



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

2015 Annual Inspection Report

for

**DELTA MANAGEMENT AT
FORT ST. PHILIP (BS-11)**

State Project Number BS-11
Priority Project List PPL-10

June 2, 2015
Plaquemines Parish

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I. Introduction

Delta Management at Fort St. Philip (BS-11) 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 BS-11 Project was approved on the tenth (10th) Priority Project List.

The project area is located within two separate areas, both in Plaquemines Parish, La, across the river from Fort Jackson at River Mile 19.5 AHP. The western-most area (Area 1), north of Fort St. Philip in Bay Dennesse, consists of three (3) crevasses and 19,500 linear feet of terraces. The other area (Area 2), approximately 4.5 miles east of Area 1 near Little Coquille Bay, consists of three (3) crevasses. Both areas are fed by over-bank flow from the Lower Mississippi River.

II. Inspection Purpose and Procedures

The purpose of the annual inspection of BS-11 is to evaluate the constructed project features and identify any deficiencies in a detailed annual report. Any recommended corrective actions are listed as conclusions in the report. Should corrective actions be reported, CPRA will provide a detailed cost estimate for engineering, design, supervision, inspection, construction contingencies, and an assessment of the urgency of such repairs (O&M Plan May 13, 2007). The annual inspection report also contains a summary of maintenance projects and an estimated projected budget for operation, maintenance, and rehabilitation for the upcoming three (3) years. The three (3) year projected operation and maintenance budget is shown in Appendix C. The summary of any past maintenance projects since completion of the initial construction in 2006 will be outlined in Section IV.

This annual inspection was held on May 19th, 2015. Skies were partly cloudy; winds were out of the NE at approximately 6 mph. At 8:00 AM the Mississippi River Gage at the Venice, La. station recorded +4.02 feet NGVD29 (+2.42 feet NAVD88). Luke Prendergast and Melissa Hymel of CPRA were in attendance. Representatives of Plaquemines Parish government, including Albertine Kimble, Vincent Frelich, and James Madere accompanied the CPRA inspection team on the Area 1 portion of the site visit. Airboats were used to reach the crevasses and to gain access to the terrace field. Photographs of the inspection are included in Appendix B.

III. Project Description and History

This project was constructed in two areas on the east side of the Mississippi River near Fort St. Philip, across from Fort Jackson. Area 1 consists of 174 acres of emergent marsh and 678 acres of open water. Area 2 contains three triangular-shaped sections that consist of 126 acres of emergent marsh and 327 acres of open water. This project's objective is to enhance marsh growth by diverting fresh, sediment-laden water through dredged crevasses into shallow, open-water receiving areas. Earthen terraces were constructed in Area 1 to trap sediments and promote marsh-building processes, thereby offsetting land loss.

The project has a twenty-year (20 year) economic life which began in 2006.

The principal project features include:

- 98 terraces located in the receiving bay of Crevasse 1A
- Crevasse 1A: 2000 ft. x 75 ft. x -8.0 ft. NAVD 88
- Crevasse 1B: 400 ft. x 75 ft. x -6.0 ft. NAVD 88
- Crevasse 1C: 700 ft. x 75 ft. x -6.0 ft. NAVD 88
- Crevasse Alt.2A: 732 ft. x 75 ft. x -8.0 ft. NAVD 88
- Crevasse 2B: 500 ft. x 75 ft. x -6.0 ft. NAVD 88
- Crevasse 2C: 2000 ft. x 75 ft. x -6.0 ft. NAVD 88

A. Terraces – Project Area 1.

- 98 terraces, each constructed 200 ft. in length, with a crown width of 10 ft., tapering at a slope of 1 vertical to 6 horizontal to a base width of 52 ft.
- 50 ft. separation between ends of each terrace.
- Terraces were built to an initial elevation of +3.5 ft. NAVD 88, with a target settled elevation of +3.0 ft. NAVD 88.
- Aggregate length of constructed terraces is 19,500 linear ft.
- Minimum distance to shoreline was 50 ft. and minimum pipeline clearance was 50 ft. Within these constraints, the locations of individual terraces were left to the discretion of the construction manager. In order to maintain the minimum clearance from the existing pipelines, three of the terraces were scaled down a total of 100 ft.

Note: *Terraces are not subject to maintenance or rehabilitation* under the Cost Sharing Agreement or permits. The above information is provided as a record of post-construction conditions. CPRA will monitor terrace condition during the 20-year life time.

Vegetative plantings on the terraces were contracted out separately from the construction contract and *are not subject to maintenance or rehabilitation* by CPRA or USFWS.

B. Crevasse 1A – Project Area 1. 2000 ft. long x 75 ft. base width x -8.0 ft. NAVD 88. Marsh elevation was assumed to be +1.5 ft. NAVD 88. The crevasse, dredged from the center of the channel, passes through a reference point defined by the pre-construction shoreline (X = 3,875,963.63 ft., Y = 322,516.09 ft. NAD 83), and extends along a bearing of N47°W. Dredge material was placed between 25-175 feet on either side of the crevasse to a maximum elevation of +5.0 ft. NAVD 88.

C. Crevasse 1B – Project Area 1. 400 ft. long x 75 ft. base width x -6.0 ft. NAVD 88. Marsh elevation was assumed to be +1.5 ft. NAVD 88. The crevasse, dredged from the center of the channel, passes through a reference point defined by the pre-construction shoreline (X = 3,875,557.544 ft., Y =

320,705.6253 ft. NAD 83), and extends along a bearing of N22°W. Dredge material was placed between 25-175 feet on either side of the crevasse to a maximum elevation of +5.0 ft. NAVD 88.

- D. Crevasse 1C – Project Area 1.** 700 ft. long x 75 ft. base width x -6.0 ft. NAVD 88. Marsh elevation was assumed to be +1.5 ft. NAVD 88. The crevasse, dredged from the center of the channel, passes through a reference point defined by the pre-construction shoreline (X = 3,873,382.42 ft., Y = 320,246.83 ft. NAD 83), and extends along a bearing of S77°W. Dredge material was placed between 25-175 feet on either side of the crevasse to a maximum elevation of +5.0 ft. NAVD 88.
- D. Crevasse Alt. 2A – Project Area 2.** 732 ft. long x 75 ft. base width x -8.0 ft. NAVD 88. Marsh elevation was assumed to be +1.5 ft. NAVD 88. The crevasse, dredged from the center of the channel, passes through a reference point defined by the pre-construction shoreline (X = 3,891,269.92 ft., Y = 322,243.99 ft. NAD 83), and extends along a bearing of N50°E. Dredge material was placed between 25-175 feet on either side of the crevasse.
- F. Crevasse 2B – Project Area 2.** 500 ft. long x 75 ft. base width x -6.0 ft. NAVD 88. Marsh elevation was assumed to be +1.5 ft. NAVD 88. The crevasse, dredged from the center of the channel, passes through a reference point defined by the pre-construction shoreline (X = 3,888,519.61 ft., Y = 320,569.13 ft. NAD 83), and extends along a bearing of S69°E. Dredge material was placed within 175 ft. no closer than 25 ft. on either side of the crevasse to a maximum elevation of +5.0 ft. NAVD 88.
- G. Crevasse 2C – Project Area 2.** 2000 ft. long x 75 ft. base width x -6.0 ft. NAVD 88. Marsh elevation was assumed to be +1.5 ft. NAVD 88. The crevasse, dredged from the center of the channel, passes through a reference point defined by the pre-construction shoreline (X = 3,891,138.38 ft., Y = 321,807.44 ft. NAD 83), and extends along a bearing of S77°E. Dredge material was placed between 25-175 feet on either side of the crevasse to a maximum elevation of +5.0 ft. NAVD 88.

Project features covered by this inspection are identified as the Delta Management at Fort St. Philip Project (BS-11). The goal of each annual inspection is to ensure that the project is delivering the anticipated benefits. Project maintenance is not required beyond the 20-year economic life, except that it is not left as a hazard to navigation or a detriment to the environment. A site map in Appendix A shows the project boundary and labels all project features.

IV. Summary of Past Maintenance Projects

There has been no past maintenance on this project.

V. Inspection Results Dredged Crevasses (See Appendix B for Project Photos)

- A. Terraces: Due to a combination of a high river stage and post-construction settlement, most of the terraces were submerged to a shallow depth at the time of inspection. However, emergent vegetation was noted growing on all terraces within the project area. Dense stands of Roseau cane were observed in several locations. Many of the terrace borrow areas appear to be infilling, which indicates that sediment is being trapped as intended.
- B. Crevasse No. 1A: This crevasse is the longest of all, and funnels river water directly into the Bay Denesse terrace field. Currents through this crevasse were moving swiftly and appeared to be carrying a significant sediment load.
- C. Crevasse No. 1B: This crevasse, which is the shortest of all, feeds a small area of marsh. Strong flow was observed in this channel. Thick growths of marsh grass were observed on the channel banks and a large stand of Roseau cane is growing within the receiving area.
- D. Crevasse No. 1C: A large volume of sediment-laden water was flowing through the channel into the receiving area. Several small patches of emergent vegetation were observed just beyond the outfall, and healthy marsh grass rings the entire perimeter of this site.
- E. Crevasse No. Alt. 2A: Channel banks are well-vegetated, and flow is maintained within the channel. While little emergent vegetation was present within the open water of the receiving area, the current flowing into this site was very turbid. This indicates that sediment is being carried in through the crevasse as designed.
- F. Crevasse No. 2B: Strong flow was present within the channel. Roseau cane and dense, healthy marsh grass surround the entire receiving area. Very little emergent vegetation was observed within the shallow water of the outfall area; however, a significant SAV presence was noted.
- G. Crevasse No. 2C: Water was flowing well in the channel, and both banks exhibited healthy growths of marsh grass and Roseau cane. Most of the receiving area is shallow open water, but some patches of emergent vegetation were present.

VI. Conclusions and Recommendations

While maintenance dredging was considered for some crevasses (as mentioned in the 2014 BS-11 annual inspection report), the interagency team has since re-evaluated project conditions and determined that no intervention will be required at this time. Observations made during the 2015 inspection confirm that the project goal of diverting sediment-laden water into the receiving bays and adjacent marsh is being met. The project team recommendation is to continue inspection and assessment of site conditions on an annual basis.

Appendix A
Project Features Map



Appendix B
Photographs



Terrace Field (12/08/2011 Stock Photo included for reference)



Marsh grass growing on terrace in Bay Denesse



Roseau cane observed growing in terrace field



Crevasse 1A with terrace field beyond



Crevasse 1B



Receiving Area 1B



Crevasse 1C



Receiving Area 1C



Crevasse Alt 2A with receiving area beyond



Crevasse 2B with receiving area beyond



Crevasse 2C



Receiving Area 2C

Appendix C
Three-Year Operation & Maintenance Budget

2015 Annual Inspection Report
 DELTA MANAGEMENT AT FORT ST. PHILIP
 State Project No. BS-11

Delta Management at Fort St. Phillip (BS-11)

Federal Sponsor: USFWS

Construction Completed : November 20, 2006

Current Approved O&M Budget June 2011	Year - 0 FY07	Year - 1 FY08	Year -2 FY09	Year -3 FY10	Year -4 FY11	Year -5 FY12	Year -6 FY13	Year -7 FY14	Year -8 FY15	Year -9 FY16	Year -10 FY17	Year -11 FY18	Year -12 FY19	Year -13 FY20	Year -14 FY21	Year -15 FY22	Year -16 FY23	Year - 17 FY24	Year -18 FY25	Year -19 FY26	Project Estimate	CWPPRA Allocated
																					Project Life Budget	Money Currently Funded
State O&M	\$4,022	\$4,151	\$4,284	\$4,421	\$274,383	\$4,708	\$4,859	\$5,014	\$5,175	\$5,340	\$5,511	\$5,688	\$5,870	\$6,058	\$354,677	\$6,451	\$6,658	\$6,871	\$7,091	\$7,318	\$728,549	\$484,457
Corps Admin	\$731	\$754	\$778	\$803	\$829	\$855	\$883	\$911	\$940	\$970	\$1,001	\$1,033	\$1,066	\$1,100	\$1,136	\$1,172	\$1,210	\$1,248	\$1,288	\$1,329	\$20,039	\$12,656
Federal S&A																					\$0	
Total																					\$748,587	\$497,113

Projected O&M Expenditures																				Remaining Project Life	Current 3 year Request (FY16, 17, 18)		
Maintenance Inspection																						\$69,106	\$16,539
General Maintenance																						\$0	\$0
Structure Operation																						\$0	\$0
Federal S&A																						\$0	\$0
State S&A																						\$0	\$0
E&D																						\$0	\$0
Surveys																						\$0	\$0
Construction																						\$0	\$0
Construction Oversight																						\$0	\$0
Total											\$5,340	\$5,511	\$5,688	\$5,870	\$6,058	\$6,251	\$6,451	\$6,658	\$6,871	\$7,091	\$7,318	\$69,106	\$16,539

Total O&M Expenditures from COE Report (Inception to present)	\$46,759
State O&M Expenditures not submitted for in-kind credit	\$0
Federal Sponsor MIPRs (if applicable) (REQUESTED MONEY)	\$0
Total Estimated O&M Expenditures (as of June 2014)	\$46,759

Current O&M Budget less COE Admin	\$484,457
<i>(State O&M Currently Funded + Fed S&A Currently Funded)</i>	
Remaining Available O&M Budget	\$437,698
<i>(Current O&M - Total Est. O&M Expenditures)</i>	
Incremental Funding Request Amount FY16-FY18	(\$421,160)

Current Project Life Budget less COE Admin	\$728,549
<i>(State O&M Project Life Budget + Fed S&A Project Life Budget)</i>	
Total Projected Project Life Budget	\$115,865
<i>(Remaining Project Life + Total Estimated O&M Expenditures)</i>	
Project Life Budget Request Amount	(\$612,684)

Appendix D

FIELD INSPECTION CHECK SHEET			
Project No. / Name: <u>BS-11 Delta Mgmt. @ Ft. St. Philip</u>		Date of Inspection: <u>5/19/2015</u> Time: <u>10:00 AM</u>	
Structure No.: <u>N/A</u>		Inspector(s): <u>CPRA: Prendergast, Hymel</u>	
Structure Description: <u>Crevasses & Terrace Field</u>		River Stage: <u>4.02'</u> Time: <u>8:00 AM</u>	
Type of Inspection: <u>Annual</u>		Weather Conditions: <u>Warm, partly cloudy, wind NE @ 6 mph</u>	
Item	Condition	Physical Damage	Observations and Remarks
Terrace Field	Very Good	None	High river stage covered crown of most terraces; however emergent vegetation was present on all. Several terraces appear to have grown in width and are supporting dense stands of Roseau cane.
Crevasse 1A	Excellent	None	Flow was moving swiftly in this crevasse leading to the Bay Denesse terrace field. Water was turbid, indicating sediment load was being carried.
Crevasse 1B	Fair	None	Previous reports have indicated that the channel is shoaling, however strong flow was observed during this inspection. Emergent marsh grass was present just beyond the channel outfall, with a dense stand of Roseau cane in the receiving bay behind the marsh grass.
Crevasse 1C	Good	None	Flow was maintained in the channel. Both channel banks are well-vegetated, with isolated patches of elephant ears noted in the receiving area. Most of the receiving area appears to be shallow open water with marsh grass around the perimeter.
Crevasse 2A Alt.	Good	None	Channel banks exhibited thick stands of emergent vegation, and turbid flow was present in the channel. Receiving bay appears to be shallow open water.
Crevasse 2B	Good	None	Strong flow was observed in the channel. Receiving area showed significant growth of SAV, with isolated clumps of emergent grasses and elephant ears. Healthy marsh grass and Roseau can surrounds the entire receiving area.
Crevasse 2C	Good	None	Both channel banks were lined with healthy vegetation, and flow was present in the channel. Receiving area appears to be mostly shallow open water with some isolated patches of emergent marsh grass.