



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

**2006 Annual Inspection Report**

**Fritchie Marsh Restoration**

State Project Number PO-06  
Priority Project List 2

August 14, 2006  
St. Tammany Parish

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## **I. Introduction**

The Fritchie Marsh Restoration Project (PO-06) project area contains 6,291-ac (2,546-ha) of intermediate and brackish marsh located southeast of Slidell in St. Tammany Parish (Appendix A). The area is bound by US Hwy 190 to the north, US Hwy 90 to the south and east, and LA Hwy 433 to the west and south. The site was inspected On October 12, 2005 by representatives of LDNR and NRCS.

## **II. Project Description and History**

From 1956 to 1984, 2,260-ac (915-ha) of emergent marsh within the Fritchie Marsh project area have been converted to open water, with the greatest loss occurring in the northern project area. This loss reflects a pattern of marsh deterioration from north to south due to a reduction of freshwater and sediment input into the northern part of the project area. Natural hydrologic patterns have been disrupted by the construction of the perimeter highways. These embankments isolate the marsh from the West Pearl River, and have restricted inflow of freshwater, nutrients, and sediment. Additionally, saltwater from Lake Pontchartrain enters the marsh through the W-14 canal and Little Lagoon during high tides and strong winds. As a result, the project area has converted from a predominantly fresh marsh in 1956 to a predominantly brackish marsh in 1990.

The objective of the Fritchie Marsh Restoration Project is to reduce marsh loss by restoring more natural hydrologic conditions in the project area through management of available freshwater. Specific objectives are (1) to increase freshwater flow and promote water exchange into the area from West Pearl River by enlarging the culvert at U.S. Highway 90 and by dredging portions of Salt Bayou and (2) increase freshwater flow into the northern project area by diverting flow from the W-14 canal.

The Fritchie Marsh Restoration Project was constructed in one phase beginning in October 2000 and completed in March 2001. The project has a 20-year economic life which began in March 2001.

The principal project features include:

- A 72-inch diameter by 136-foot long concrete culvert under U.S. Highway 90, rock riprap lining of the Salt Bayou channel bottom and pipe outlets, and installation of 308 linear feet of sheet piling to form a bulkhead.
- Dredging of approximately 5300 linear feet of Salt Bayou.
- Installation of a weir in the W-14 canal. The weir consists of 108 linear feet of sheet pile with a 20-foot wide boat bay.
- Dredging approximately 400 linear feet of the W-14 diversion channel.

## **III. Inspection Purpose and Procedures**

The purpose of the annual inspection of the Fritchie Marsh Restoration Project (PO-06) is to evaluate the constructed project features to identify any deficiencies and prepare a report detailing the condition of project features and recommended corrective actions needed. Should it be determined that corrective actions are needed, LDNR shall provide, in the report, a detailed cost estimate for engineering, design, supervision, inspection, and construction contingencies, and an assessment of the urgency of such repairs (O&M Plan July 10, 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.

An inspection of the Fritchie Marsh Restoration Project (PO-06) was held on October 12, 2005 by representatives of LDNR George Boddie, Brady Carter, Barry Richard, and Brad Sticker of NRCS. The water level inside the project area during this inspection was 1.5 ft NAVD. A later inspection of Salt Bayou was performed by George Boddie and Barry Richard on March 30, 2006. The water level for this second inspection was 0.96 ft NAVD 88. Photographs of that inspection are included in Appendix B of this report.

#### **IV. Inspection Results**

##### **Hwy 90 Culvert and Stone Revetment**

The only visible damage to this structure was to the asphalt patch on the highway. However, this was already being repaired by LaDOTD when we arrived for the inspection (Photo #1). During the last inspection it was noted that there was some scour along the north bank of Salt Bayou just west of the culverts. It appears that the Hurricane may have caused additional damage to this section of bank (Photo #2). If this bank were to completely breach, the hydrologic exchange between the marsh and Salt Bayou would be altered.

##### **Salt Bayou Dredging**

During the second inspection (March 2006), it was noted that a considerable amount of Salt Bayou was inaccessible due to the large amount of marsh that had been deposited into the bayou by to the Hurricane. There were several locations where large sections of sheared marsh completely filled the bayou, greatly reducing the movement of water. (Photo #3)

##### **W-14 Weir**

This structure sustained no visible damage due to the Hurricane.

##### **W-14 Diversion Channel Dredging**

No visible signs of damage or siltation of the channel dredging.

## **V. Conclusions**

The structures showed little to no signs of damage due to Hurricane Katrina. However, the marsh and natural waterways were severely altered. In addition to the above mentioned Salt Bayou damage, large sections of interior marsh have been converted to open water. The project features are still intact however, the project area itself has been severely damaged.

## **VI. Recommendations**

Both LDNR and NRCS agree that there is a need to re-evaluate the project to determine its future. This process will begin in the fall of 2006.

### **Immediate Repairs**

- None at this time.

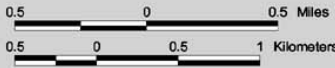
### **Programmed Maintenance**

- None at this time.

**Appendix A**  
**Project Features Map**



Data Source:  
 U.S. Department of the Interior  
 U.S. Geological Survey  
 National Wetlands Research Center  
 Coastal Restoration Field Station  
 Baton Rouge, LA  
 and  
 Louisiana Department of Natural Resources  
 Coastal Restoration Division  
 Baton Rouge, LA



1998 DOQQ Imagery  
 Map Date: April 23, 2004  
 Map ID: USGS-NWRC 2004-04-0148

**LEGEND**

- PO-06 Project Boundary
- 5300 ft. Dredge Area on Salt Bayou
- 400 ft. Dredge Area on the W-14
- Diversion Channel
- Bulkhead of Steel Sheetpile
- 72" Concrete Culvert
- Steel Sheetpile Weir with Boat Bay
- Water Flow Monitoring Stations
- Staff Gauge Only
- Continuous Recorder

**Appendix B**  
**Photographs**





**Photo #1 – Salt Bayou Culverts at Hwy 90.** Looking East from inside the project area. Note the work being done to repair the damages to the road.



**Photo #2 – Salt Bayou Scour.** Looking at the north bank of Salt Bayou inside the project area from the Hwy 90 Culverts. Note the large section of bank which has been scoured out.



**Photo #3 – Salt Bayou.** Notice the large amount of stray marsh inside the channel.

## **Appendix C**

### **Three Year Budget Projection**

Annual Inspection Report  
 Fritchie Marsh Restoration  
 State Project No. PO-06

<u>Project Manager</u>	<u>O &amp; M Manager</u>	<u>Federal Sponsor</u>	<u>Prepared By</u>
<i>Barry Richard</i>	<i>Barry Richard</i>	NRCS	<i>Barry Richard</i>
	<b>2006/2007</b>	<b>2007/2008</b>	<b>2008/2009</b>
<b>Maintenance Inspection</b>	\$3,257.00	\$3,341.00	\$3,428.00
<b>Structure Operation</b>	\$-	\$-	\$-
<b>Administration</b>	\$-	\$-	\$-
<b>Maintenance/Rehabilitation</b>			
<b>06/07 Description:</b>			
<i>E&amp;D</i>	\$-		
<i>Construction</i>	\$-		
<i>Construction Oversight</i>	\$-		
<i>Sub Total - Maint. And Rehab.</i>	\$-		
<b>07/08 Description:</b>			
<i>E&amp;D</i>		\$-	
<i>Construction</i>		\$-	
<i>Construction Oversight</i>		\$-	
<i>Sub Total - Maint. And Rehab.</i>		\$-	
<b>08/09 Description:</b>			
<i>E&amp;D</i>			\$-
<i>Construction</i>			\$-
<i>Construction Oversight</i>			\$-
<i>Sub Total - Maint. And Rehab.</i>			\$-
	<b>2006/2007</b>	<b>2007/2008</b>	<b>2008/2009</b>
<b><u>Annual O&amp;M Budgets</u></b>	<b>\$3,257.00</b>	<b>\$3,341.00</b>	<b>\$3,428.00</b>
<b><u>O &amp; M Budget (3 yr Total)</u></b>			<b>\$10,026.00</b>
<b><u>Existing O &amp; M Budget</u></b>			<b>\$130,011.98</b>
<b><u>Remaining O &amp; M Budget (Projected)</u></b>			<b>\$119,985.98</b>

**OPERATION AND MAINTENANCE BUDGET WORKSHEET 2006/2007**  
 Fritchie Marsh Restoration Project / PO-06 / PPL 2

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	0	\$0.00	\$0.00
Engineering and Design	LUMP	0	\$0.00	\$0.00
Operations Contract	LUMP	0	\$0.00	\$0.00
Construction Oversight	LUMP	0	\$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
<b>TOTAL ADMINISTRATION COSTS:</b>				<b>\$0.00</b>

**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	
<b>TOTAL SURVEY COSTS:</b>				<b>\$0.00</b>	

**GEOTECHNICAL**

GEOTECH DESCRIPTION:					
Borings	EACH	0	\$0.00	\$0.00	
OTHER				\$0.00	
<b>TOTAL GEOTECHNICAL COSTS:</b>				<b>\$0.00</b>	

**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
Navigation Aid	EACH		0	\$0.00		\$0.00
Signage	EACH		0	\$0.00		\$0.00
General Excavation / Fill	CU YD		0	\$0.00		\$0.00
Dredging	CU YD		0	\$0.00		\$0.00
Sheet Piles (Lin Ft or Sq Yds)			0	\$0.00		\$0.00
Timber Piles (each or lump sum)			0	\$0.00		\$0.00
Timber Members (each or lump sum)			0	\$0.00		\$0.00
Hardware	LUMP		0	\$0.00		\$0.00
Materials	LUMP		0	\$0.00		\$0.00
Mob / Demob	LUMP		0	\$0.00		\$0.00
Contingency	LUMP		0	\$0.00		\$0.00
General Structure Maintenance	LUMP		0	\$0.00		\$0.00
OTHER				\$0.00		\$0.00
OTHER				\$0.00		\$0.00
OTHER				\$0.00		\$0.00
<b>TOTAL CONSTRUCTION COSTS:</b>						<b>\$0.00</b>

**TOTAL OPERATIONS AND MAINTENANCE BUDGET:** \$3,257.00

**OPERATION AND MAINTENANCE BUDGET WORKSHEET 2007/2008**  
 Fritchie Marsh Restoration Project / PO-06 / PPL 2

DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
O&M Inspection and Report	EACH	1	\$3,341.00	<b>\$3,341.00</b>
General Structure Maintenance	LUMP	0	\$0.00	<b>\$0.00</b>
Engineering and Design	LUMP	0	\$0.00	<b>\$0.00</b>
Operations Contract	LUMP	0	\$0.00	<b>\$0.00</b>
Construction Oversight	LUMP	0	\$0.00	<b>\$0.00</b>

**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
<b>TOTAL ADMINISTRATION COSTS:</b>				<b>\$0.00</b>

**MAINTENANCE / CONSTRUCTION**

**SURVEY**

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

**GEOTECHNICAL**

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

**CONSTRUCTION**

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

**TOTAL OPERATIONS AND MAINTENANCE BUDGET:** **\$3,341.00**

Annual Inspection Report  
 Fritchie Marsh Restoration  
 State Project No. PO-06

**OPERATION AND MAINTENANCE BUDGET WORKSHEET 2008/2009**

Fritchie Marsh Restoration Project / PO-06 / PPL 2

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	0	\$0.00	\$0.00
Engineering and Design	LUMP	0	\$0.00	\$0.00
Operations Contract	LUMP	0	\$0.00	\$0.00
Construction Oversight	LUMP	0	\$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
<b>TOTAL ADMINISTRATION COSTS:</b>				<b>\$0.00</b>

**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
<b>TOTAL SURVEY COSTS:</b>				<b>\$0.00</b>

**GEOTECHNICAL**

GEOTECH DESCRIPTION:				
Borings	EACH	0	\$0.00	\$0.00
OTHER				\$0.00
<b>TOTAL GEOTECHNICAL COSTS:</b>				<b>\$0.00</b>

**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	\$0.00
Navigation Aid	EACH	0	\$0.00	\$0.00	\$0.00
Signage	EACH	0	\$0.00	\$0.00	\$0.00
General Excavation / Fill	CU YD	0	\$0.00	\$0.00	\$0.00
Dredging	CU YD	0	\$0.00	\$0.00	\$0.00
Sheet Piles (Lin Ft or Sq Yds)		0	\$0.00	\$0.00	\$0.00
Timber Piles (each or lump sum)		0	\$0.00	\$0.00	\$0.00
Timber Members (each or lump sum)		0	\$0.00	\$0.00	\$0.00
Hardware	LUMP	0	\$0.00	\$0.00	\$0.00
Materials	LUMP	0	\$0.00	\$0.00	\$0.00
Mob / Demob	LUMP	0	\$0.00	\$0.00	\$0.00
Contingency	LUMP	0	\$0.00	\$0.00	\$0.00
General Structure Maintenance	LUMP	0	\$0.00	\$0.00	\$0.00
OTHER			\$0.00	\$0.00	\$0.00
OTHER			\$0.00	\$0.00	\$0.00
OTHER			\$0.00	\$0.00	\$0.00
<b>TOTAL CONSTRUCTION COSTS:</b>					<b>\$0.00</b>

**TOTAL OPERATIONS AND MAINTENANCE BUDGET:** \$3,428.00



## **Appendix D**

### **Field Inspection Form**

**MAINTENANCE INSPECTION REPORT CHECK SHEET**

Project No. / Name: PO-06 Fritchie Marsh Date of Inspection: 10/12/2005 Time: 10:15am

Structure No. n/a Inspector(s): Richard, Boddie, Carter, Sticker

Structure Description: n/a Water Level Inside: 1.5 ft Outside: \_\_\_\_\_

Type of Inspection: Post Storm Weather Conditions: Warm, partly cloudy

Item	Condition	Physical Damage	Corrosion	Photo #	Observations and Remarks
Steel Bulkhead / Caps	Good				
Handrails, Grating, Hardware, etc.	Good				
Signage, Supports	Good				
Rock RipRap channel lining	Good				Rock Rip Rap is performing well. Signs of erosion at ends of Rip Rap on both sides of culvert.
W-14 Weir structure	Good				
W-14 diversion channel dredge	Good				
Salt Bayou dredging	Poor			2,3	Hurricane Katrina moved marsh from either side of Salt Bayou into it. There are portions that are completely clogged with marsh and silt. Before a decision is reached on regrading bayou the project will be reassessed. Spoil bank breached in project area where culverts empty out.
72" Diameter culverts	Good				
HWY 90 road surface	Poor			1	The patch on top of the culverts was removed by the storm surge. However, DOTD was in the process of replacing it when we drove by to inspect the structure.