State of Louisiana

Coastal Protection and Restoration Authority of Louisiana (CPRA)

2015/2016 Annual Inspection Report

for

FOUR MILE CANAL TERRACING AND SEDIMENT TRAPPING PROJECT (TV-18)

State Project Number TV-18
Priority Project List 9

April 21, 2016
Vermilion Parish

Prepared by:

Stan Aucoin, Engineering Tech.
CPRA
Lafayette Field Office
635 Cajundome Blvd.
Lafayette, LA 70596

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Appendices

I. Introduction

The Four Mile Canal Terracing and Sediment Trapping (TV-18) project is located approximately 4 miles (6.44 km) south of Intracoastal City in Vermilion Parish, Louisiana, and includes Little White Lake and the portion of Little Vermilion Bay immediately west of Four-Mile Canal also known as the Vermilion River Cutoff (Appendix A). The total project area comprises approximately 2,269 acres.

The Four Mile Canal Terracing and Sediment Trapping 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 and approved on the ninth Priority Project List. The Four Mile Canal Project has a twenty year (20 year) project life, which began in May 2004.

II. Inspection Purpose and Procedures

The purpose of the annual inspection of the Four Mile Canal Terracing and Sediment Trapping Project (TV-18) 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, CPRA 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, 2005). The annual inspection report also contains a summary of maintenance projects which were completed since completion of constructed project features 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 Four Mile Canal Project are outlined in Section IV.

An inspection of the Four Mile Canal Terracing and Sediment Trapping Project (TV-18) was held on April 21, 2016 under mostly cloudy skies and mild temperatures. In attendance were Stan Aucoin from CPRA and John Foret, and Rick Hartman from NOAA Fisheries. The annual inspection began at the site of the terraces constructed in Little White Lake.

The field inspection included a visual inspection of the project site. Staff gauge readings were used, when available, to determine approximate elevations of water and earthen terraces. Photographs were taken at each project feature (see Appendix B) and Field Inspection notes were completed in the field to record measurements and deficiencies (see Appendix D).

III. Project Description and History

The Flood Control Act of 18 August 1941 enacted by the United States Congress provided for improvements in the Vermilion River. Vermilion River Cutoff, an 8 ft by 80 ft (2.44 m by 24.38 m) channel from the -8 foot contour in the Vermilion Bay to the Gulf Intracoastal Waterway (GIWW) was constructed for improving navigation from Lafayette, LA to the -8 foot (-2.44 m) contour in Vermilion Bay and to improve flood control from Port Barre, LA to the Vermilion Bay via Bayou Teche, Bayou Fusilier and Vermilion River. The materials excavated to build the canal were deposited in spoil banks along the canal. This prevented the river waters from nourishing the adjacent marsh (USACE 1993; HNTB 2002). The main cause of marsh loss in this area is believed to be shoreline erosion. From the 1978 Louisiana Department of Transportation and Development (LDOTD) inventory and assessment of shoreline erosion in coastal Louisiana, the Abbeville 15 minute Quadrangle, which depicts Vermilion Bay near Onion Bayou, documents an erosion rate of 1.6 ft/yr (0.5 m/yr) and just adjacent to that in the Cheniere Au Tigre & Abbeville 15 minute Quadrangle, which is Vermilion Bay (Mud Point to Lake Cleodis) has an erosion rate of 2.6 ft/yr [0.8 m/yr] (Adams et al. 1978). Shoreline change, specifically in the project area, calculated by USGS was 2.86 ft/yr (0.87 m/yr) and island area change was 0.64 acres/yr (0.26 ha/yr [2003]). A combination of wave and wake erosion continues to deteriorate this area, which is relatively unprotected and affected by storm events emerging from Vermilion Bay. This erosion prevents sub-aerial marsh development from sediments introduced to the area by the GIWW through the Vermilion River and Four-Mile Canal (LDNR 1999).

The construction of terraces in Little White Lake and Vermilion Bay will buffer existing marsh against shoreline erosion by reducing wave and wake energy. Marsh will immediately be created by planting *S. alterniflora* along the crowns and slopes of the constructed terraces. Additionally, new marsh will be created as freshwater and suspended sediments introduced from Four Mile Canal and the Vermilion River are dispersed through the project area via conveyance channels, and trapped in the shallow open water adjacent to the terraces. In doing so, terraces may indirectly reduce water-column turbidity within the project area. This, in conjunction with decreased wave and wake energy, will create habitat suitable for the colonization by submerged aquatic vegetation (SAV). Fisheries habitat may be enhanced by the marsh edge created by the terraces and the propagation of SAV. Conveyance channels may also promote the exchange of organisms and organic material within and through the project area (2005 DNR OM&M Report).

The principal project features include:

1. 26,300 linear feet of earthen terraces constructed in Little White Lake

2. 40,300 linear feet of earthen terraces constructed in Little Vermilion Bay

3. Smooth Cordgrass plantings on all terraces

IV. Summary of Past Operation and Maintenance Projects

General Maintenance: Below is a summary of completed maintenance projects and operation tasks performed since May 2004, the construction completion date of the Four Mile Canal Terracing and Sediment Trapping Project.

December 2011 Staff Gauges:
-Staff Gauge #1 was installed at the Maxie Peirce Boat Launch at coordinates N 29°47'4.2", W 92°09'11.4".

-Staff Gauge #2 was installed near Little White Lake at coordinates N 29°45'44.61", W 92°09'43.63".

Structure Operations:

There are no active operations associated with this project.

V. Inspection Results

Site 1—Earthen terraces

Water depths at the entrance to the terrace field in Little White Lake continue to shallow. The 3rd row of terraces has fewer terraces visible. The 2nd row continues to suffer effects of the waves. The 1st row remains in excellent condition. The eastern terraces adjacent to the Four Mile Canal continue to erode as well as the western most terraces. The boat wakes continue to damage these terraces. Interior terraces were inspected on this trip and found to be in excellent condition. Vegetation between the terraces in both fields is expanding. (Photos: Appendix B, Photo 1-4)

Site 2—Vegetation plantings

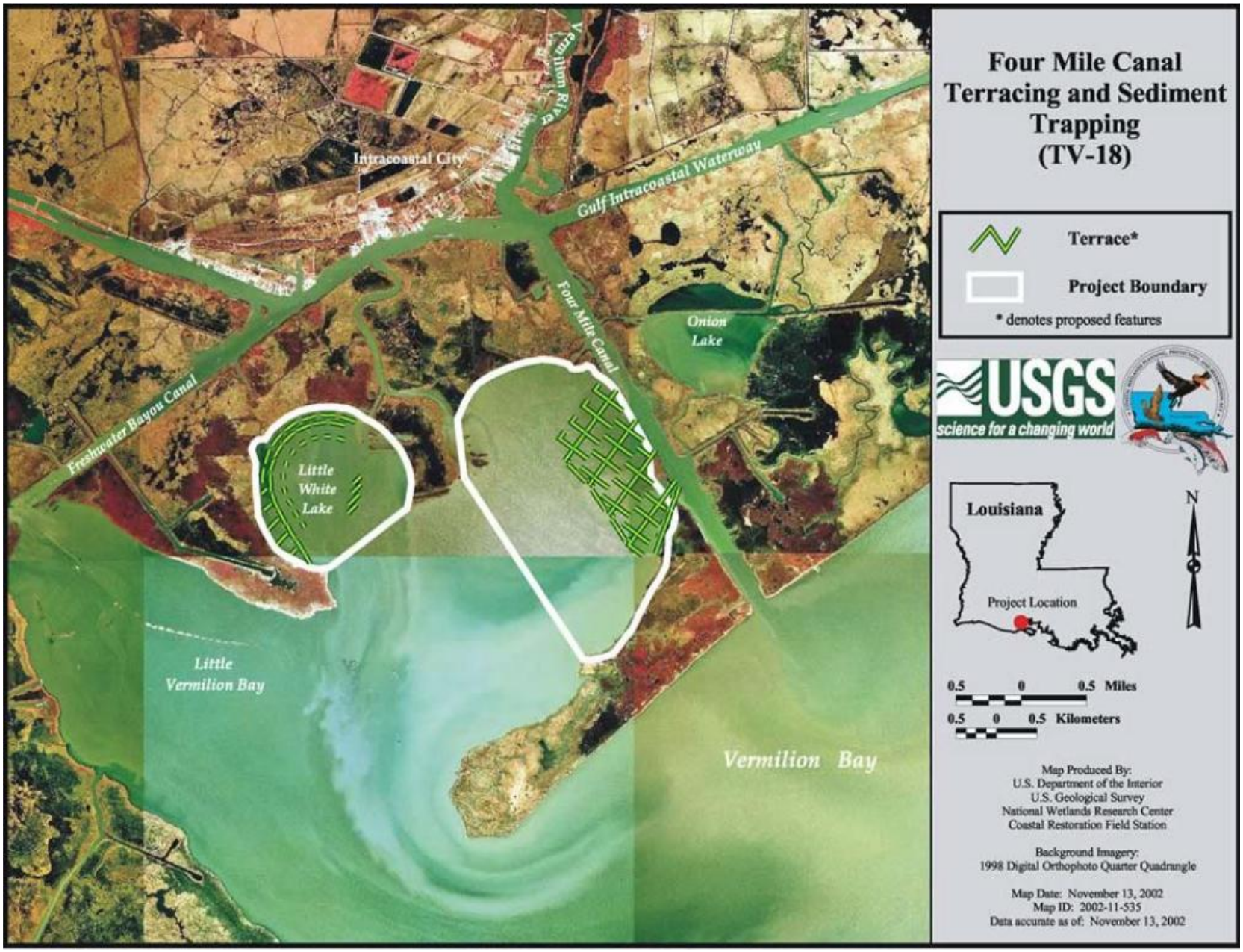
Vegetation on stable terraces in both areas continues to do extremely well. Emergent vegetation has become established and continues to expand. No maintenance with regard to the plantings is needed at this time.

VI. Conclusions and Recommendations

The Four Mile Canal Terracing and Sediment Trapping Project is still in fair condition and functioning as intended where terraces remain intact. Protection of the terraces along Four Mile Canal should still be considered.

Appendix A

Project Features Map


Four Mile Canal
Terracing and Sediment
Trapping
(TV-18)
Terrace*
Project Boundary
* denotes proposed features
USGS
science for a changing world
Louisiana
Project Location
N
0.5 0 0.5 Miles
0.5 0 0.5 Kilometers
Map Produced By:
U.S. Department of the Interior
U.S. Geological Survey
National Wetlands Research Center
Coastal Restoration Field Station
Background Imagery:
1998 Digital Orthophoto Quarter Quadrangle
Map Date: November 13, 2002
Map ID: 2002-11-535
Data accurate as of: November 13, 2002
Intracoastal City
Vermilion River
Gulf Intracoastal Waterway
Four Mile Canal
Onion Lake
Freshwater Bayou Canal
Little White Lake
Little Vermilion Bay
Vermilion Bay

Appendix B

Photographs

Photo No. 1—Little White Lake terraces (interior row)

Photo No. 2—Little White Lake terraces (2nd row)

Photo 3—Four Mile Canal terraces

Photo 4—emergent vegetation within Four Mile Canal terraces

Appendix C

Three Year Budget Projection

Annual Inspection Report
FOUR MILE CANAL TERRACING AND SEDIMENT TRAPPING PROJECT
State Project No. TV-18

FOUR MILE CANAL/ TV18 / PPL 9

Three-Year Operations & Maintenance Budgets 07/01/2016 - 06/30/2019

Project Manager	O & M Manager	Federal Sponsor	Prepared By
Pat Landry	*Stan Aucoin*	*NMFS*	*Stan Aucoin*

	2016/2017 (-13)	2017/2018 (-14)	2018/2019 (-15)
Maintenance Inspection	$ 7,057.00	$ 7,269.00	$ 7,487.00
Structure Operation			
State Administration		$ -	$ -
Federal Administration		$ -	$ -
Maintenance/Rehabilitation			

16/17 Description:

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

17/18 Description

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

18/19 Description:

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

	2016/2017 (-13)	2017/2018 (-14)	2018/2019 (-15)
Total O&M Budgets	**$ 7,057.00**	**$ 7,269.00**	**$ 7,487.00**

O &M Budget (3 yr Total)	**$ 21,813.00**
Unexpended O & M Budget	**$ 44,638.00**
Remaining O & M Budget (Projected)	**$ 22,825.00**

Appendix D

Field Inspection Form

Annual Inspection Report
FOUR MILE CANAL TERRACING AND SEDIMENT TRAPPING PROJECT
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MAINTENANCE INSPECTION REPORT CHECK SHEET

Project No. / Name: TV-18 Four Mile Canal

Date of Inspection: April 21, 2016 Time:

Structure No. N/A

Inspector(s): Stan Aucoin (CPRA)
John Foret and Rick Hartman (NMFS)

Structure Description: Terracing and Sediment Trapping

Water Level

Type of Inspection: Annual

Weater Conditions: partly cloudy and warm

Item	Condition	Pysical Damage	Corrosion	Photo #	Observations and Remarks
Steel Bulkhead / Caps	N/A				
Steel Grating	N/A				
Stop Logs	N/A				
Hardware	N/A				
Timber Piles	N/A				
Timber Wales	N/A				
Galv. Pile Caps	N/A				
Vegetation	Good			1-4	Water depth at the entrance to the terrace field in Little White Lake continues to shallow. Vegetation on interior terracesare in excellent condition. Emergent vegetation between terraces is expanding.
Signage /Supports	N/A				
Rip Rap (fill)	N/A				
Eathern Embankment Terraces	Good			1-4	Erosion of sacrificial terraces (2nd & 3rd rows) in Little White Lake continues. Erosion of terraces adjacent to Four Mile Canal continues to worsen and should be addressed with the construction of a rock dike. Interior terraces are in excellent condition.

What are the conditions of the existing levees?
Are there any noticable breaches?
Settlement of rock plugs and rock weirs?
Position of stoplogs at the time of the inspection?
Are there any signs of vandalism?