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

2007 Operations, Maintenance, and Monitoring Report

For

BARATARIA BAY WATERWAY WEST SIDE SHORELINE PROTECTION

State Project Number BA-23
Priority Project List 4

June 2007
Jefferson Parish

Prepared by:
Jon Barmore, Biological Monitoring Section / Coastal Restoration Division
and
Barry Richard, E.I. and Peter Hopkins, P.E., Field Engineering Section / Coastal Engineering Division

Louisiana Department of Natural Resources
New Orleans Field Office
CERM, Suit 309
2045 Lakeshore Dr.
New Orleans, La 70122

Suggested Citation:
Barmore, J., B. Richard, and P. Hopkins. 2007. *2007 Operations, Maintenance, and Monitoring Report for Barataria Bay Waterway West Side Shoreline Protection (BA-23), Louisiana Department of Natural Resources,Coastal Restoration Division, New Orleans, Louisiana. 25 pp.*

2007 Operations, Maintenance, and Monitoring Report
for
Barataria Bay Waterway West Side Shoreline Protection (BA-23)

Table of Contents

Preface

The 2007 report includes monitoring data collected through December 2003 and annual Maintenance Inspections through June 2007.

I. Introduction

The Barataria Bay Waterway West Bank Shoreline Protection Project (BA-23) is located in Jefferson Parish, Louisiana, approximately 4.5 mi (7.2 km) south of Lafitte on the west side of the Dupre Cut portion of the Barataria Bay Waterway (BBW). The project area is east of Bayou Rigolettes, north of the Lafitte Oil and Gas Field, and southwest of The Pen (Figure 1).

Project area wetlands were formed in a protective curve of the natural ridge of Bayou Barataria. The east-west orientation of the ridge, which serves as the southern boundary of the project area, protected the wetlands from the direct influence of salinities and tidal action of the Gulf of Mexico through Barataria Bay. Construction of the Dupre Cut portion of the BBW established a direct conduit linking project wetlands with Barataria Bay. Initially, Dupre Cut spoil banks protected the project area from salinity and tidal fluctuations in the waterway. The combination of subsidence and wave erosion from marine traffic, however, has caused a breaching of the spoil banks which has resulted in increased water exchange and salinity fluctuations.

Land loss maps (Britsch and Dunbar 1993) of the area indicate that by the late 1950's and 1960's a majority of the project wetlands had converted to open-water. The land loss rate, used in the 1994 Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) Wetland Value Assessment analysis, was 1.89 % per year for the years 1983 to 1994 (Louisiana Coastal Wetlands Conservation and Restoration Task Force 1994).

Conversion to open-water is but one of the processes affecting the project area. Subsidence of the ridge forming the northern, western, and southern boundaries has changed the ridge from a forested wetland to more of a shrub-scrub environment. Once solid emergent marshes have converted to broken fringe marshes, it is very difficult to reverse the process. In 1949, O'Neil classified the marshes in the project area as fresh *Scirpus americanus* (three-cornered grass) marsh. Thirty years later, those remaining marsh areas were classified by Chabreck and Linscombe (1978 and 1988) as brackish.

The BA-23 project consists of approximately 9,400 linear feet (2,865 m) of rock bankline protection (foreshore rock dike) along the west bank of the BBW to protect the adjacent marsh from excessive water exchange and subsequent erosion (Figure 1). The project supplemented a dredge-and-fill operation previously completed by the U.S. Army Corps of Engineers (USACE). The Natural Resources Conservation Service (NRCS) filled in gaps in the spoilbank excluded from the USACE operation, thereupon reinforcing and forming a continuous foreshore rock dike.

The USACE dedicated dredging operation in the BBW utilized sediments taken from the waterway in an attempt to create new marsh within the project area. The USACE deposited approximately 750,000 cubic yards (555,556 m^3) of cutterhead dredged material in semi-confined, shallow open-water areas adjacent to the BBW. This one-time operation is designed to create conditions conducive to the establishment of emergent marsh. As a part of the BA-23 project, marsh water levels are being managed through the use of a water control structure placed in the southern portion of the project area. The structure is required by permit conditions to remain open most of the year, allowing unimpeded ingress and egress of marine organisms. During waterfowl hunting season (November through January), however, water levels are managed to a height not exceeding 6 in (15 cm) below marsh elevation.

Project Objective

The primary objective of this project is to re-establish a hydrologic barrier to protect approximately 2,200 ac (880 ha) of combined marsh and open-water from excessive wave energy, water level fluctuations, and saltwater intrusion from the BBW.

The project features include approximately 9,400 linear feet (2,865 m) of foreshore rock dike combined with a water control structure consisting of two 48 in (1.22 m) corrugated pipe culverts with two 5' stop log bays to allow for management of water levels and the movement of marine organisms within the project area.

Construction Dates

Start Construction:	June 1, 2000
End Construction:	November 15, 2000

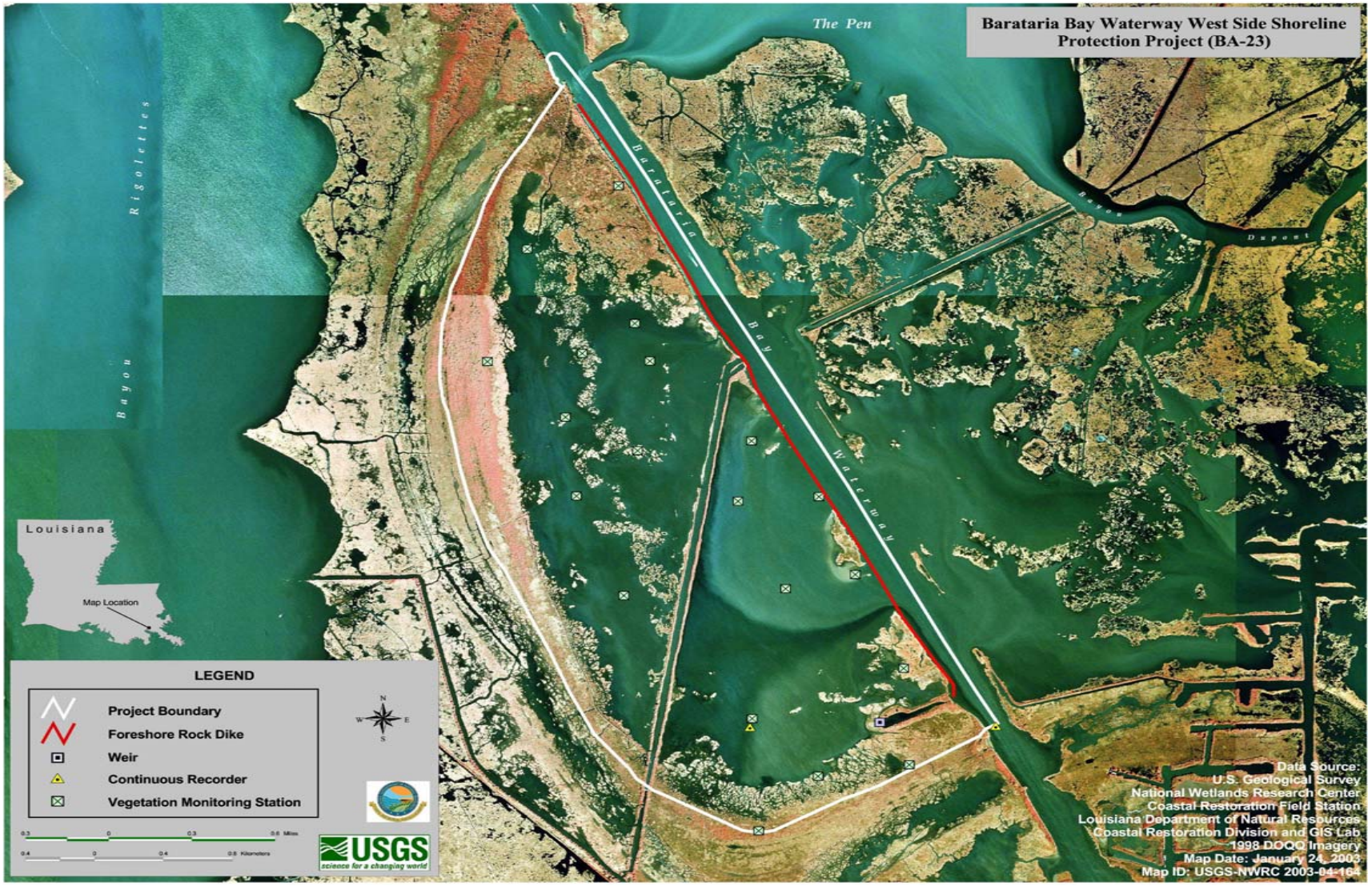

Figure 1. Barataria Bay Waterway West Side Shoreline Protection (BA-23).

II. Maintenance Activity

a. Project Feature Inspection Procedures

The purpose of the annual inspection of the Barataria Bay Waterway West Side Shoreline Protection Project (BA-23) 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, Louisiana Department of Natural Resources (LDNR) shall provide, in the report, a detailed cost estimate for engineering, design, supervision, inspection, construction contingencies, and an assessment of the urgency of such repairs (O&M Plan March 18, 2002; LDNR 2002). The annual inspection report also contains a summary of maintenance projects and an estimated projected budget for the upcoming three (3) years for operation, maintenance and rehabilitation. The three (3) year projected operation and maintenance budget is shown in Appendix C. A summary of past operation and maintenance projects completed since completion of the project are outlined in Section II d. Previous inspections have been held on the following dates:

March 19,2002,
April 3, 2003,
February 18, 2004,
October 4, 2005,
March 20, 2007.

b. Inspection Results

An inspection of the Barataria Bay Waterway West Side Shoreline Protection Project (BA-23) was held on March 20, 2007, by George Boddie, Barry Richard, Tom Bernard, and Peter Hopkins from LDNR, and Warren Blanchard of NRCS. There was a light wind, clear sky, and the tide gauge, which is located approximately 0.8 miles north of C&M Marina on the east bank of the Barataria Bay Waterway, read +0.88-ft. NAVD-88. The three year budget projection is included in Appendix A, photographs of that inspection are included in Appendix B, and the field inspection notes are included in Appendix C.

Rock Riprap: The foreshore rock dike appeared to be in good condition at the time of the inspection (Appendix B Photos 1 and 2).

Water Control Structure: The water control structure was inaccessible at the time of the inspection due to shallow water conditions in the access channel. On April 18, 2007, Barry Richard and Peter Hopkins returned to remove the stop logs and the structure was in good condition at that time. The water control structure is accessed through an abandoned oil well canal. An access channel was dredged in the canal during construction, which provided for increased hydrologic exchange between the project area and the BBW, and for access to the structure. Since construction, it has slowly silted in, reducing the amount of hydrologic exchange and making access to the structure more difficult. Plans have been developed and bids received to dredge this canal.

c. Maintenance Recommendations

The Barataria Bay Waterway West Side Shoreline Protection Project (BA-23) structures are performing as intended. The rock dike is protecting the existing marsh as designed, and the dredge material which the USACE placed inside of the project area has set up and vegetated nicely. The last maintenance lift (December 2005) raised the elevation of the settled sections of foreshore rock dike back to the original designed elevation.

As mentioned above, the access channel via the BBW to the water control structure has silted in a significant amount since the project was completed. The dredging of the access canal is expected to be accomplished in mid 2007. Material from this dredging will be beneficially placed adjacent to the oilfield canal to create marsh habitat.

i. Immediate Repairs

- Dredge water control structure access channel. The estimated cost of dredging is $65,000. This work consists of dredging approximately 4,400 CY of material, resulting in a channel bottom elevation of -5.0 FT NAVD88, and a bottom width of 20 ft. Dredged material will be placed adjacent to the canal.

ii. Programmed Maintenance

- Continue to check the water control structure during operational procedures.
- No maintenance on project features is anticipated to be required within 3 years.

d. Maintenance History

One maintenance project has been completed to restore settled areas of the structure as follows:

Dec. 2005- Luhr Bros., Inc.

- placed 5,143 tons of rock riprap to raise settled areas of the foreshore rock dike. The work was completed on January 24, 2006.

TOTAL CONSTRUCTION COST- $235,434.00

III. Operation Activity

a. Operation Plan

Structure Operations: In accordance with the operation schedule outlined in the Operation and Maintenance Plan, operations of the water control structure located at the southern end of the project area began on May 2, 2001. Since May 2001, this water control structure has been operated twice annually, in November and January. Shaw Coastal, Inc. of Houma, La. operated this structure twice in 2003 at a cost of $4,182.51. LDNR personnel have operated the structure from that time to the present and continue forward.

Permit Issues: To address low water conditions during the winter months in the impoundment area, LDNR applied for a permit modification on behalf of Jefferson Parish to modify the position of stop logs in the water control structure to retain higher water levels in the project area. The permit modification request was based on the following analysis from the LDNR – New Orleans Monitoring Section:

The Barataria Bay Waterway West Side Shoreline Protection Project (BA-23) has been actively monitored by the New Orleans Monitoring Section of the Louisiana Department of Natural Resources since January 1999. Three subjects of biological importance in the BA-23 project are fishes, vegetation (submerged and emergent), and waterfowl. These goals are of great importance to National Marine Fisheries Service (NMFS), the LDNR, and the land owners (Webb-Milling), respectively. Fishes often need secure off-waterway areas for spawning grounds, feeding locations, and refuge. Submerged and emergent vegetation are a vital part to the health and longevity of marsh and wetlands. Waterfowl hunting is one of the main uses of this land by its owners and their lessees. These goals are synergistic in the respect that both the fishes and the waterfowl need SAV (submerged aquatic vegetation) and emergent vegetation to make the wetlands useful and increase site fidelity. Under the original operation schedule of the water control structure, these goals cannot be met.

Modifying the operation of the water control structure to retain additional water earlier in the year will markedly increase winter-time levels. Currently there are many days during the winter months when water levels in some parts of the project area drop to 0.0 ft., creating large mud flats throughout the project area. This total loss of water will have a lethal and permanent affect on the fish populations contained within. Those fishes that can make it to the few remaining low areas will suffer severe competition for all life sustaining resources such as food, refuge, etc. SAV growth that may occur during the summer months will be lost with excessive dewatering. Next year, the populations must be restarted from the seed bank only and not from existing stock. Many emergent plants cannot survive dry land conditions and must have some level of inundation all year. Without sufficient water levels, plant mortality will be high. Waterfowl use wetlands for nesting, feeding, mate locations, breeding, and protection. Without the available water, there will be little or no site fidelity. Increasing these winter-time water levels should eliminate all of these problems and create a healthier and more sustainable wetland that is usable by wildlife as well as the land owner. The proposed operation schedule to achieve the goals outlined above is as follows:

From January 31 to November 1, stop log bays shall remain fully open to allow unimpeded migration of marine organisms.

From November 1 to January 31, stop log bays shall be placed at a crest elevation not to exceed marsh elevation in all bays.

The memorandum requesting the modification of the USACE permit was sent on July 24, 2003. The temporary permit modification was issued by the USACE on December 9, 2003, with the following special conditions added:

1. As proposed, the stop logs shall only be placed at marsh elevation between the times of November 15, 2003 and January 31, 2004.

2. The permittee shall install a continuous recorder within the project area to monitor water levels for the remainder of the winter and to determine if the proposed modification achieves the desired water levels. The results of the monitoring shall be provided to the U.S. Fish and Wildlife Service (USFWS), the USACE, and NMFS prior to March 1, 2004, to determine if the modification was successful and or requires any permit changes.

3. The permittee shall regularly monitor the water flow exchange across the Bayou Barataria Ridge as to determine if the modification is inducing increased marsh erosion within the natural channel of the ridge. If it is determined that erosion has increased to an extent that the proposed water management plan has been contradicted, the permittee shall contact this office and other pertinent resources agencies for our review and possible permit modification.

On April, 29, 2004, LDNR submitted a letter presenting monitoring data collected over the period of December 15, 2003 through January 31, 2004. In the letter, LDNR requested an extension of the permit modification to collect additional monitoring data during the period of November 2004 through January 2005 to further evaluate the water levels in the project area. In addition, LDNR conducted an elevation survey throughout the project area to acquire average marsh elevation. The additional survey and monitoring data was used to bolster the argument that the permitted operation schedule should be modified to meet the goals of the project.

The permit modification extension was approved for the 2004-2005 structure operations. The stop logs were placed at marsh elevation for the duration of operations. The marsh elevation survey was performed and marsh elevation increased approximately 0.5 ft NAVD. After speaking with Henry Haller of the Madison Land Company (the landowner), he was satisfied with the amount of water in the project area during the 2004-2005 operations. LDNR submitted a letter requesting a permanent permit modification and a permit modification was issued by the USACE on November 1, 2005, to operate the water control structure as follows:

1. Stop logs shall be placed at an elevation no greater than 0.5 ft below marsh elevation annually between the times of November 15 and January 31.

2. The permittee shall regularly monitor the water exchange across the Bayou Barataria ridge as to determine if the modification is inducing marsh erosion.

IV. Monitoring Activity

There has been no additional data collection since December 2004. All data collected before December 2004 was analyzed and reported in the 2004 OM&M report.

V. Conclusions

a. Project Effectiveness

<u>Biological Monitoring (summarized from 2004 report):</u>

- The goals of this project were to increase or maintain the marsh to open water ratio within the project area and to create a hydrological barrier around the project area.

- The project boundary was altered post-1997 aerial photography and pre-2003 photography, resulting in an increase of 250 acres of land. However, there was an additional increase of 118 acres of land from 1997 to 2003

that can be attributed to the construction of wetlands using dredge material during project construction.

- There was no decrease in water level variance in the project area. And although salinity decreased in the project area from pre-construction to post-construction, the same occurred in the reference area.

- As a result of the permanent permit modification, approved by the USACE in 2005, the goal set forth by the landowner to maintain non-zero water levels during winter months was met.

- There was an overall loss of plant species diversity and cover in the project area.

b. Recommended Improvements

Monitoring funds are limited for projects classified as "shoreline protection." This has made it very difficult to collect enough monitoring data to accurately determine whether this project was successful as a hydrologic barrier. Future projects should be carefully classified according to the monitoring needs of the entire project.

The canal that leads to the water control structure has silted in over the past few years. Accessing the structure becomes more difficult every year. It is recommended that the canal be dredged for better access when operating the structure. It is also recommended that the situation be monitored in the event that the canal begins to fill in the future.

c. Lessons Learned

In the past, O&M inspections of this project have focused on the physical integrity of the constructed project features and not on the project as a whole. While this project is classified as a shoreline protection project, there is also a hydrologic component. The water control structure at the southern end of the project relies on the integrity of the entire hydrologic boundary to function correctly. The breaching of the existing hydrologic boundary may affect the overall goals and objectives of the project and should have been included in the annual inspections.

VI. Literature Cited

Britsch, L. B., and J. B. Dunbar. 1993. Land Loss rates: Louisiana Coastal Plain. Journal of Coastal Research 9(2): 324-338.

Chabreck, R. H., and G. Linscombe. 1978. Vegetative type map of the Louisiana coastal marshes. Louisiana Department of Wildlife And Fisheries, New Orleans.

Chabreck, R. H., and G. Linscombe. 1988. Louisiana coastal marsh vegetative type map. Louisiana Department of Wildlife And Fisheries, New Orleans.

Louisiana Coastal Wetlands Conservation and Restoration Task Force. 1994. Baton Rouge, LA: Fourth priority project list report.

Louisiana Department of Natural Resources (LDNR). 2002. Operations, maintenance, and rehabilitation plan for the Barataria Bay Waterway West Side shoreline protection project (BA-23). Louisiana Department of Natural Resources, Coastal Engineering Division, Baton Rouge.

Appendix A

Three Year Budget Projection

Barataria Bay Waterway West Side Shoreline Protection / BA-23 / PPL NO. 4

Three-Year Operations & Maintenance Budgets 07/01/2007 - 06/30/2010

Project Manager	O & M Manager	Federal Sponsor	Prepared By
Barrt Richard	*Barry Richard*	*NRCS*	*Peter Hopkins*

	2007/2008	2008/2009	2009/2010
Maintenance Inspection	$3,257.00	$3,341.00	$3,428.00
General Maintenance	$0.00	$0.00	$0.00
Structure Operation	$7,085.00	$7,270.00	$7,459.00
Administration	$0.00	$0.00	$0.00
Maintenance/Rehabilitation			

07/08 Description:

E&D	$0.00
Construction	$0.00
Construction Oversight	$0.00
Sub Total - Maint. And Rehab.	$ -

08/09 Description

E&D	$0.00
Construction	$0.00
Construction Oversight	$0.00
Sub Total - Maint. And Rehab.	$ -

09/10 Description:

E&D	$0.00
Construction	$0.00
Construction Oversight	$0.00
Sub Total - Maint. And Rehab.	$ -

	2007/2008	2008/2009	2009/2010
Total O&M Budgets	**$ 10,342.00**	**$ 10,611.00**	**$ 10,887.00**

O &M Budget (3 yr Total)	**$ 31,840.00**
Unexpended O & M Budget	**$ 318,867.85**
Remaining O & M Budget (Projected)	**$ 287,036.85**

OPERATION AND MAINTENANCE BUDGET WORKSHEET 2007/2008

Barataria Bay Waterway West Bank Protection / BA-23 / PPL NO. 4

DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
O&M Inspection and Report	EACH	1	$3,257.00	**$3,257.00**
General Structure Maintenance	LUMP	1	$0.00	**$0.00**
Engineering and Design	LUMP	1	$0.00	**$0.00**
Operations	LUMP	1	$7,085.00	**$7,085.00**
Construction Oversight	LUMP	1	$0.00	**$0.00**
ADMINISTRATION				
LDNR / CRD Admin.	LUMP	0	$0.00	$0.00
FEDERAL SPONSER Admin.	LUMP	0	$0.00	$0.00
SURVEY Admin.	LUMP	0	$0.00	$0.00
OTHER				$0.00
			TOTAL ADMINISTRATION COSTS:	**$0.00**

MAINTENANCE / CONSTRUCTION

SURVEY

SURVEY DESCRIPTION:					
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:					
Borings	EACH	0	$0.00	$0.00
OTHER				$0.00
			TOTAL GEOTECHNICAL COSTS:	**$0.00**

CONSTRUCTION

CONSTRUCTION DESCRIPTION:					
Rip Rap	LIN FT	TON / FT	TONS	UNIT PRICE	
	0	0.0	0	$0.00	$0.00
	0	0.0	0	$0.00	$0.00
	0	0.0	0	$0.00	$0.00
Filter Cloth / Geogrid Fabric	SQ YD	0	$0.00	$0.00
Navagation 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: **$10,342.00**

OPERATION AND MAINTENANCE BUDGET WORKSHEET 2008/2009

Barataria Bay Waterway West Bank Protection / BA-23 / PPL NO. 4

DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
O&M Inspection and Report	EACH	1	$3,341.00	**$3,341.00**
General Structure Maintenance	LUMP	1	$0.00	**$0.00**
Engineering and Design	LUMP	1	$0.00	**$0.00**
Operations	LUMP	1	$7,270.00	**$7,270.00**
Construction Oversight	LUMP	1	$0.00	**$0.00**
ADMINISTRATION				
LDNR / CRD Admin.	LUMP	0	$0.00	$0.00
FEDERAL SPONSER Admin.	LUMP	0	$0.00	$0.00
SURVEY Admin.	LUMP	0	$0.00	$0.00
OTHER				$0.00
			TOTAL ADMINISTRATION COSTS:	**$0.00**

MAINTENANCE / CONSTRUCTION

SURVEY

SURVEY DESCRIPTION:					
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:					
Borings	EACH	0	$0.00	$0.00
OTHER				$0.00
			TOTAL GEOTECHNICAL COSTS:	**$0.00**

CONSTRUCTION

CONSTRUCTION DESCRIPTION:					
Rip Rap	LIN FT	TON / FT	TONS	UNIT PRICE	
	0	0.0	0	$0.00	$0.00
	0	0.0	0	$0.00	$0.00
	0	0.0	0	$0.00	$0.00
Filter Cloth / Geogrid Fabric		SQ YD	0	$0.00	$0.00
Navagation 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: **$10,611.00**

OPERATION AND MAINTENANCE BUDGET WORKSHEET 2009/2010

Barataria Bay Waterway West Bank Protection / BA-23 / PPL NO. 4

DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
O&M Inspection and Report	EACH	1	$3,428.00	**$3,428.00**
General Structure Maintenance	LUMP	1	$0.00	**$0.00**
Engineering and Design	LUMP	1	$25,477.00	**$25,477.00**
Operations	LUMP	1	$7,459.00	**$7,459.00**
Construction Oversight	LUMP	1	$4,944.00	**$4,944.00**

ADMINISTRATION

LDNR / CRD Admin.	LUMP	1	$9,705.48	$9,705.48
FEDERAL SPONSER Admin.	LUMP	1	$9,705.48	$9,705.48
SURVEY Admin.	LUMP	1	$2,000.00	$2,000.00
OTHER				$0.00
			TOTAL ADMINISTRATION COSTS:	**$21,410.96**

MAINTENANCE / CONSTRUCTION

SURVEY

SURVEY DESCRIPTION:					
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
Structure survey	LUMP	1	$4,847.00	$4,847.00
			TOTAL SURVEY COSTS:	**$4,847.00**

GEOTECHNICAL

GEOTECH DESCRIPTION:					
Borings	EACH	0	$0.00	$0.00
OTHER				$0.00
			TOTAL GEOTECHNICAL COSTS:	**$0.00**

CONSTRUCTION

CONSTRUCTION DESCRIPTION:					
Rip Rap	LIN FT	TON / FT	TONS	UNIT PRICE	
	0	0.0	0	$0.00	$0.00
	0	0.0	0	$0.00	$0.00
	0	0.0	0	$0.00	$0.00
Filter Cloth / Geogrid Fabric		SQ YD	0	$0.00	$0.00
Navagation 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	$71,093.00	$71,093.00
Contingency		LUMP	1	$0.00	$0.00
General Structure Maintenance(cap 20%)		LUMP	1	$152,025.00	$152,025.00
Variable Crest Weir Structure Repair		LUMP	1	$19,519.00	$19,519.00
OTHER				$0.00	$0.00
OTHER				$0.00	$0.00
				TOTAL CONSTRUCTION COSTS:	**$242,637.00**

TOTAL OPERATIONS AND MAINTENANCE BUDGET: **$310,202.96**

Appendix B

Inspection Photographs

Picture 1. Shoreline protection.

Picture 2. Shoreline protection.

Appendix C

Field Inspection Notes

MAINTENANCE INSPECTION REPORT CHECK SHEET

Project No. / Name: **BA-23 Barataria Waterway (West) Shoreline Protection** Date of Inspection: 3 /20/2007 Time: 9 : 30 am

Structure No. _____ Inspector(s): Richard, Boddie, Bernard, Hopkins, Blanchard

Structure Description: _____ Water Level Inside: N/A Outside: Approx. 0.9 ft

Type of Inspection: Annual Weather Conditions: Clear Skies, Light Wind

Item	Condition	Physical Damage	Corrosion	Photo #	Observations and Remarks
CMP culverts	Good	None	None		
Weir Bays - logs Locks, hoist, Supports	Good	None	Some		
Handrails Grating Hardware etc.	Good	None	None		
Timber Piles	Good	None	None		
Timber Wales	Good	None	None		
Galv. Pile Caps	Good	None	None		
Signage /Supports	Good	None	None		
Riprap	Good	None	None		
Silt/Fill	Fair	None	None		Access channel for water control structure silting in. Dredging project to commence soon
Foreshore Rock Dike	Good	None	None	1, 2	