that had slipped from its guide channel along CU #5. The only recommendation for corrective action is to install temporary reflective tape along the concrete pile near the location of the damaged pile and warning sign until a new timber pile and sign is installed. We will continue to monitor the other noted deficiencies on future project inspections.

**References:**

Hymel, Melissa, August 2003. *Monitoring Plan*, Barataria Basin Landbridge Shoreline Protection (Phases 1, 2 & 3), Louisiana Department of Natural Resources, Coastal Restoration Division, 11 pp.

LDNR, July 2002. *Operation, Maintenance and Rehabilitation Plan, BA-27* Barataria Landbridge Shoreline Protection Phases 1 & 2 (Construction Units No. 1 & 2), Louisiana Department of Natural Resources, Coastal Engineering Division.

LDNR, February 2005. *Operation, Maintenance and Rehabilitation Plan*, BA-27c Barataria Landbridge Shoreline Protection Phase 3 (Construction Unit No. 3) , Louisiana Department of Natural Resources, Coastal Engineering Division.

## **Appendix A**

### **Photographs**

2015 Annual Inspection Report  
Barataria Landbridge Shoreline Protection Project (Phases 1, 2 3 &4)  
State Project No. BA-27



Photo 1: View of the rock revetment (CU#3) along the east bank of Little Lake near Sta. 106+00



Photo 2: View of rock revetment (CU#3) crossing the opening in the marsh near Sta. 96+00.

2015 Annual Inspection Report  
Barataria Landbridge Shoreline Protection Project (Phases 1, 2 3 &4)  
State Project No. BA-27



Photo 3: View of rock revetment (CU#3) along east shoreline of Little Lake near Sta. 95+00.



Photo 4: View of fish dip in rock revetment (CU#3) near Sta. 74+00.

2015 Annual Inspection Report  
Barataria Landbridge Shoreline Protection Project (Phases 1, 2 3 &4)  
State Project No. BA-27



Photo 5: View of fish dip in rock revetment (CU#3) near Sta. 43+00



Photo 6: View of rock revetment (CU#3) along east bank of Little Lake near Sta. 35+00.

2015 Annual Inspection Report  
Barataria Landbridge Shoreline Protection Project (Phases 1, 2 3 &4)  
State Project No. BA-27



Photo 7: View of rock revetment (CU#3) on east side of camp near Sta. 01+00.



Photo 8: View of the end of CU#3 rock revetment along south bank of Bayou Rigolettes near Sta. 0+00.

2015 Annual Inspection Report  
Barataria Landbridge Shoreline Protection Project (Phases 1, 2 3 &4)  
State Project No. BA-27



Photo 9: CU#4 Concrete wall along south bank of Bayou Perot.



Photo 10: CU#4 Rock revetment closure along south bank of unnamed canal.

2015 Annual Inspection Report  
Barataria Landbridge Shoreline Protection Project (Phases 1, 2 3 &4)  
State Project No. BA-27



Photo 11: CU#4 Rock revetment closure along north bank of unnamed canal.



Photo 12: CU#4 Concrete wall near the entrance to unnamed canal.

2015 Annual Inspection Report  
Barataria Landbridge Shoreline Protection Project (Phases 1, 2 3 &4)  
State Project No. BA-27



Photo 13: Rock revetment (CU#2 – west side) along south bank of Bayou Rigolettes near Sta. 12+00.



Photo 14: Rock revetment (CU#2 – west side) near Chevron pipeline along south bank of Bayou Rigolettes near Sta. 17+00.

2015 Annual Inspection Report  
Barataria Landbridge Shoreline Protection Project (Phases 1, 2 3 &4)  
State Project No. BA-27



Photo 15: Rock revetment (CU#2 – east side) along south bank of Bayou Rigolettes near mouth of unnamed canal at Sta. 3+00.



Photo 16: Rock revetment (CU#2- west side) tie-into bank on the west side of unnamed canal near Sta. 26+70.

2015 Annual Inspection Report  
Barataria Landbridge Shoreline Protection Project (Phases 1, 2 3 &4)  
State Project No. BA-27



Photo 17: Rock revetment (CU#2- east side) tie-in to the east side of unnamed canal near Sta. 0+00.



Photo 18: Rock revetment (CU#2-east side) near Sta. 8+00.

2015 Annual Inspection Report  
Barataria Landbridge Shoreline Protection Project (Phases 1, 2 3 &4)  
State Project No. BA-27



Photo 19: View of low area along rock dike of CU#2 near Sta. 30+00.



Photo 20: CU# 4 Concrete wall and rock revetment (CU#2)on east bank of Bayou Perot.

2015 Annual Inspection Report  
Barataria Landbridge Shoreline Protection Project (Phases 1, 2 3 &4)  
State Project No. BA-27



Photo 21: CU# 4 Concrete wall and rock revetment on east bank of Bayou Perot.



Photo 22: CU# 4 Concrete wall at the Chevron Pipeline along west bank of Harvey Cutoff Canal.

2015 Annual Inspection Report  
Barataria Landbridge Shoreline Protection Project (Phases 1, 2 3 &4)  
State Project No. BA-27



Photo 23: CU# 4 Rock tie-in from Reach 2 to west bank of Harvey Cutoff Canal.



Photo 24: CU# 4 Concrete wall (Reach 1) rock tie-in to bank along east bank of the Harvey Cutoff Canal.

2015 Annual Inspection Report  
Barataria Landbridge Shoreline Protection Project (Phases 1, 2 3 &4)  
State Project No. BA-27



Photo 25: CU# 4 Concrete wall (Reach 1) rock tie-in to bank along east bank of the Harvey Cutoff Canal.



Photo 26: CU# 4 Concrete wall (Reach 1) at the Chevron Pipeline along east bank of Harvey Cutoff Canal.

2015 Annual Inspection Report  
Barataria Landbridge Shoreline Protection Project (Phases 1, 2 3 &4)  
State Project No. BA-27



Photo 27: CU# 4 Concrete wall (Reach 1, Sections 13a & 13b) along east bank of Bayou Rigolettes.



Photo 28: CU# 4 Rock revetment to concrete wall (Reach 1) tie-in near an existing canal.

2015 Annual Inspection Report  
Barataria Landbridge Shoreline Protection Project (Phases 1, 2 3 &4)  
State Project No. BA-27



Photo 29: CU# 4 rock revetment tie-in to an existing canal bank at the beginning of Reach 1.



Photo 30: CU#6 rock revetment tie-in to bank at existing canal near Sta. 0+00.

2015 Annual Inspection Report  
Barataria Landbridge Shoreline Protection Project (Phases 1, 2 3 &4)  
State Project No. BA-27



Photo 31: CU#6- view of fish dip and warning signs near Sta. 40+80.



Photo 32: CU#6 rock revetment along east bank of Bayou Rigolettes near Sta. 58+00.

2015 Annual Inspection Report  
Barataria Landbridge Shoreline Protection Project (Phases 1, 2 3 &4)  
State Project No. BA-27



Photo 33: Cu#6 – view of fish dip along east bank of Bayou Rigolettes near Sta. 68+00.



Photo 34: CU#6 – view of fish dip along east bank of Bayou Rigolettes near Sta. 107+00.

2015 Annual Inspection Report  
Barataria Landbridge Shoreline Protection Project (Phases 1, 2 3 &4)  
State Project No. BA-27



Photo 35: CU#6 rock revetment along east bank of Bayou Rigolettes near Sta. 130+00



Photo 36: CU#6 – view of fish dip along east bank of Bayou Rigolettes near Sta. 146+00.

2015 Annual Inspection Report  
Barataria Landbridge Shoreline Protection Project (Phases 1, 2 3 &4)  
State Project No. BA-27



Photo 37: CU#6 rock revetment tie-in to timber bulkhead near Sta. 200+00.



Photo 38: CU#6 – view of fish dip along east bank of Bayou Rigolettes near Sta. 250+00.

2015 Annual Inspection Report  
Barataria Landbridge Shoreline Protection Project (Phases 1, 2 3 &4)  
State Project No. BA-27



Photo 39: CU#6 – view of fish dip near Sta. 258+00.



Photo 40: CU#6 rock revetment near Sta. 277+50.

2015 Annual Inspection Report  
Barataria Landbridge Shoreline Protection Project (Phases 1, 2 3 &4)  
State Project No. BA-27



Photo 41: CU#6 rock revetment along Bayou Rigolettes near Sta. 285+00.



Photo 42: CU#6 rock revetment at end of project near Sta. 305+00.

2015 Annual Inspection Report  
Barataria Landbridge Shoreline Protection Project (Phases 1, 2 3 &4)  
State Project No. BA-27



Photo 43: CU#5 rock revetment to rock tie-in near beginning of project.



Photo 44: CU#5 – view of concrete wall between wall 1 and wall 2.

2015 Annual Inspection Report  
Barataria Landbridge Shoreline Protection Project (Phases 1, 2 3 &4)  
State Project No. BA-27



Photo 45: CU#5 – view of existing concrete wall between wall 4 and 5.



Photo 46: CU#5 – view of gap in concrete wall between wall 5 and 6A.

2015 Annual Inspection Report  
Barataria Landbridge Shoreline Protection Project (Phases 1, 2 3 &4)  
State Project No. BA-27



Photo 47: CU#5 – view of concrete wall 7B and 8 in background.



Photo 48: CU#5 – view of gap in concrete wall between walls 7B & 8.

2015 Annual Inspection Report  
Barataria Landbridge Shoreline Protection Project (Phases 1, 2 3 &4)  
State Project No. BA-27



Photo 49: CU#5 – view of concrete wall tie-in to rock revetment at southern end of wall 9.



Photo 50: CU#5 - view of concrete wall tie-in to rock revetment at southern end of wall 9.

2015 Annual Inspection Report  
Barataria Landbridge Shoreline Protection Project (Phases 1, 2 3 &4)  
State Project No. BA-27



Photo 51: View of rock revetment tie-in to existing marsh on southern end of CU#5.

**Appendix B**  
**Three Year Budget Projections and Worksheet**

**BARATARIA LAND BRIDGE, PH 1 & 2 / BA27 / PPL7**  
**Three-Year Operations & Maintenance Budgets 07/01/2015- 06/30/18**

Project Manager	O & M Manager	Federal Sponsor	Prepared By
	<i>Ledet</i>	<i>NRCS</i>	<i>Babin</i>

	2015/2017	2016/2017	2017/2018
<i>Maintenance Inspection</i>	\$ 6,739.00	\$ 6,941.00	\$ 7,149.00
<i>Structure Operation</i>	\$ -	\$ -	\$ -
<i>Administration</i>	\$ -	\$ -	\$ -
	\$ -	\$ -	\$ -

**Maintenance/Rehabilitation**

**15/16 Description:** \_\_\_\_\_

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

**16/17 Description:** \_\_\_\_\_

<i>Surveying</i>	\$ -
<i>Construction</i>	\$ -
<i>Construction Oversight</i>	\$ -
<i>Sub Total - Maint. And Rehab.</i>	\$ -

**17/18 Description:** \_\_\_\_\_

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

	2015/2016	2016/2017	2017/2018
<b><u>Total O&amp;M Budgets</u></b>	<b>\$ 6,739.00</b>	<b>\$ 6,941.00</b>	<b>\$ 7,149.00</b>

<b>O&amp;M Budget (3 Yr Total)</b>	<b>\$ 20,829.00</b>
<b>Unexpended O&amp;M Funds</b>	<b>\$ 1,318,684.00</b>

**Remaining O&M Funds**

**\$ 1,297,855.00**

Note: 2015-2018 Unexpended O&M budget includes a deduction of \$109,391 for remaining MIPR O&M funds for NRCS

## OPERATIONS & MAINTENANCE BUDGET WORKSHEET

**Project: Barataria Landbridge Shoreline Protection ( Phase 1 & 2 CU#2)**

**FY 15/16 –**

Administration		\$	0
O&M Inspection & Report		\$	6,739
Operation:		\$	0
Maintenance:		\$	0
E&D:	\$		0
Construction:	\$		0
Construction Oversight:	\$		0

**Inspection and Report**

**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.	\$	500
		<u>\$ 2,096</u>

Report:

CPRA Engineer 6 – 60 hrs. @ \$73/hr.	\$	4,380
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Total Direct CPRA Costs: **\$ 6,476**

**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.	\$	1,061
		<u>\$ 4,448</u>

Report:

CPRA Engineer 6 – 60 hrs. @ \$154.88/hr.	\$	9,293
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Total Indirect CPRA Costs: **\$13,741**

*(\$20,217/3 = \$6,739 – divided between Ph1 &2, 3 and 4)*

**FY 16/17 –**

Administration		\$	0
O&M Inspection and Report:		\$	6,941
Maintenance:		\$	0
Surveying:	\$		0
Construction:	\$		0
Construction Oversight:	\$		0

**Operation and Maintenance Assumptions:**

**CPRA Direct Costs**

Total Direct CPRA Costs: \$ 6,476 x 3% Inflation = **\$ 6,670**

**CPRA Indirect Costs**

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

*(\$20,823/3 = \$6,941 – divided between Ph1 &2, 3 and 4)*

**FY 17/18 –**

Administration		\$	0
O&M Inspection & Report		\$	7,149
Operation:		\$	0
Maintenance:		\$	0
E&D:	\$	0	
Construction:	\$	0	
Construction Oversight:	\$	0	

**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**

*(\$21,446/3 = \$7,149 – divided between Ph1 &2, 3 and 4)*

**2015-2018 Accounting**

Approved O&M Budget (Lana Report)	\$	1,525,609
Total Expenditures (Lana Report)	\$	- 97,534
MIPR O&M for NRCS (remaining)	\$	<u>-109,391</u>
Estimated Unexpended Funds:	\$	1,318,684

**BARATARIA LAND BRIDGE, PH 3 / BA27c / PPL9**  
**Three-Year Operations & Maintenance Budgets 07/01/2015 - 06/30/18**

Project Manager	O & M Manager	Federal Sponsor
	<i>Ledet</i>	NRCS
		Prepared By
		<i>Babin</i>

	2015/2016	2016/2017	2017/2018
<i>Maintenance Inspection</i>	\$ 6,739.00	\$ 6,941.00	\$ 7,149.00
<i>Structure Operation</i>	\$ -	\$ -	\$ -
<i>Administration</i>	\$ -	\$ -	\$ -
	\$ -	\$ -	\$ -

15/16 Description:

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

16/17 Description:

<i>Surveying</i>	\$ -
<i>Construction</i>	\$ -
<i>Construction Oversight</i>	\$ -
<i>Sub Total - Maint. And Rehab.</i>	\$ -

17/18 Description:

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

	2015/2016	2016/2017	2017/2018
<b><i>Total O&amp;M Budgets</i></b>	<b>\$ 6,739.00</b>	<b>\$ 6,941.00</b>	<b>\$ 7,149.00</b>

<b>O&amp;M Budget (3 Yr Total)</b>	<b>\$ 20,829.00</b>
<b>Unexpended O&amp;M Funds</b>	<b>\$ 65,116.00</b>
<b>Remaining O&amp;M Funds</b>	<b>\$ 44,287.00</b>

## OPERATIONS & MAINTENANCE BUDGET WORKSHEET

### **Project: Barataria Landbridge Shoreline Protection BA-27 c (Phase 3)**

#### **FY 15/16 –**

CPRA Administration	\$	0
O&M Inspection & Report	\$	6,739
Operation:	\$	0
Maintenance:	\$	0
E&D:	\$	0
Construction:	\$	0
Construction Oversight:	\$	0

#### **Operation and Maintenance Assumption:**

##### **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.	\$	500
	\$	2,096

###### Report:

CPRA Engineer 6 – 60 hrs. @ \$73/hr.	\$	4,380
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Total Direct CPRA Costs: **\$ 6,476**

##### **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.	\$	1,061
	\$	4,448

###### Report:

CPRA Engineer 6 – 60 hrs. @ \$154.88/hr.	\$	9,293
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Total Indirect CPRA Costs: **\$13,741**

*(\$20,217/3 = \$6,739 – divided between Ph1&2, 3 and 4)*

#### **FY 16/17 –**

CPRA Administration	\$	0
O&M Inspection & Report	\$	6,941
Operation:	\$	0
Maintenance:	\$	0
E&D:	\$	0
Construction:	\$	0

Construction Oversight: \$ 0

**Operation and Maintenance Assumptions:**

**CPRA Direct Costs**

Total Direct CPRA Costs: \$ 6,476 x 3% Inflation = \$ **6,670**

**CPRA Indirect Costs**

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

*(\$20,823/3 = \$6,941 – divided between Ph1 & 2, 3 and 4)*

**FY 17/18 –**

Administration	\$	0
O&M Inspection & Report	\$	7,149
Operation:	\$	0
Maintenance:	\$	0
E&D:	\$	0
Construction:	\$	0
Construction Oversight:	\$	0

**Operation and Maintenance Assumptions:**

**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**

*(\$21,446/3 = \$7,149 – divided between Ph1 & 2, 3 and 4)*

**2015-2018 Accounting**

Approved O&M Budget (Lana Report)	\$	74,641
Total Expenditures (Lana Report)	\$	<u>-9,525</u>
Estimated Unexpended Funds:	\$	65,116

**BARATARIA LAND BRIDGE, PH 4 / BA27d / PPL11**  
**Three-Year Operations & Maintenance Budgets 07/01/2015 - 06/30/18**

Project Manager	O & M Manager	Federal Sponsor	Prepared By
	<i>Ledet</i>	NRCS	<i>Babin</i>

	2015/2016	2016/2017	2017/2018
<i>Maintenance Inspection</i>	\$ 6,739.00	\$ 6,941.00	\$ 7,149.00
<i>Structure Operation</i>	\$ -	\$ -	\$ -
<i>Administration</i>	\$ -	\$ -	\$ -
	\$ -	\$ -	\$ -

**Maintenance/Rehabilitation**

*15/16 Description:* \_\_\_\_\_

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

*16/17 Description* \_\_\_\_\_

<i>Surveying</i>	\$ -
<i>Construction</i>	\$ -
<i>Construction Oversight</i>	\$ -
<i>Sub Total - Maint. And Rehab.</i>	\$ -

*17/18 Description:* \_\_\_\_\_

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

	2015/2016	2016/2017	2017/2018
<b><u>Total O&amp;M Budgets</u></b>	<b>\$ 6,739.00</b>	<b>\$ 6,941.00</b>	<b>\$ 7,149.00</b>

<b>O&amp;M Budget (3 Yr Total)</b>	<b>\$ 20,829.00</b>
<b>Unexpended O&amp;M Funds</b>	<b>\$ 6,135,506.00</b>

Remaining O&M Funds

\$ 6,114,677.00

## OPERATIONS & MAINTENANCE BUDGET WORKSHEET

**Project: Barataria Landbridge Shoreline Protection BA-27d (Phase 4)**

**FY 15/16 –**

Administration	\$	0
O&M Inspection & Report	\$	6,739
Operation:	\$	0
Maintenance:	\$	0
E&D:	\$	0
Construction:	\$	0
Construction Oversight:	\$	0

**Operation and Maintenance Assumption:**

**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.	\$	500
		<u>\$ 2,096</u>

Report:

CPRA Engineer 6 – 60 hrs. @ \$73/hr.	\$	4,380
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Total Direct CPRA Costs: **\$ 6,476**

**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.	\$	1,061
		<u>\$ 4,448</u>

Report:

CPRA Engineer 6 – 60 hrs. @ \$154.88/hr.	\$	9,293
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Total Indirect CPRA Costs: **\$13,741**

*(\$20,217/3 = **\$6,739** – divided between Ph1 &2, 3 and 4)*

**FY 16/17 –**

Administration		\$	0
O&M Inspection and Report:		\$	6,941
Maintenance:		\$	0
Surveying:	\$	0	
Construction:	\$	0	
Construction Oversight:	\$	0	

**Operation and Maintenance Assumptions:**

**CPRA Direct Costs**

Total Direct CPRA Costs: \$ 6,476 x 3% Inflation = \$ **6,670**

**CPRA Indirect Costs**

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

*(\$20,823/3 = \$6,941 – divided between Ph1 & 2, 3 and 4)*

**FY 17/18 –**

Administration		\$	0
O&M Inspection & Report		\$	7,149
Operation:		\$	0
Maintenance:		\$	0
E&D:	\$	0	
Construction:	\$	0	
Construction Oversight:	\$	0	

**Operation and Maintenance Assumptions:**

**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**

*(\$21,446/3 = \$7,149 – divided between Ph1 & 2, 3 and 4)*

**2015-2018 Accounting**

O&M Budget (Lana Report)	\$ 6,637,330
Total Expenditures (Lana Report)	\$ -45,787
MIPR O&M for NRCS (Remaning)	<u>\$ -456,037</u>
Estimated Unexpended Funds:	\$ 6,135,506