REGION 3

Coastal Wetlands Planning Protection & Restoration Act

24th Priority Project List

Region 3

Regional Planning Team Meeting

February 12, 2014
Houma, LA

CWPPRA

1. Welcome and Introductions

- RPT Region 3 Leader: Ron Boustany - NRCS

CWPPRA

Announcements

- Copies of the PPL 24 Selection Process & Schedule available at the sign-in table.
- PPL 24 RPT meetings to accept project nominees:
  - Region IV, Estuarine Fisheries & Habitat Center, Feb. 11, 2014, 11:00 am
  - **Region III, Terrebonne Parish Main Library, Feb. 12, 2014, 9:00 am**
  - Region I, USFWS SE LA Refuges Complex (Big Branch), Feb. 13, 2014, 8:00 am
  - Region II, USFWS SE LA Refuges Complex, Feb. 13, 2014, 11:30 am
- Parish representatives must identify themselves during the RPT meetings and **fill out a voting registration form**, including contact information for the primary and secondary voting representatives that will cast votes during the Coastwide Electronic Vote.

CWPPRA

Region 3 Parishes

- Eligible parishes for basins in Region 3 include:
- Terrebonne Basin
  - **St. Mary Parish**
  - **Terrebonne Parish**
  - **Assumption Parish**
  - **Lafourche Parish**
  - **Iberia Parish**
  - **St. Martin Parish**
- Atchafalaya Basin
  - **St. Mary Parish**
  - **Iberia Parish**
  - **Terrebonne Parish**
- Tech-Vermilion Basin
  - **St. Mary Parish**
  - **Iberia Parish**
  - **Vermilion Parish**

CWPPRA

RPT Meetings

- Project proposals should be consistent with the 2012 State Master Plan.
- A project can only be nominated in one basin (except for coastwide projects – more info on coastwide projects after the following "RPT Meetings" slide).
- Proposals that cross multiple basins, excluding coastwide projects, shall be nominated in one basin only, based on the majority area of project influence.
- Coastwide projects apply across basin boundaries; their benefits are not tied to one basin. They can be nominated from any basin and can be presented in all RPT meetings.

CWPPRA

RPT Meetings

- Presenters must complete a PPL 24 Nomination Sign-Up Sheet for <u>each</u> project nominee (demo projects too).
- Limit project proposals to 5 minutes and Powerpoint presentations to 5 slides.
- Public comments on project proposals will be accepted orally during the RPT meetings and in writing by February 19, 2014.
- Limit comments/questions during meeting to PPL 24 subject proposals and processes.

CWPPRA

Coastwide Projects

- Proposes a technique applicable across the coast (e.g. vegetative planting)
- Nominated at any RPT meeting
- All coastal parishes & agencies will vote on selection of coastwide nominee
- Only one coastwide nominee may be selected from the coastwide nominee pool during the Electronic Coastwide Vote on February 25, 2014.
- The Technical Committee may or may not select a coastwide project in April 2014.

CWPPRA

Demonstration Projects

- Demonstrates a technology which can be transferred to other areas in coastal Louisiana
- Engineering/Environmental Workgroups will validate that demos fit CWPPRA Standing Operating Procedures criteria
- The RPTs select up to 6 demos during the Feb. 25 Coastwide Electronic Vote.
- The Technical Committee selects up to 3 demos in April 2o14.
- Workgroups may recommend that no demos move forward to candidate stage
- Previous demo candidates must be ***re-nominated*** for PPL 24.

CWPPRA

Coastwide Electronic Vote

- **Feb. 25, 2014**: The Coastwide Electronic Vote to select 4 nominees per basin in Barataria and Terrebonne, 3 nominees per basin in Breton Sound and Pontchartrain, 2 nominees per basin in Mermentau, Calcasieu-Sabine, and Teche-Vermilion, and 1 nominee in the Atchafalaya Basin. 1 coastwide project and 6 demos may also be selected.
- Parishes of each basin are asked to ***identify*** **TODAY** ***who will vote*** during the Coastwide Electronic Vote.
- Each officially designated parish representative, each Federal agency, and the State (CPRA) will have one vote.
- No additional projects can be nominated after the RPTs.
- No significant changes to projects proposed at the first round of RPT meetings will be allowed (this includes combining projects).
- Public comments will be heard today and written comments must be submitted by 2/19/2014.

CWPPRA

Coastwide Electronic Voting Process

- USACE will send out voting sheets as both Excel spreadsheet and PDF documents 1 week prior to the Coastwide Electronic Vote. Voters will only receive voting sheets for the basins that they are eligible to vote for & the column that they need to mark their vote will be highlighted. Voting instructions will be provided with the voting sheets.
- Parish representatives must **fill out a voting registration form** at the RPT meetings with their email addresses to receive the voting sheets in February.
- Voters may either email their voting sheets to allison.murry@usace.army.mil OR fax their voting sheets to 504-862-2572.
  All votes must be received by 10:30 am on February 25, 2014.

CWPPRA

Nominee Project Evaluations

- Following the Coastwide Electronic Vote, an agency will be assigned to each project to prepare a Nominee Project factsheet (1 page + map).
- CWPPRA Engineering & Environmental Workgroups review draft features and assign preliminary cost and benefit ranges.
- Work groups will also review demo & coastwide projects and verify that they meet PPL 24 criteria.

CWPPRA

PPL 24 Candidate Project Selection

- CWPPRA Technical Committee meeting, April 15, 2014 at 9:30 am, New Orleans District Corps of Engineers.
- Technical Committee ranks nominees and votes to select 10 candidate projects and up to 3 demos.
- Written public comments should be submitted to Corps of Engineers prior to Tech Comm meeting by April 1, 2014.
- Public comments also accepted orally during meeting.

CWPPRA

PPL 24 Candidate Project Evaluation & Selection

- Candidates evaluated between May and October
- Workgroups conduct site visits and meetings to identify needs and establish project baselines and boundaries.
- Workgroups determine benefits, project features, and cost estimates
- Technical Committee votes to select up to 4 candidate projects and up to 1 demo to recommend for Phase 1.
  - Dec. 11, 2014, Baton Rouge, 9:30 am
- Task Force final decision to select PPL 24 in January 2015.

CWPPRA

PPL 24 Timeline

- **Coastwide Electronic Vote, Feb. 25, 2014**
  - **21 basin-project nominees, 1 coastwide nominee, and 6 demos selected**
- **Technical Committee Mtg, Apr. 15, 2014, New Orleans**
  - **Selection of 10 candidates and up to 3 demos**
- **Technical Committee Mtg, Dec. 11, 2014, New Orleans**
  - **Recommend up to 4 projects for Phase 1 funding**
- **Task Force Mtg, Jan. 2015, New Orleans**
  - **Final Selection of projects for Phase 1 funding**

CWPPRA

Written Comments

- Send written comments on projects & demos proposed today to the CWPPRA program manager
- **Deadline: February 19, 2014**

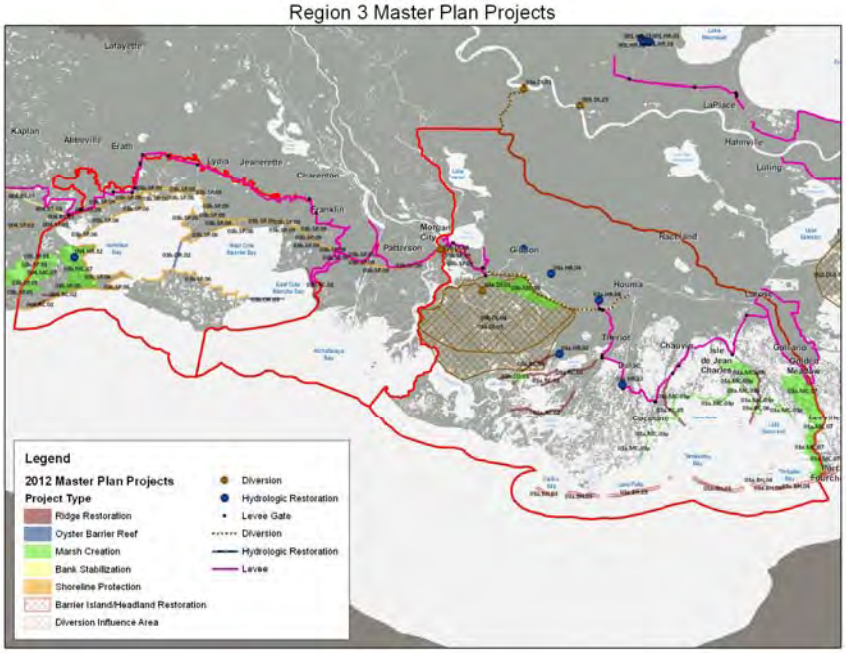
Brad Inman
CWPPRA Program Manager
U.S. Army Corps of Engineers
P.O. Box 60267
New Orleans, Louisiana 70160

Fax: 504-862-2572
(Attn: Brad Inman)

Email: Brad.L.Inman@usace.army.mil

CWPPRA

Region 3 Master Plan Projects



CWPPRA

Project Type	Project Name	Project Costs	Project No.
Barrier Island/Headland Restoration	Isles Dernieres Barrier Island Restoration: Restoration of the Isles Dernieres barrier islands to provide dune, beach, and back barrier marsh habitat and to provide storm surge and wave attenuation in the Terrebonne Basin.	$343M	03a.BH.03
Barrier Island/Headland Restoration	Timbalier Islands Barrier Island Restoration: Restoration of the Timbalier barrier islands to provide dune, beach, and back barrier marsh habitat and to provide storm surge and wave attenuation in the Terrebonne Basin.	$524M	03a.BH.04
Hydrologic Restoration	Central Terrebonne Hydrologic Restoration: Modification of structure on Liners Canal to improve freshwater flow to Lake Decade and installation of a structure in Grand Pass to restrict the opening to Lake Mechant.	$14M	03a.HR.02
Hydrologic Restoration	Chacahoula Basin Hydrologic Restoration: Installation of three water control structures (culverts) to increase hydraulic connectivity in the Chacahoula Basin on either side of Highway 182.	$7M	03a.HR.04
Hydrologic Restoration	HNC Lock Hydrologic Restoration: Construction of a lock on the Houma Navigation Canal and operation to reduce saltwater intrusion and distribute freshwater to the surrounding wetlands.	$180M	03a.HR.10
Marsh Creation	Terrebonne Bay Rim Marsh Creation Study: Planning, engineering and design to develop marsh creation along the northern rim of Terrebonne Bay (approximately 3,370 acres). PLANNING AND DESIGN ONLY.	$91M	03a.MC.03p
Marsh Creation	Belle Pass-Golden Meadow Marsh Creation (1st Period Increment): Creation of approximately 14,420 acres from Belle Pass to Golden Meadow to create new wetland habitat, restore degraded marsh, and reduce wave erosion.	$732M	03a.MC.07

CWPPRA

Project Type	Project Name	Project Costs	Project No.
Marsh Creation	North Terrebonne Bay Marsh Creation-Component B: Creation of approximately 4,940 acres of marsh south of Montegut between Bayou St. Jean Charles and Bayou Pointe au Chien to create new wetland habitat, restore degraded marsh, and reduce wave erosion.	$1555M	03a.MC.09b
Marsh Creation	Terrebonne GIWW Marsh Creation: Creation of approximately 1,190 acres of marsh along the GIWW in Terrebonne Basin to create new wetland habitat, restore degraded marsh, and reduce wave erosion.	$37M	03b.MC.05
Marsh Creation	Belle Pass-Golden Meadow Marsh Creation (2nd Period Increment): Creation of approximately 14,420 acres from Belle Pass to Golden Meadow to create new wetland habitat, restore degraded marsh, and reduce wave erosion.	$2,927M	03a.MC.07
Marsh Creation	North Lost Lake Marsh Creation: Creation of approximately 850 acres of marsh between Lake Pagie and Bayou Decade to create new wetland habitat, restore degraded marsh, and reduce wave erosion.	$125M	03b.CO.01
Oyster Barrier Reef	West Cote Blanche Bay Oyster Barrier Reef Restoration: Creation of approximately 28,000 feet of oyster barrier reef in West Cote Blanche Bay from Dead Cypress Point (near Cypremort Point) to near Bayou Michael (NW corner of Marsh Island) to provide oyster habitat, reduce wave erosion, and prevent further marsh degradation.	$20M	03b.OR.02
Oyster Barrier Reef	East Cote Blanche Bay Oyster Barrier Reef Restoration: Creation of approximately 30,000 feet of oyster barrier reef in East Cote Blanche Bay from Marone Point to Lake Point (NE corner of Marsh Island) to provide oyster habitat, reduce wave erosion, and prevent further marsh degradation.	$22M	03b.OR.03
Ridge Restoration	Bayou DeCade Ridge Restoration: Restoration of approximately 47,000 feet (110 acres) of historic ridge along Bayou DeCade from Lake Decade to Raccourci Bay to provide coastal upland habitat, restore natural hydrology, and provide wave and storm surge attenuation.	$38M	03a.RC.01

CWPPRA

Project Type	Project Name	Project Costs	Project No.
Ridge Restoration	Bayou DuLarge Ridge Restoration: Restoration of approximately 106,000 feet (240 acres) of historic ridge along Bayou DuLarge to provide coastal upland habitat, restore natural hydrology, and provide wave and storm surge attenuation.	$56M	03a.RC.02
Ridge Restoration	Small Bayou LaPointe Ridge Restoration: Restoration of approximately 55,000 feet (130 acres) of historic ridge along Small Bayou LaPointe to provide coastal upland habitat, restore natural hydrology, and provide wave and storm surge attenuation.	$29M	03a.RC.03
Ridge Restoration	Mauvais Bois Ridge Restoration: Restoration of approximately 60,000 feet (140 acres) of historic ridge at Mauvais Bois to provide coastal upland habitat, restore natural hydrology, and provide wave and storm surge attenuation.	$37M	03a.RC.04
Ridge Restoration	Bayou Terrebonne Ridge Restoration: Restoration of approximately 55,000 feet (130 acres) of historic ridge along the southern portions of Bayou Terrebonne to provide coastal upland habitat, restore natural hydrology, and provide wave and storm surge attenuation.	$38M	03a.RC.05
Ridge Restoration	Bayou Pointe au Chien Ridge Restoration: Restoration of approximately 57,000 feet (130 acres) of historic ridge along the southern portions of Bayou Pointe au Chien to provide coastal upland habitat, restore natural hydrology, and provide wave and storm surge attenuation.	$30M	03a.RC.06
Ridge Restoration	Bayou Sale Ridge Restoration: Restoration of approximately 36,000 feet (80 acres) of historic ridge along Bayou Sale to provide coastal upland habitat, restore natural hydrology, and provide wave and storm surge attenuation.	$22M	03b.RC.01
Sediment Diversion	Atchafalaya River Diversion (150,000 cfs): Sediment diversion off of the Atchafalaya River into or to benefit Penchant and southwest Terrebonne marshes, 150,000 cfs capacity (modeled at 60% of southward Atchafalaya flow exceeding 50,000 cfs).	$783M	03a.DI.05

CWPPRA

Project Type	Project Name	Project Costs	Project No.
Ridge Restoration	Bayou Long Ridge Restoration: Restoration of approximately 49,000 feet (110 acres) of historic ridge along Bayou Long/Bayou Fontanelle to provide coastal upland habitat, restore natural hydrology, and provide wave and storm surge attenuation.	$37M	002.RC.01
Ridge Restoration	Spanish Pass Ridge Restoration: Restoration of approximately 53,000 feet (120 acres) of historic ridge along the banks of Spanish Pass near Venice to provide coastal upland habitat, restore natural hydrology, and provide wave and storm surge attenuation.	$43M	002.RC.02
Ridge Restoration	Bayou LaLoutre Ridge Restoration: Restoration of approximately 117,000 feet (270 acres) of historic ridge along Bayou LaLoutre to provide coastal upland habitat, restore natural hydrology, and provide wave and storm surge attenuation.	$61M	001.RC.01
Sediment Diversion	Mid-Barataria Diversion (250,000 cfs- 1st Period Increment): Sediment diversion into mid-Barataria in the vicinity of Myrtle Grove to build and maintain land, maximum capacity 50,000 cfs (modeled at 50,000 cfs when the Mississippi River flow exceeds 600,000 cfs, at 8% of river flows between 200,000-600,000 cfs, and no operation below 200,000 cfs). NOTE: This project is the first implementation period component of a 250,000 cfs diversion to mid-Barataria. The influence area shown is for the total 250,000 cfs project upon completion in the second implementation period.	$275M	002.DI.03
Sediment Diversion	Mid Barataria Diversion (250,000 cfs- 2nd Period Increment): Sediment diversion into Mid-Barataria in the vicinity of Myrtle Grove to build and maintain land, 250,000 cfs capacity. NOTE: This project represents the incremental expansion of the 50,000 cfs diversion (002.DI.03) to mid-Barataria (constructed in the 1st Implementation Period) for a total capacity of 250,000 cfs (modeled at 250,000 cfs when Mississippi River flow exceeds 900,000 cfs, at 50,000 cfs for river flows between 600,000-900,000 cfs, at 8% of river flows between 200,000-600,000 cfs, and no operation when river flow is below 200,000 cfs).	$820M	002.DI.03a
Sediment Diversion	Lower Barataria Diversion (50,000 cfs): Sediment diversion into lower Barataria Bay in the vicinity of Empire, 50,000 cfs capacity (modeled at capacity when Mississippi River flow exceeds 600,000 cfs; modeled at 8% of river flow from 600,000 cfs down to 200,000 cfs; no operation below 200,000 cfs).	$203M	002.DI.15
Sediment Diversion	Lower Breton Diversion (50,000 cfs): Sediment diversion into lower Breton Sound in the vicinity of Black Bay to build and maintain land, 50,000 cfs capacity (modeled at 50,000 cfs when Mississippi River flow exceeds 600,000 cfs, at 8% of river flows between 200,000-600,000 cfs, and no operation when river flow is below 200,000 cfs).	$212M	001.DI.02

CWPPRA

Project Type	Project Name	Project Costs	Project No.
Sediment Diversion	Increase Atchafalaya Flow to Eastern Terrebonne: Dredging of the GIWW east of the Atchafalaya and installation of a bypass structure at the Bayou Boeuf Lock to increase freshwater and sediment flows from Atchafalaya River to Terrebonne marshes (modeled to maintain a minimum of 20,000 cfs east along GIWW towards HNC).	$292M	03b.DI.04
Shoreline Protection	Vermilion Bay and West Cote Blanche Bay Shoreline Protection (Critical Areas): Shoreline protection through rock breakwaters of approximately 83,000 feet of shoreline along Vermilion Bay and West Cote Blanche Bay to preserve shoreline integrity and reduce wetland degradation from wave erosion.	$86M	03b.SP.06a
Shoreline Protection	GIWW Shoreline Protection (Intracoastal City to Amelia): Shoreline protection of approximately 690,000 feet of GIWW shoreline between Intracoastal City and Amelia to preserve shoreline integrity and reduce wetland degradation from wave erosion.	$765M	03b.SP.09

ATTENDANCE RECORD

DATE	SPONSORING ORGANIZATION	LOCATION
February 12, 2014 9:00 A.M.	COASTAL WETLANDS PLANNING, PROTECTION AND RESTORATION ACT	Terrebonne Parish Main Library 151 Library Dr Houma, LA 70360

PURPOSE

MEETING OF THE REGIONAL PLANNING TEAM REGION III

PARTICIPANT REGISTER*

NAME	JOB TITLE AND ORGANIZATION	PHONE NUMBER
Ron Boustany	NRCS	337 291-3067
Ronny Paille	FWS	337-291-3117
Robert Dubois	FWS	337 291-3127
T-Roy	FWS	337-291-3120
Bryce Lapp	TRAPBAG	832-860-4336
Bre Dudley	TRAPBAG	225-202-8704
Barry Hebert	LDWF	225-765-0233
Amanda Pennie	Lafourche Parish Govt	985-493-6616
Karl Rectenwald	RECON	337-533-8844
Todd Hubbell	CPRA	985-447-0994
Elaine Lear	CPRA	985-447-0974
Robert Freeman	Iberia Rep.	337-364-0332
Marandel Parker	NRCS	337-364-1623 ext. 3
David Drouet	Vern. CPRC	337-658-2255
Darin M. Lee	CPRA	985-447-0991
Glen Curole	CPRA	985-447-0995
Mark Hester	LL Lafayette	504-237-1151
Joe Gonzales	Manson Construction Co	985-580-1900
Julia Wall	CPRA	
Aaron Hoff	EPA	214.665.7319
Madonna Bourgeois	NRCS	985-447-3871
Andrea Moore	DC - NRCS	985-447-3871

LMV FORM 583-R
JAN 88

* If you wish to be furnished a copy of the attendance record, please indicate so next to your name.

ATTENDANCE RECORD

DATE	SPONSORING ORGANIZATION	LOCATION
February 12, 2014 9:00 A.M.	COASTAL WETLANDS PLANNING, PROTECTION AND RESTORATION ACT	Terrebonne Parish Main Library 151 Library Dr Houma, LA 70360

PURPOSE

MEETING OF THE REGIONAL PLANNING TEAM REGION III

PARTICIPANT REGISTER*

NAME	JOB TITLE AND ORGANIZATION	PHONE NUMBER
Ryan Johnson	Soil Con. - NRCS	985-447-3871
Maria Mula-Michel	LDAF	985-447-3871
Cindy Steyer	NRCS Water Resources	225-665-4253 x111
Kim Clements	NMFS	225-389-0508 x204
Alton James Jr	USDA NRCS	
JOHN FORET	NMFS	337.291.2102
PATRICK WILLIAMS	NMFS	225-389-0508
Kevin Sagrera	CPRA	337-303-4585
Brenda Lee	CPRA	225-342-[illegible]
Wayne Martin	Enviro Solutions	985-693-4883
Harold Schoeffler	Sierra Club - Lafayette	337 412 7550
Charles Sasser	LSU	225-578-6375
Chad Courville	Miami Corporation	337.264.1695
Brad Crawford	EPA	214 665 7255
Cassidy Lejeune	LDWF	337-373-0032
Tim Allen	Apache	985-879-3528
Barbara Aldridge	EPA	2146652712
Nic Matheny	TPCG	985-873-6889

LMV FORM 583-R
JAN 88

* If you wish to be furnished a copy of the attendance record, please indicate so next to your name.

Region 3 – TECHE-VERMILION BASIN

Project Number	Project Proposals
R3-TV-01	North Vermilion Bay Shoreline Breach Repair
R3-TV-02	Southwest Pass Shoreline
R3- TV-03	South Humble Marsh Creation & Nourishment
R3-TV-04	South & West Vermilion Bay Shoreline Protection – Critical Reaches

Region 3 – TERREBONNE BASIN

R3-TE-01	East Island Beach & Backbarrier Marsh Restoration
R3-TE-02	Timbalier Island Restoration
R3-TE-03	Leeville Canal Backfill & Marsh Creation
R3-TE-04	Bayou Terrebonne Ridge Restoration & Marsh Creation
R3-TE-05	West Fouchon Marsh Creation & Marsh Nourishment
R3-TE-06	Grand Bayou Freshwater Enhancement
R3-TE-07	Lake Felicity Oyster Reef Shoreline Protection & Marsh Creation
R3-TE-08	Lake Barre Marsh Creation
R3-TE-09	East Catfish Lake Marsh Creation & Terracing
R3-TE-10	Small Bayou LaPointe Marsh & Ridge Restoration
R3-TE-11	Carencro Bayou Marsh Creation & Freshwater Introduction
R3-TE-12	Bayou De Cade Bankline & Marsh Restoration
R3-TE-13	Bayou Jean Lacroix to Bayou Pointe au Chien Marsh Creation & Terracing
R3-TE-14	West Bayou Lafourche Marsh Creation & Terracing
R3-TE-15	Raccoon Island West Restoration
R3-TE-16	Bayou Dularge Ridge Restoration & Marsh Creation
R3-TE-17	Marsh Creation at Houma Navigation Canal
R3-TE-18	Leeville West Marsh Creation & Nourishment

Region 3 – TECHE-VERMILION BASIN

R3-TV-01

North Vermilion Bay Shoreline Breach Repair

R3-TV-01

PPL24 PROJECT NOMINEE FACT SHEET
2/11/2013 - RPT

Project Name
North Vermilion Bay Shoreline Breach Repair

Master Plan Strategy
Central Coast, Vermilion Bay and West Cote Blanche Bay Shoreline Protection (Critical Areas) - 03b.SP.06a.

Project Location
Region 3, Teche/Vermilion Basin, Vermilion Parish, Vermilion Bay shoreline between 4-Mile Canal and Boston Canal

Problem
There are currently five locations along the north Vermilion Bay shoreline between the 4-mile Canal and Boston Canal that have or threaten to breach into the bay. These locations are primarily man-made canals where shoreline erosion has caused breaching and now allows for direct exchange between the bay waters and the interior marshes. These direct connections allow for amplified tidal fluctuations resulting in salinity intrusion and tidal scour as water is rapidly exchanged.

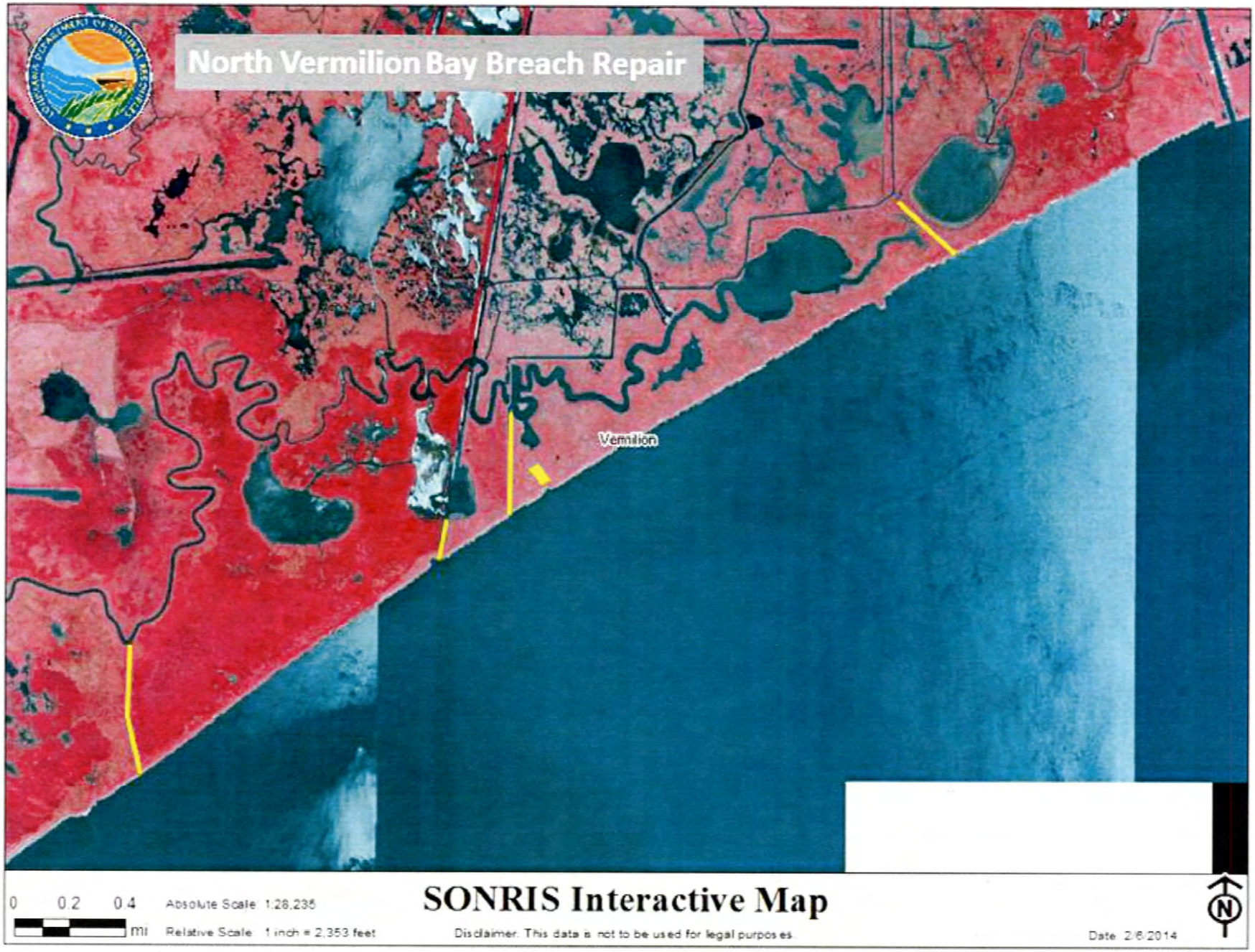
Goals
The goal of the project will be to stop direct tidal exchange of the interior marsh with Vermilion Bay and stop marsh loss.

Proposed Solutions:
The project proposes to backfill the locations where breaches have occurred or threaten to occur with dredge material pumped from the adjacent Vermilion Bay.

Project Benefits: The project will directly create approximately 11 acres of marsh and preserve approximately another 25 acres of interior marsh by preventing salinity intrusion and tidal erosion.

Project Construction Costs: $1.5 million

Preparer(s) of Fact Sheet:
Sherrill Sagrera, Vermilion Soil and Water Conservation District, (337) 893-0636; sherrillsagrera@bellsouth.net


North Vermilion Bay Breach Repair
Vermilion
0 0.2 0.4
mi
Absolute Scale 1:28,235
Relative Scale 1 inch = 2,353 feet
SONRIS Interactive Map
Disclaimer: This data is not to be used for legal purposes
Date: 2/6/2014
N

R3-TV-02

Southwest Pass Shoreline

R3-TV-02

PPL24 PROJECT NOMINEE FACT SHEET
January 29, 2014

Project Name
Southwest Point Shoreline Protection

State Master Plan
03b.SP.08 and 03b.SP.05 Southwest Pass Shoreline Protection (West Side) and Gulf Shoreline Protection (Freshwater Bayou to Southwest Pass).

Project Location
The project is located in the Region 3, Teche/Vermilion Basin, between the Marsh Island Wildlife Refuge in Iberia Parish and Paul J. Rainey Wildlife Sanctuary in Vermilion Parish.

Problem
Erosion of peninsulas in the project area is reducing the effectiveness of the landmass as a mainland barrier to gulf storm surge, wave energy and tidal flux reduction. Average losses of 8.4 ft/yr at Southwest Point were measured from 1998 to 2010. Southwest point is only about 240 ft wide at its thinnest location.

Proposed Project Features
Proposed is the installation of armored shoreline protection along the south shoreline of Vermilion Bay at Southwest Point for approximately 8,350 linear feet. Shoreline protection would consist of oyster crete concrete rings that proved successful in the PPL22 Bioengineering Demonstration Project at Rockefeller Refuge.

Goals
The project goal is to protect and stabilize critical points within Southwest Pass. The current width and subsequent flow pattern will be maintained by installing armor protection around the perimeter of Southwest Point. The armored protection will prevent tidal currents from circumventing the restriction at the pass and breaching into adjacent marsh areas.

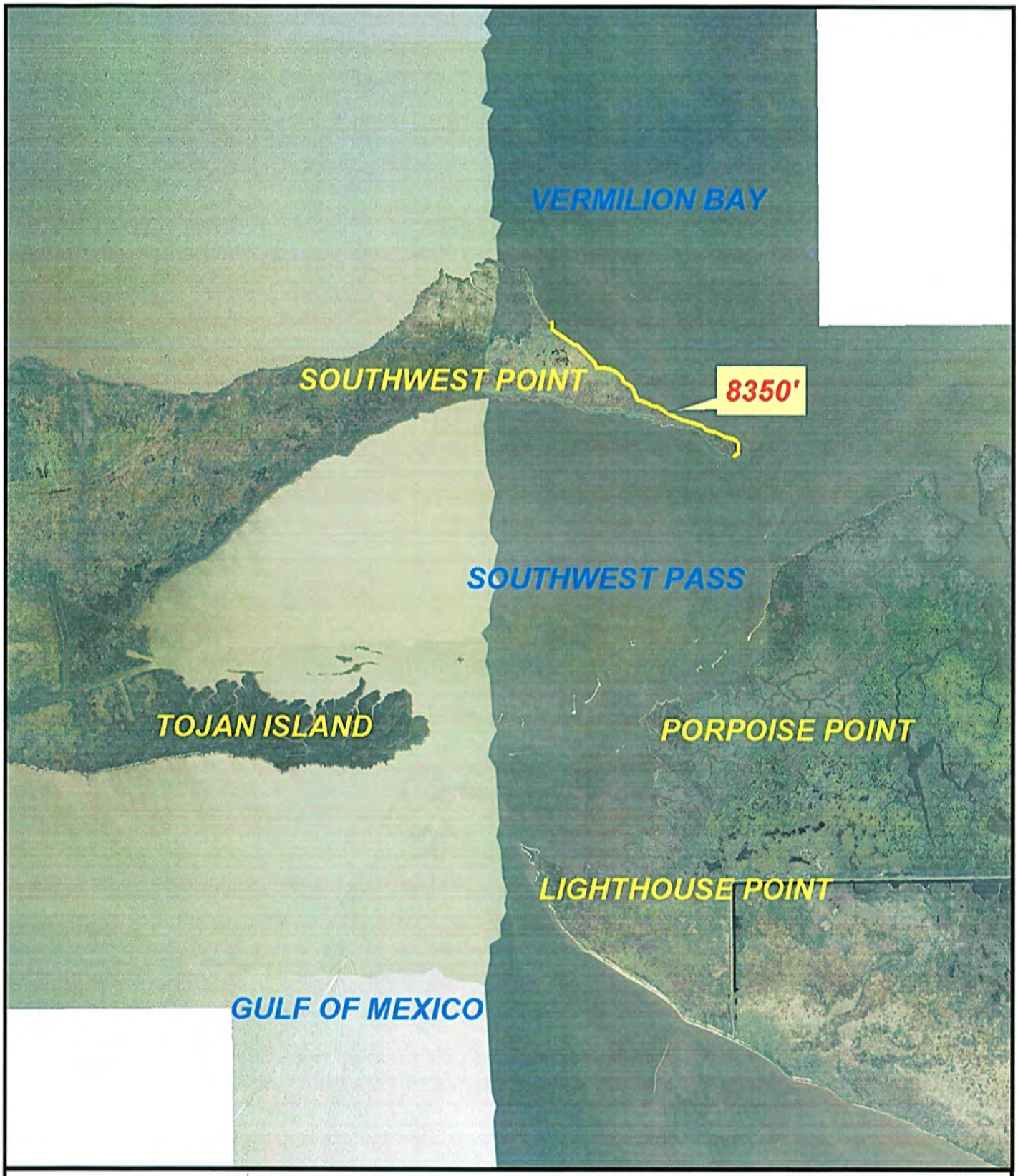
Preliminary Project Benefits
The project would significantly reduce marsh losses through shoreline protection. The shoreline protection features would maintain approximately 32 acres of the Gulf shoreline along a peninsula that will in turn help maintain a landmass that plays a significant role in regulating the hydrology of the Vermilion Bay system.

Identification of Potential Issues
There is a potential for oyster lease issues and disturbance of existing oyster seed grounds. The project would not interfere with navigation.

Preliminary Construction Costs
The estimated construction cost with 25% contingency is $5 - $10 million.

Preparer of Fact Sheet
Sherrill Sagrera, VPCAC, 337-893-0368
Loland Broussard, NRCS, 337-291-3060, Loland.Broussard@la.usda.gov
Troy Mallach, NRCS, 337-291-3064, Troy.Mallach@la.usda.gov

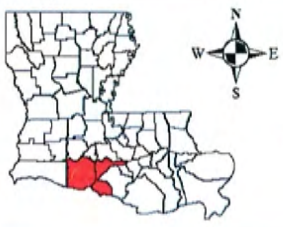
R3-TV-02



Map Produced By:
United States Department of Agriculture
Natural Resources Conservation Service
Alexandria, LA

Data Source: NAIP 2013

Map Date: JANUARY 22, 2014



PPL-24
SOUTHWEST POINT
SHORELINE PROTECTION

Legend
SHORELINE_PROTECTION

0 4,000 8,000
Feet

R3-TV-03

South Humble Marsh Creation & Nourishment

R3-TV-03

PPL24 PROJECT NOMINEE FACT SHEET
February 12, 2014

South Humble Marsh Creation and Nourishment

Louisiana's 2012 Coastal Master Plan
Marsh Creation – 004.MC.07

Project Location
Region 3, Teche - Vermilion Basin, Vermilion Parish

Problem
Project area wetlands are undergoing losses at rates of -0.3 %/year based on USGS analyses conducted through 2009. Marshes in this area are subject to losses from shoreline erosion, subsidence/sediment deficit, and interior ponding. Shoreline erosion along the Freshwater Bayou Canal has resulted in direct wetland loss as the canal has widened from an authorized width of less than 200 feet to 800 feet. In addition to these direct losses, significant interior marsh loss has resulted from saltwater intrusion and hydrologic changes associated increasing tidal influence, and herbivory. As hydrology within this area has been modified, habitats have shifted to more of a floatant marsh type, resulting in increased susceptibility to tidal energy and storm damages. Habitat shifts and hydrologic stress reduce marsh productivity, a critical component of vertical accretion in intermediate wetlands. The ensuing erosion creates water turbidity within the interior ponds, this coupled with increased pond depth, decreases the coverage of submerged aquatic vegetation. Additionally, recent hurricanes have resulted in large and wide spread losses. It is unlikely that many of these areas will recover unaided. As evidenced from aerial photography the project area is part of a larger feature of weakened interior marsh from the project area south and west to include those marshes south of Pecan Island. If left to deteriorate, the project area would eventually open Vermilion Bay into Freshwater Bayou. This would then threaten the integrity of Freshwater Bayou, exposing a larger interior marsh area to conversion to open water. In the specific project area, erosion of the eastern bank line of Freshwater Bayou has resulted in formation of three breaches, allowing boat wakes and hydrologic action to adversely affect the interior marsh east of the canal. The wakes from passing vessels and tidal action are causing the export of organic material from the project area.

Proposed Solution
The proposed project's primary feature is to create and/or nourish approximately 500 acres of marsh (365 acres created, 135 acres nourished). Sediment will be hydraulically pumped from the Gulf of Mexico into the shallow water marsh creation area. Minimal containment dikes will be constructed around the marsh creation area to keep material on site during pumping. Once pumping has been completed, the containment dikes will be degraded to the current platform elevation and gaps will be excavated. Approximately 12,000 LF of tidal channels, along with two 50-100 acre ponds are planned for the newly created marsh. Additionally, 50 acres of vegetative plantings will occur within the newly created areas.

Goals
The project goal is to create and/or nourish approximately 500 ac of marsh (365 ac created, 135 ac nourished) of emergent brackish marsh using sediment from the Gulf.

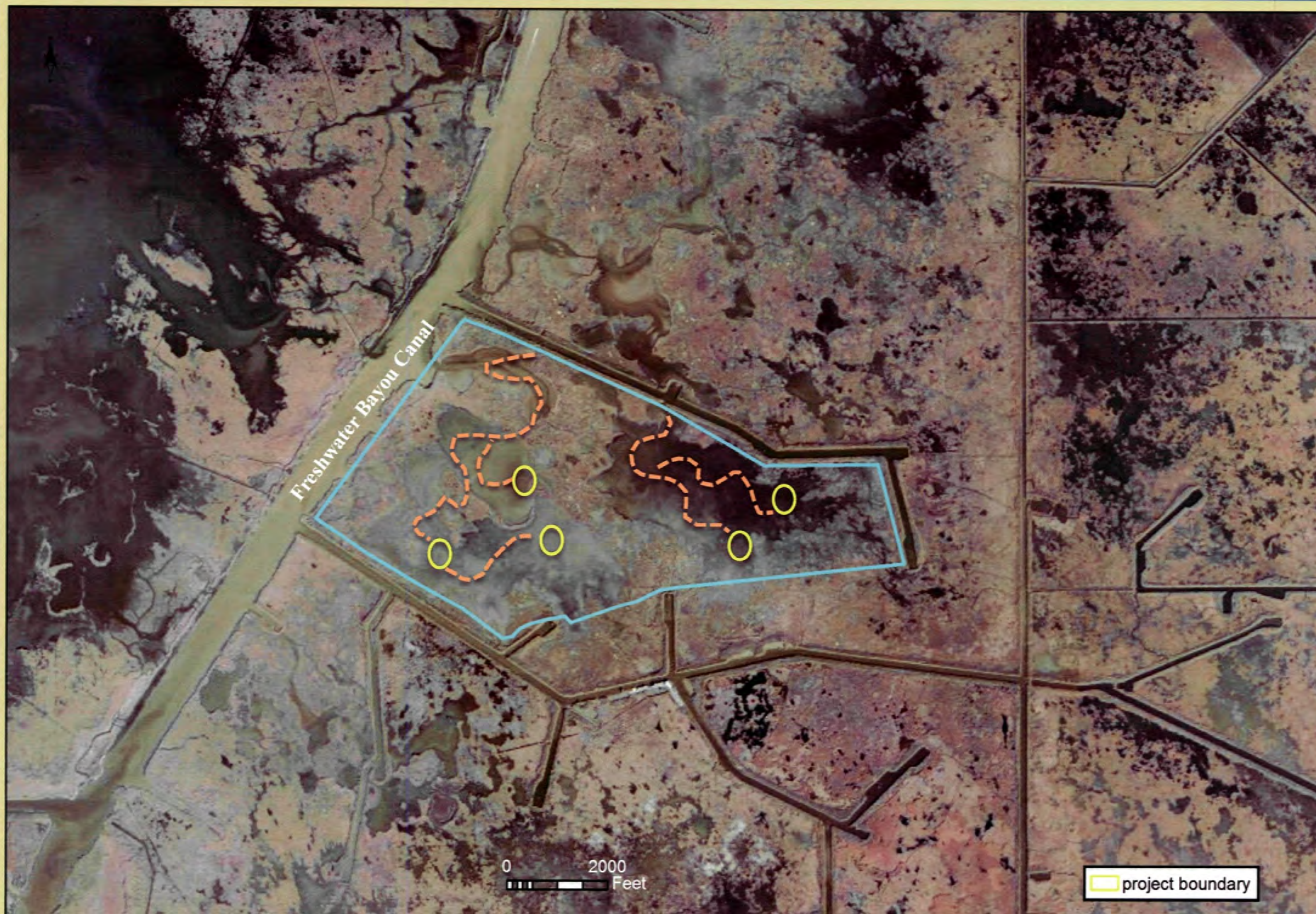
Preliminary Project Benefits:
Based on a 50% rate reduction to the projected -0.30%/yr land loss rate, marsh creation and nourishment in the project area would yield 485 net acres, 20 years after initial construction.

Preliminary Construction Costs:
The estimated construction cost including 25% contingency is $22,095,565.

Preparer(s) of Fact Sheet:
Darryl Clark; US Fish and Wildlife Service; 337.291.3111; Darryl_Clark@fws.gov
John D. Foret, Ph.D.; NOAA Fisheries Service; 337.291.2107 John.Foret@noaa.gov
Billy Broussard; Vermilion Corporation; 337.893.0268; vermilioncorporation@connections-lct.com

Vermilion Corporation/ NOAA Fisheries
U.S. Fish & Wildlife Service

South Humble Marsh Creation & Nourishment

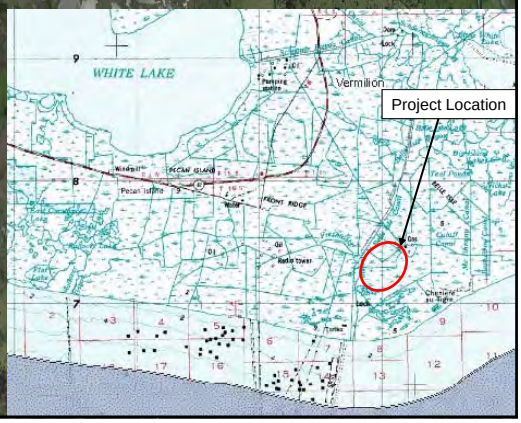


R3-TV-03

South Humble Marsh Creation and Nourishment (Vermilion Parish)

Region III – Teche - Vermilion Basin

February 12, 2013



NOAA Fisheries Service
U.S. Fish & Wildlife Service

NOAA Fisheries Service
U.S. Fish & Wildlife Service

Problem

- Land loss rates in this area result of FW Bayou breaching into hydrologically modified marsh
- Increasing tidal influence along with saltwater intrusion weakened plant communities, ultimately leading to vegetation die-off and marsh breakup, export to FW Bayou, and allowing for Hurricanes Rita and Ike to scour the area
- Marshes that once provided a buffer between FW Bayou and Belle Isle are now shallow open water areas
- Part of a larger feature of weakened interior marsh between Vermilion Bay and areas south & east of Pecan Island

NOAA Fisheries Service
U.S. Fish & Wildlife Service

Project Features

- Total Acres = 500 acres (365 created, 135 nourished)
- Reestablishes critical land bridge between Belle Isle and FW Bayou
- Borrow from outside immediate project area from GOM
- Create ~ 12,000 LF of tidal channels within newly created area
- Consistent with State Master Plan
- 485 net acres @ TY20
- Construction Cost with 25% contingency = $22.1 million

R3-TV-04

South & West Vermilion Bay Shoreline Protection – Critical Reaches

R3-TV-04

PPL24 PROJECT NOMINEE FACT SHEET
February 2014

Project Name:
South & West Vermilion Bay Shoreline Protection - Critical Reaches Project

Project Location:
Region III, Teche-Vermilion Basin, Marsh Island Refuge, Iberia Parish and State Wildlife Management Area, Vermilion Parish (LDWF ownership)

Coast 2050 Strategy:
Regional: [10.] Maintain shoreline integrity and stabilize critical areas of the Teche-Vermilion Bay systems including the gulf shorelines
Mapping Units: [64.] Marsh Island – Protect bay/lake/gulf shorelines
[82 & 84.] Vermilion Bay & Vermilion Marsh - Protect bay/lake shorelines

Master Plan:
Project No. 03b.SP.06a – Vermilion Bay and West Cote Blanche Bay Shoreline Protection (Critical Areas): Shoreline protection through rock breakwaters of approximately 83,000 feet of shoreline along Vermilion Bay & West Cote Blanche Bay to preserve shoreline integrity and reduce wetland degradation from wave erosion ($86 million).

Problem: Wave action generated across the long fetch lengths of Vermilion Bay is causing severe erosion on bordering Marsh Island Refuge and State WMA shorelines. In addition to direct loss from shoreline retreat, of particular concern is the loss of certain shoreline reaches that would also allow coalescence of the Bay and large interior lakes. This capture of interconnected shallow lake-marsh ecosystems will significantly alter hydrology, increasing tidal exchange impacts and accelerate interior degradation and loss of fragile wetland areas important to the large fish and wildlife populations that they support.

Goal: The goal of this project is to protect critical shoreline areas and associated adjacent interior marshes and lakes along the southern and western Vermilion Bay shorelines by halting erosion in selected reaches.

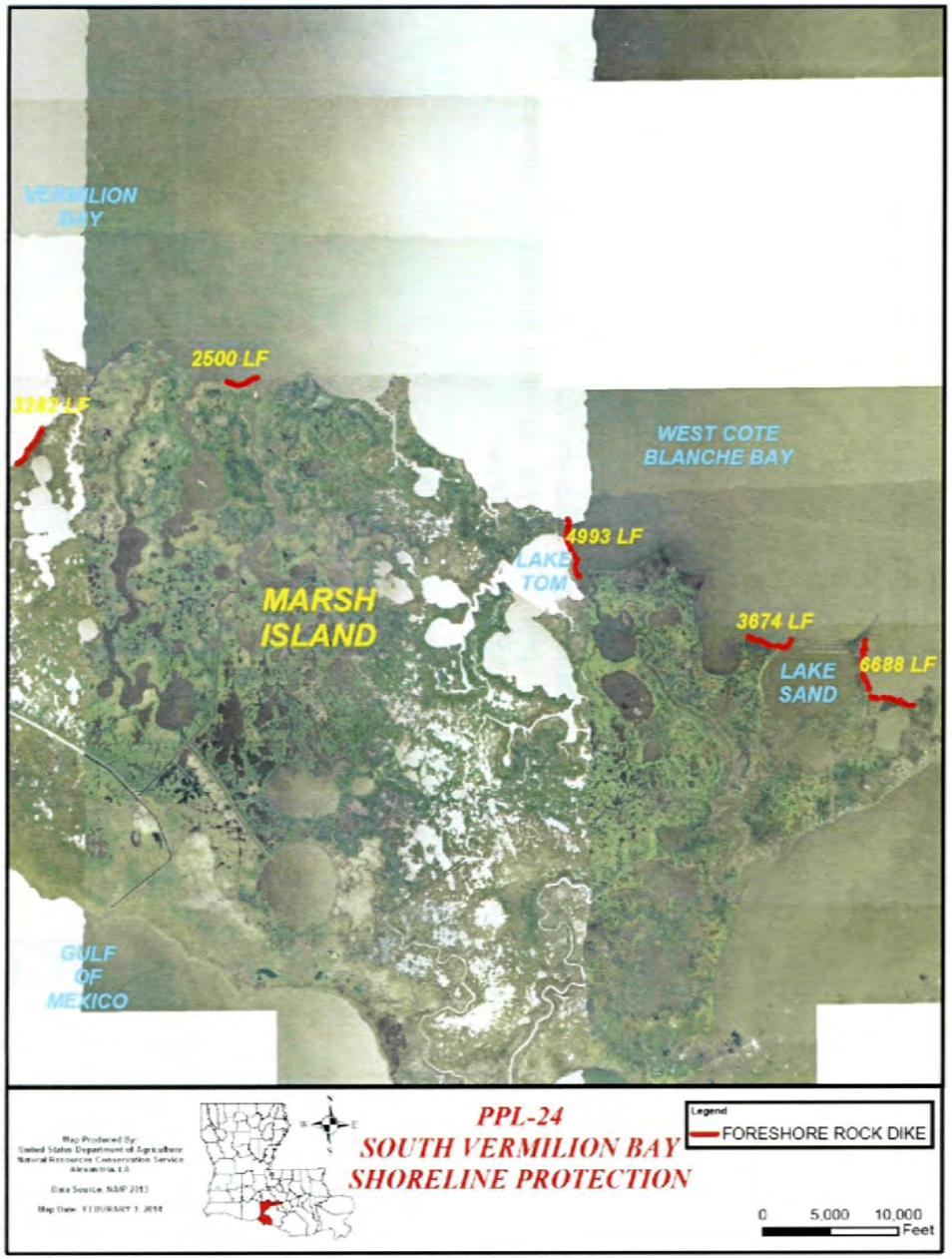
Proposed Solutions: The project feature consists of an approximate total of 26,400 LF of rock breakwater structure at selected reaches of shoreline from Redfish Point to Bayou Fearman of the State WMA, and from Bayou Michael to the eastern tip of Marsh Island Refuge.

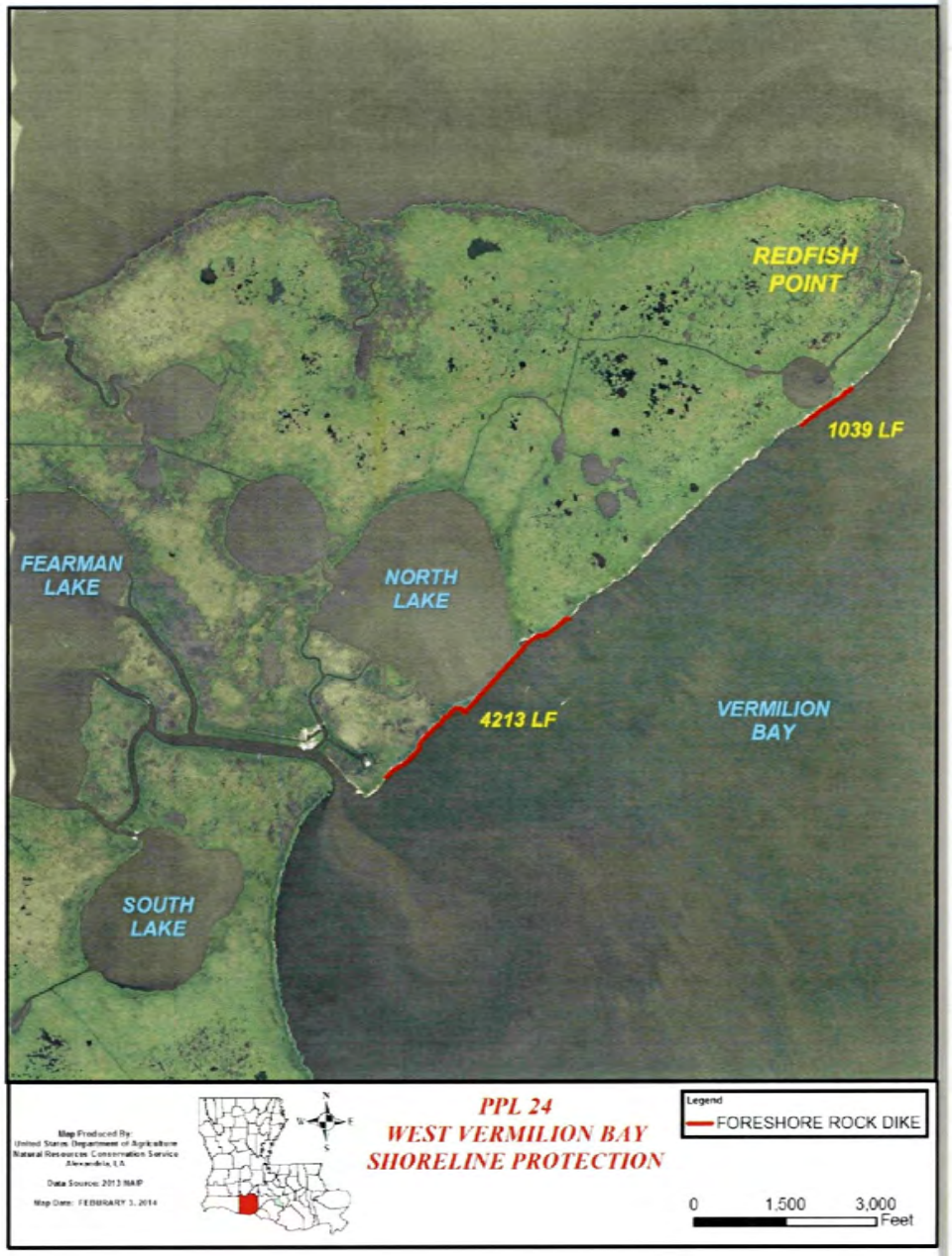
Preliminary Project Benefits: Maintaining the shoreline integrity and stabilizing selected areas of the Vermilion Bay system will prevent future shoreline losses in critical reaches, and protect important interior wetlands and shallow lakes utilized by numerous species of fish, waterfowl and other wildlife, and endangered species. With 5 miles of shoreline protection, approximately 136 ac of shoreline marsh would be protected over 20 years; and the project structures would prevent the bay from capturing even greater acreage of existing shallow water lakes and surrounding marsh – the acreage of the just the 4 largest lakes adjacent to the bay shoreline is 2,430 acres. The proposed project will have significant synergistic effects with other existing restoration and protection projects on the refuges.

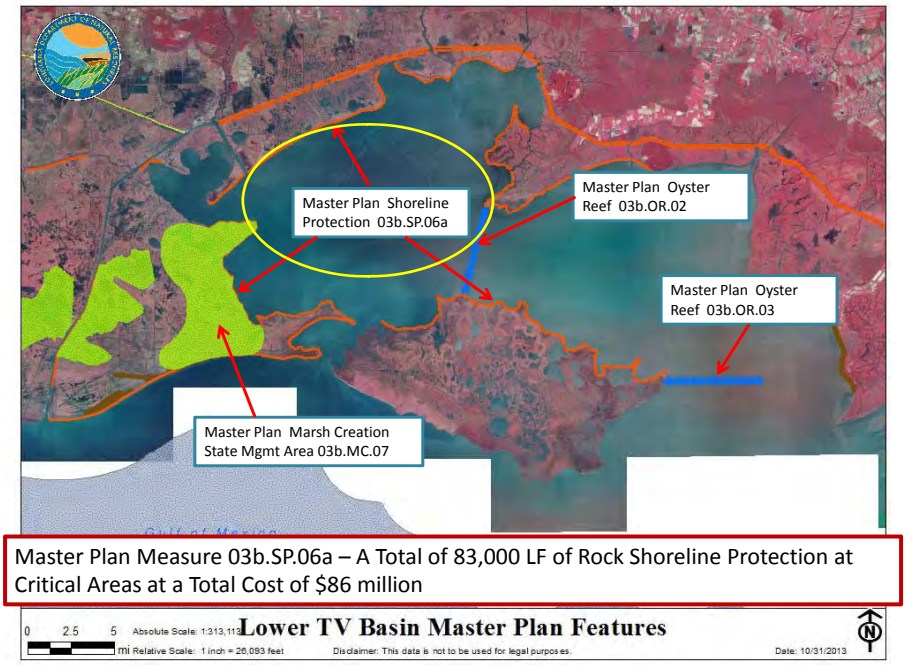
Identification of Potential Issues:
There are no potential issues anticipated with this proposed project.

Preliminary Construction Costs:
The anticipated construction cost, with contingency, is in the $25-30 million range.

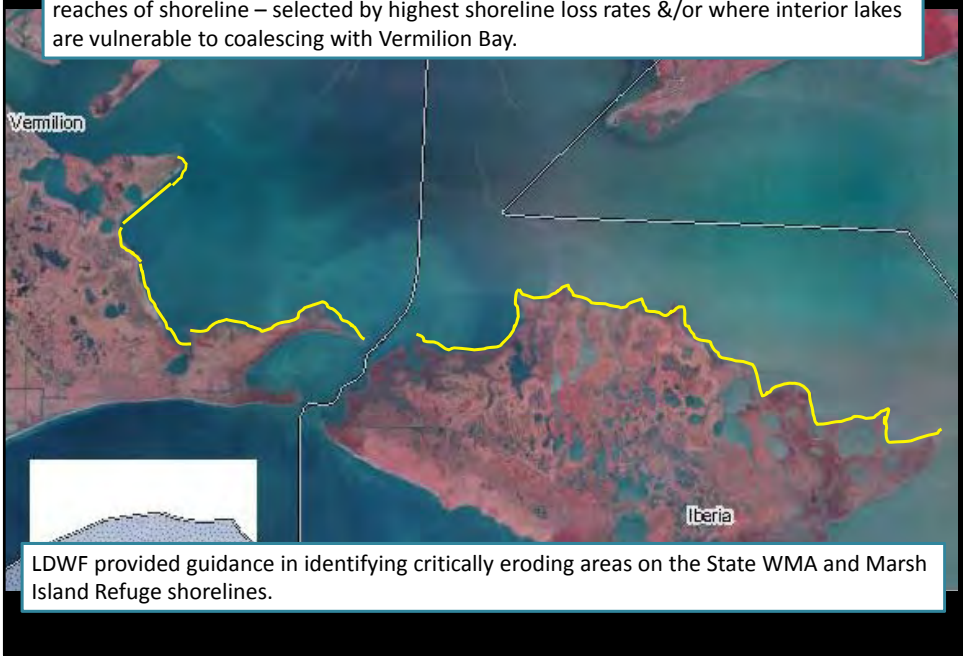
Preparer(s) of Fact Sheet:
Cindy S. Steyer (225) 665-4253, cindy.steyer@la.usda.gov
Cassidy Lejeune, (337) 373-0032, clejeune@wlf.la.gov


VERMILION BAY
2500 LF
3282 LF
WEST COTE BLANCHE BAY
4993 LF
LAKE TOM
MARSH ISLAND
3674 LF
LAKE SAND
6688 LF
GULF OF MEXICO
Map Produced By:
United States Department of Agriculture
Natural Resources Conservation Service
Alexandria, LA
Data Source: NAIP 2013
Map Date: FEBRUARY 3, 2014
PPL-24
SOUTH VERMILION BAY
SHORELINE PROTECTION
Legend
FORESHORE ROCK DIKE
0 5,000 10,000
Feet


REDFISH POINT
1039 LF
FEARMAN LAKE
NORTH LAKE
4213 LF
VERMILION BAY
SOUTH LAKE
Map Produced By:
United States Department of Agriculture
Natural Resources Conservation Service
Alexandria, LA
Data Source: 2013 NAIP
Map Date: FEBRUARY 3, 2014
PPL 24
WEST VERMILION BAY
SHORELINE PROTECTION
Legend
FORESHORE ROCK DIKE
0 1,500 3,000
Feet

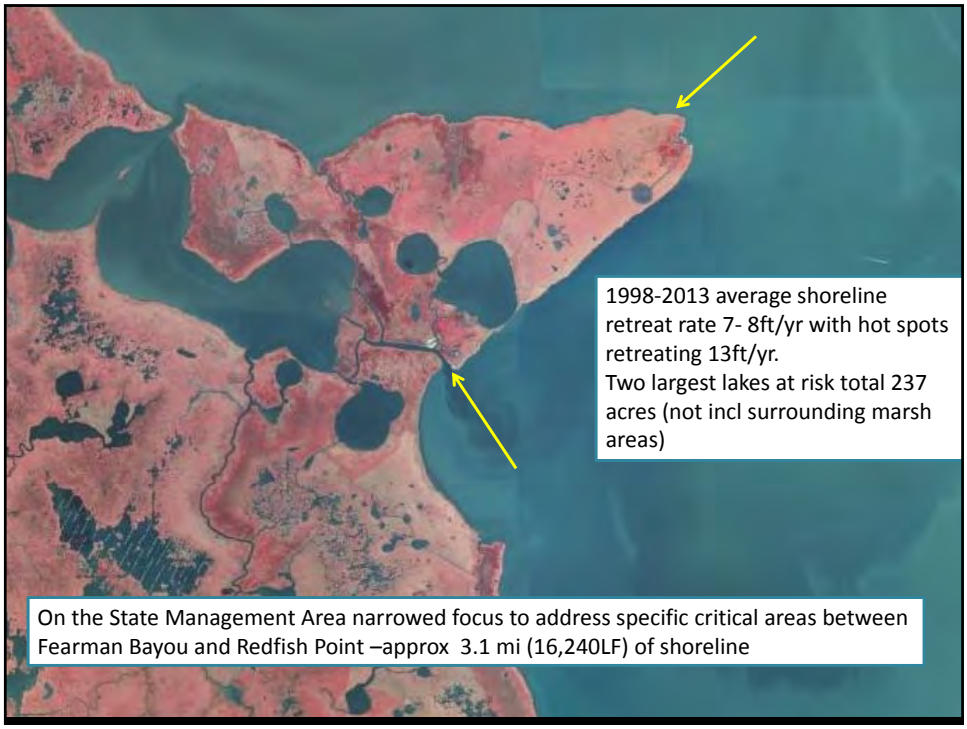


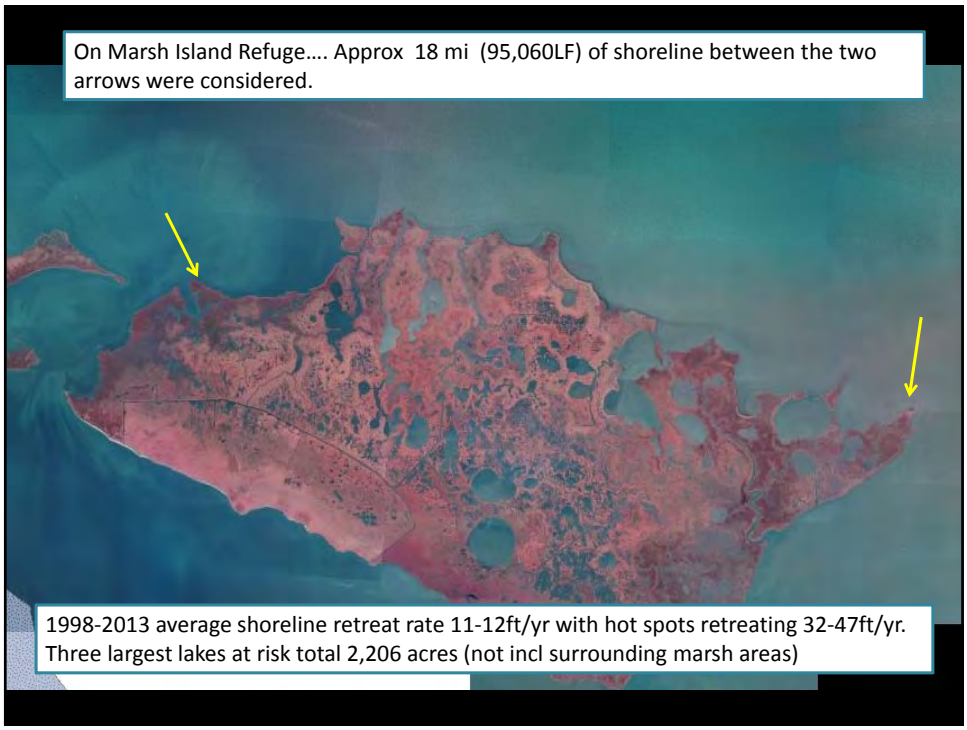
Master Plan Measure 03b.SP.06a – A Total of 83,000 LF of Rock Shoreline Protection at Critical Areas at a Total Cost of $86 million

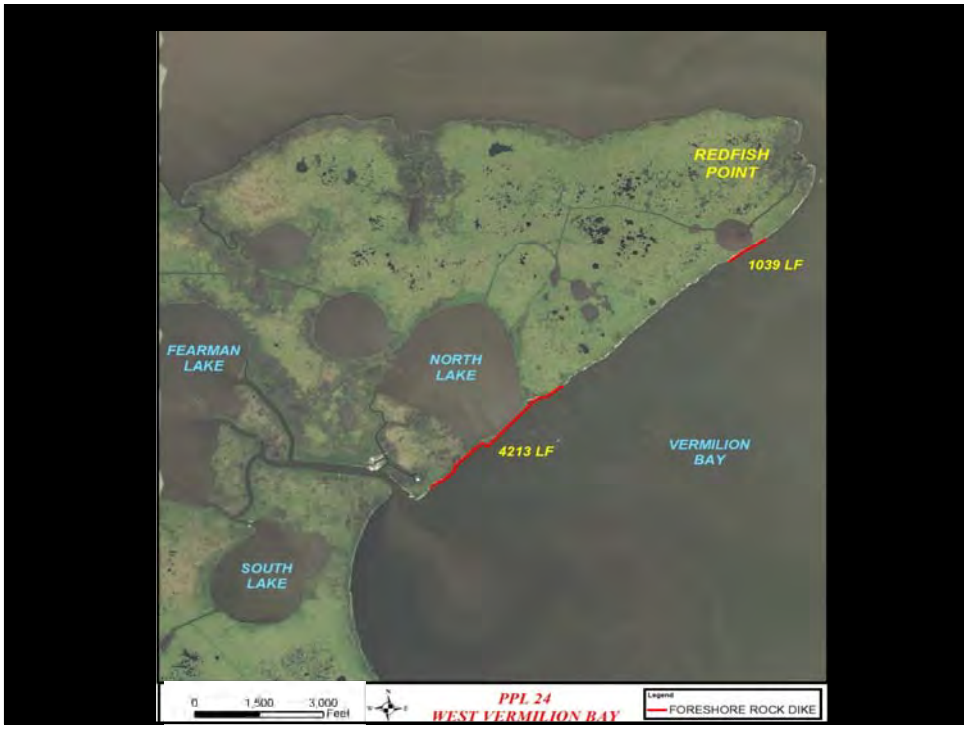


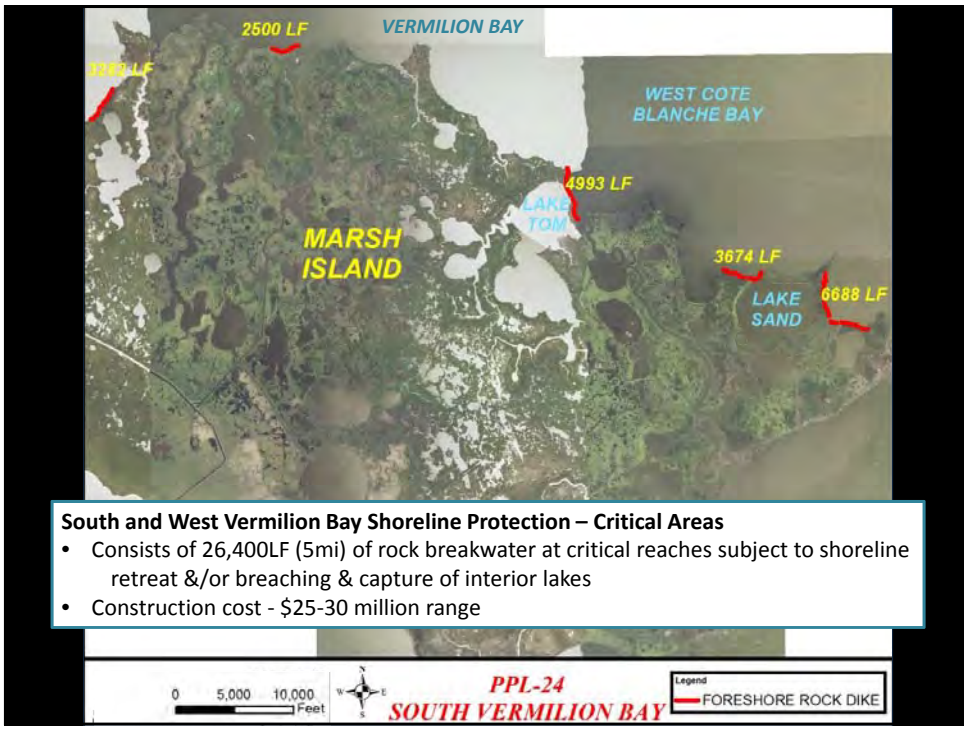
Project builds a portion of the MP 03b.SP.06a measure - address the most critical reaches of shoreline – selected by highest shoreline loss rates &/or where interior lakes are vulnerable to coalescing with Vermilion Bay.

LDWF provided guidance in identifying critically eroding areas on the State WMA and Marsh Island Refuge shorelines.


1998-2013 average shoreline retreat rate 7- 8ft/yr with hot spots retreating 13ft/yr.
Two largest lakes at risk total 237 acres (not incl surrounding marsh areas)
On the State Management Area narrowed focus to address specific critical areas between Fearman Bayou and Redfish Point –approx 3.1 mi (16,240LF) of shoreline


On Marsh Island Refuge…. Approx 18 mi (95,060LF) of shoreline between the two arrows were considered.
1998-2013 average shoreline retreat rate 11-12ft/yr with hot spots retreating 32-47ft/yr.
Three largest lakes at risk total 2,206 acres (not incl surrounding marsh areas)





South and West Vermilion Bay Shoreline Protection – Critical Areas

- Consists of 26,400LF (5mi) of rock breakwater at critical reaches subject to shoreline retreat &/or breaching & capture of interior lakes
- Construction cost - $25-30 million range

Region 3 – ATCHAFALAYA BASIN

No projects were nominated in this basin.

Region 3 – TERREBONNE BASIN

R3-TE-01

East Island Beach & Backbarrier Marsh Restoration

PPL24 Project Nominee Fact Sheet
February 12, 2014

Project Name
East Island Beach and Backbarrier Marsh Restoration

Coast 2050 Strategy
Coastwide Common Strategies-Dedicated dredging to create, restore, or protect wetlands; Vegetative planting; Offshore and riverine sand and sediment resources.
Region 2 Ecosystem Strategies- Restore and sustain marshes- #8. Dedicated delivery of sediment for marsh building by any feasible means; Restore barrier islands and Gulf shorelines-#12. Restore and maintain the Isles Dernieres and Timbalier barrier island chains, Marsh Island, Point au Fer, and Cheniere au Tigre (including back barrier beaches).
Mapping Unit Strategies- #33. Protect bay/gulf shorelines

Master Plan
Project No. 03a.BH.03

Project Location
Region 3, Terrebonne Basin, Terrebonne Parish, part of the Isles Dernieres, approximately 38 miles south of Houma, LA

Problem
East/Trinity Island is part of the Isles Dernieres barrier island chain, one of the most rapidly deteriorating barrier shorelines in the U.S. These barrier islands play an important role in protecting the Terrebonne barrier-built estuary and its surrounding wetlands from the destructive forces of high wave energy, storm surges and salt water intrusion (van Heerden and DeRouen 1997). Additionally, the number and size of the tidal inlets influence the tidal prism. Finally, the habitats provided by barrier islands are highly valuable, particularly for colonial nesting birds and shorebirds, and for nekton. Unfortunately, East Island and the rest of the Isles Dernieres barrier island system, is rapidly deteriorating, averaging -36.4 ft/yr of gulfside erosion, and -8.9 ft/yr of bayside erosion, during the period 1887-1988 (McBride and Byrnes 1997). In addition, Louisiana deltaic barriers lack stable subaerial backbarrier platforms upon which barrier island can migrate landward (McBride and Byrnes 1997).

Proposed Project Features
Sediment will be placed on the landward side of the island, creating additional backbarrier marsh, and along the Gulf shoreline, creating additional intertidal beach and dune. Sand fences will be installed to retain sand and create and maintain supratidal and dune habitat. Appropriate plant species will be planted to help stabilize sediment and to create marsh, dune, and swale habitats. Besides the habitat values, the former will provide a stable backbarrier platform on which the island can migrate landward, while the latter will provide additional sand for redistribution by currents and waves along the entire island's Gulf beach.

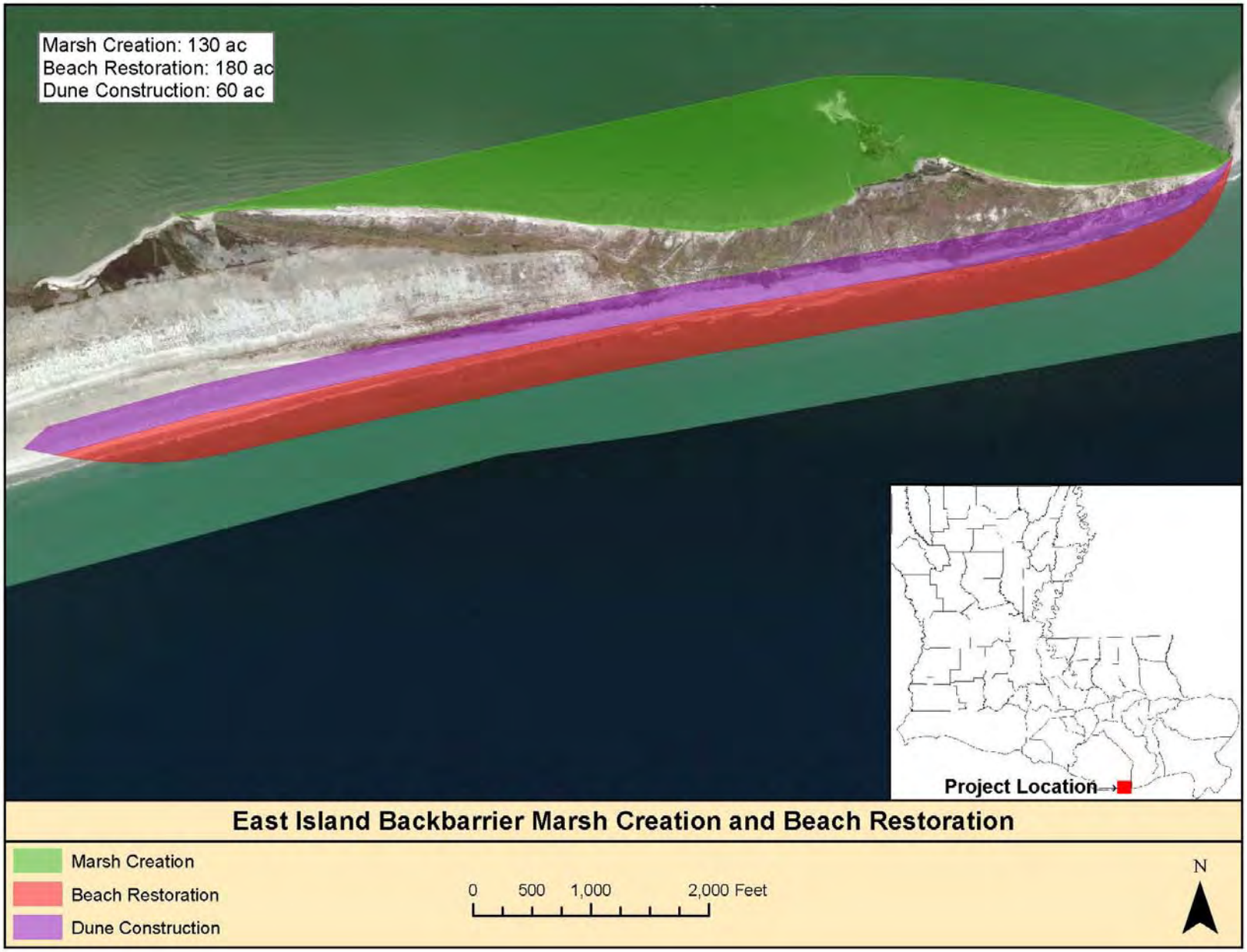
Goals
- provide a backbarrier platform to enable successful island migration
- extend the life of this barrier island by increasing its width
- create 130 ac of vegetated intertidal marsh using new dredged material and vegetative plantings
- create 60 ac of vegetated dune using sand, sand fencing, and vegetative plantings
- create 80 ac of intertidal gulf beach
- protect the Terrebonne estuary and vegetated wetlands against direct exposure to the Gulf of Mexico
- add sand to this sand-starved barrier island system

Preliminary Project Benefits
The project would benefit about 2148 acres of barrier island habitat. Approximately 250 acres of barrier island habitat would be created initially with an estimated 175 protected over the 20-year project life.

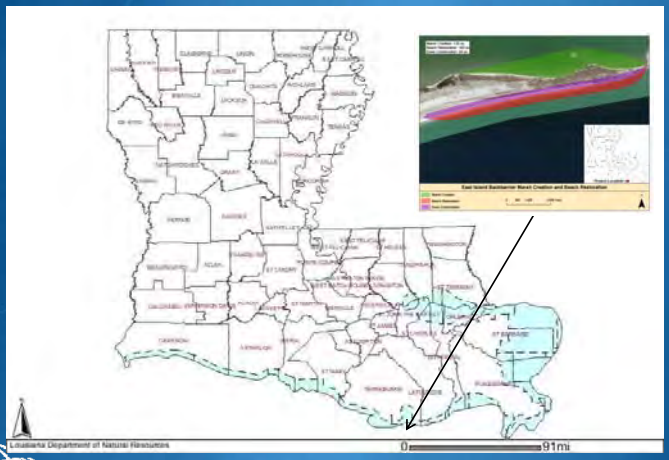
Identification of Potential Issues
None

Preliminary Construction Costs
The estimated construction cost including 25% contingency is $23.5 Million.

Preparers of Fact Sheet:
Brad Crawford, EPA Region 6, (214) 665-7255, crawford.brad@epa.gov
Adrian Chavarria, EPA Region 6, (214) 665-3103, chavarria.adrian@epa.gov
Aaron Hoff, ORISE intern, EPA Region 6, (214) 665-7319Hoff.aaron@epa.gov

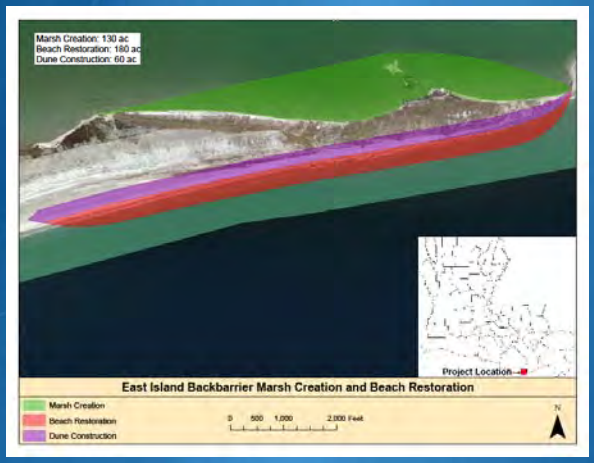

Marsh Creation: 130 ac
Beach Restoration: 180 ac
Dune Construction: 60 ac
Project Location
East Island Backbarrier Marsh Creation and Beach Restoration
Marsh Creation
Beach Restoration
Dune Construction
0 500 1,000 2,000 Feet
N

East Island Dune and Marsh Restoration



Coastal Wetlands Planning, Protection and Restoration Act

East Island Dune and Marsh Restoration



Coastal Wetlands Planning, Protection and Restoration Act

East Island Dune and Marsh Restoration

Goals:
- Create 130 ac backbarrier marsh
- Create 60 ac dune
- Create 180 ac of beach
- Total of 250 ac BI habitat

Preliminary Project Benefits:
- 175 net ac over 20 years

Identification of Potential Issues:
- None

Preliminary Construction Costs:
- $23.5 million

Coastal Wetlands Planning, Protection and Restoration Act

Questions

Brad Crawford
(214) 665-7255
Crawford.brad@epa.gov

Coastal Wetlands Planning, Protection and Restoration Act

R3-TE-02

Timbalier Island Restoration

R3 TE-02

PPL24 PROJECT NOMINEE FACT SHEET
February 12, 2014

Project Name
Timbalier Island Restoration

Coast 2050 Strategy
Coastwide Common Strategies-Dedicated dredging to create, restore, or protect wetlands; Vegetative planting; Offshore and riverine sand and sediment resources. Region 2 Ecosystem Strategies- Restore and sustain marshes; 8) Dedicated delivery of sediment for marsh building by any feasible means; Restore barrier islands and Gulf shorelines; 12) Restore and maintain the Isles Derrieres and Timbalier barrier island chains, Marsh Island, Point au Fer, and Cheniere au Tigre (including back barrier beaches).

Master Plan
Project No. 03a.BH.04

Project Location
Region 3, Terrebonne Basin, Terrebonne Parish, approximately 38 miles south of Houma, LA.

Problem
The Lafourche Delta headland and barrier island system, including Timbalier Island, plays an important role in protecting the Terrebonne barrier-built estuary and its surrounding wetlands from the destructive forces of high wave energy, storm surges and salt water intrusion (van Heerden and DeRouen 1997). Additionally, the number and size of the tidal inlets influence the tidal prism. Finally, the habitats provided by barrier islands are highly valuable, particularly for colonial nesting birds and shorebirds, and for nekton. Unfortunately, Timbalier Island and the rest of the Lafourche Delta headland and barrier island system, is one of the most rapidly deteriorating barrier shorelines in Louisiana, averaging -13.1 ft/yr of erosion from the 1990s through 2005 in the proposed project area. Recent hurricanes have breached the island in the proposed project area.

Proposed Project Features
This project will place sediment on the Gulf and bay side of Timbalier Island. Placing sediment on the bay side of Timbalier Island will increase the area of backbarrier marsh which will provide a stable platform which the island needs to migrate landward. Placement of dredge material on the Gulf side of Timbalier Island will provide sand that can be redistributed along the island's shoreline by currents and waves. Sediment fences and plantings will be utilized to manage new placed sediments.

Goals:

- Close the breach in the island
- Provide a backbarrier platform to enable sustainable and successful island migration
- Extend the life of this barrier island by increasing its width
- Create about 76 acres of intertidal marsh using new dredged material and vegetative plantings
- Fortify/protect the platform and marsh by creating 104 acres of beach and 16 ac of dune.
- Protect the Terrebonne estuary and its surrounding wetlands from waves, storm surges, and salt water intrusion
- Add sand to this sand-starved barrier island system

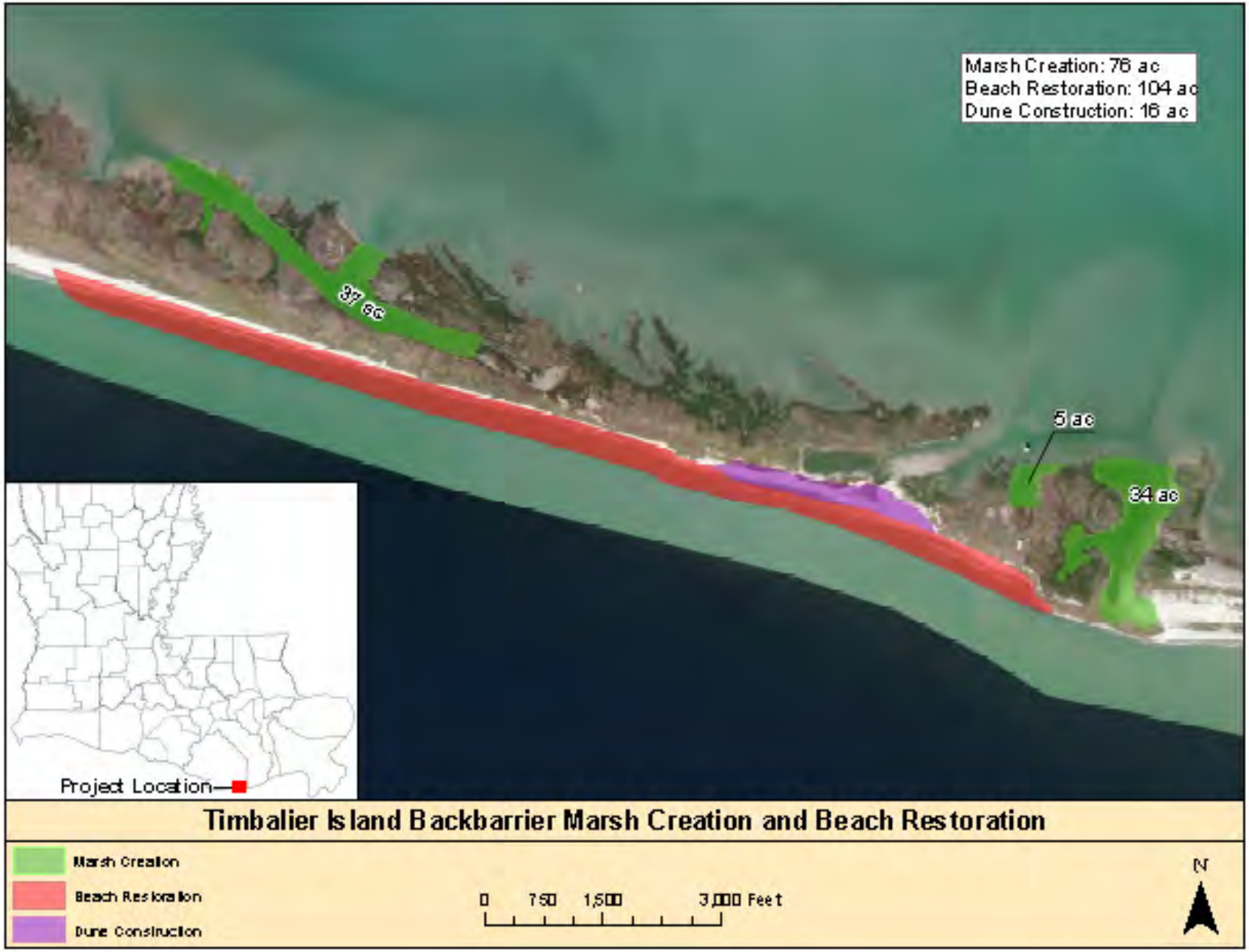
Preliminary Project Benefits

- Creation of 196 ac of beach, dune, and marsh habitat
- Protect approximately 100 ac of barrier island habitat over 20 years

Identification of Potential Issues
None

Preliminary Construction Costs
The estimated construction costs including 25% contingency is $21,686,257

Preparers of Fact Sheet:
Brad Crawford, EPA Region 6, (214-665-7255), crawford.brad@epa.gov
Adrian Chavarria, EPA Region 6, (214-665-3103), chavarria.adrian@epa.gov
Aaron Hoff, ORISE Intern, EPA Region 6, (214-665-7319), hoff.aaron@epa.gov
Barbara Aldridge, EPA Region 6, (214-665-2712), Adridge.barbara@epa.gov


Marsh Creation: 76 ac
Beach Restoration: 104 ac
Dune Construction: 16 ac
37 ac
5 ac
34 ac
Project Location
Timbalier Island Backbarrier Marsh Creation and Beach Restoration
Marsh Creation
Beach Restoration
Dune Construction
0 750 1,500 3,000 Feet
N

Timbalier Island Shoreline Sediment Nourishment

Coastal Wetlands Planning, Protection and Restoration Act

Timbalier Island Shoreline Sediment Nourishment

Coastal Wetlands Planning, Protection and Restoration Act

Timbalier Island Shoreline Sediment Nourishment

Goals / Preliminary Benefits:

- Close breach
- Provide backbarrier platform
- Extend life of the island
- Create 76 ac of marsh
- Protect marsh by creating 104 ac beach,16 ac dune
- Protect Terrebonne estuary and surrounding wetlands from waves, storm surges, saltwater intrusion
- Add sand to this sand-starved barrier island system

Preliminary Cost Estimate:

- $21.7 million

Coastal Wetlands Planning, Protection and Restoration Act

Questions

Brad Crawford
(214) 665-7255
Crawford.brad@epa.gov

Coastal Wetlands Planning, Protection and Restoration Act

R3-TE-03

Leeville Canal Backfill & Marsh Creation

PPL 24 PROJECT NOMINEE FACT SHEET
February 12, 2014

Project Name
Leeville Canal Backfill and Marsh Creation

Master Plan Strategy
03a.MC.07– Belle Pass-Golden Meadow Marsh Creation

Project Location
Region 3, Terrebonne Basin. The project is located to the south of the Southwestern Louisiana Canal and west of Bayou Lafourche, southwest of the town of Leeville in Lafourche Parish, Louisiana.

Problem
The compound effects of subsidence, erosional forces, and human intervention have taken a toll on the Terrebonne Basin. According to USGS data, nearly 324,000 ac of land were lost between 1932 and 2010 within the basin, which had the highest land loss rate in the state from 1985 to 2004. Oil and gas canal dredging is widespread within the project area, altering the hydrology and exacerbating the problem further. Wetlands have been replaced by open water where canals are dug, while spoil banks convert them to upland habitat. The natural banks of Bayou Lafourche and Southwest Louisiana Canal have been seriously impacted near the project area, and impounded areas can occur when several spoil banks intersect, causing flood stress to the marsh within.

Goals
Create and nourish 424 acres of emergent marsh using sediment from Little Lake or possibly Bayou Lafourche. Additionally, conduct canal backfill operations in three other cells that would convert 2 miles of upland canal habitat to an additional 37 ac of emergent marsh and 18 ac of shallow water habitat that would support the growth of aquatic vegetation. Also, the project will provide indirect benefits to the surrounding area through hydrologic restoration.

Proposed Project Features
This project would create up to 355 acres and nourish up to 106 acres of emergent marsh using sediment from a borrow site within Little Lake. An additional 37 ac of emergent marsh and 18 ac of shallow water habitat would be created by re-grading upland habitat from oil and gas canal spoil banks to marsh elevation, returning the soil to the canal to create shallow water habitat and additional emergent marsh.

Preliminary Project Benefits
1) *What is the total acreage benefited both directly and indirectly*?
   Emergent Marsh = 461; Shallow water habitat = 18 ac
2) *How many acres of wetlands will be protected/created over the project life*?
   The average wetland loss rate for the South Point Au Chene WMA sub-unit is -0.89% per year. Using a loss rate reduction of 50%, an expected loss rate of -0.45% per year is used, with net acreages at TY20 totaling 333 ac.

3) *What is the anticipated loss rate reduction throughout the area of direct benefits over the project life (<25%, 25-49%, 50-74% and >75%)?*
   A 50% loss rate reduction is anticipated throughout the entire project area.

4) *Do any project features maintain or restore structural components of the coastal ecosystem such as barrier islands, natural or artificial levee ridges, beach and lake rims, cheniers, etc?*
   The marsh created within the project would help to restore the natural banks of Bayou Lafourche as well as Bayou Pierre et Lee/Southwest Louisiana Canal. Backfilling operations will also help to partially restore hydrology within the area.

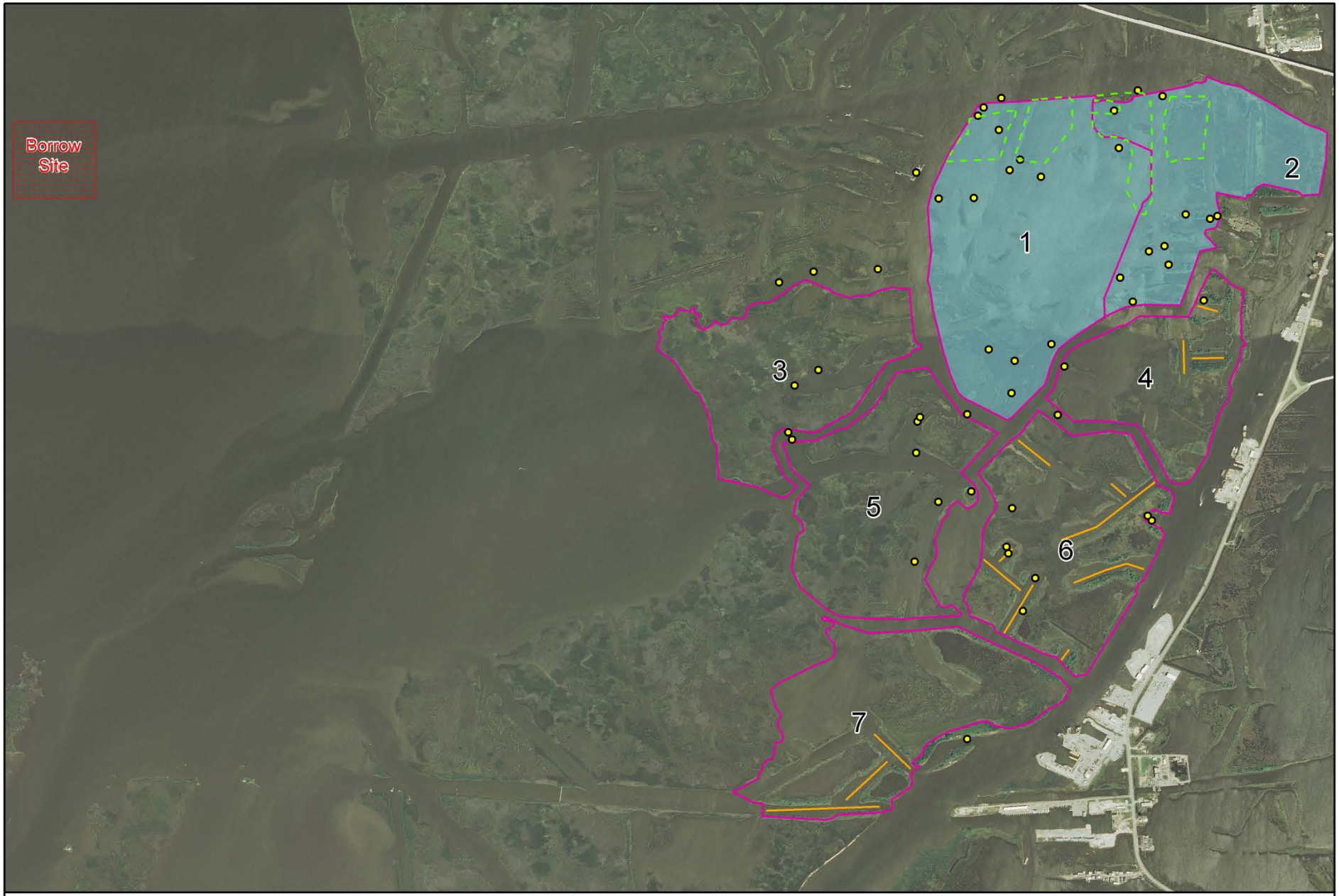
5) *What is the net impact of the project on critical and non-critical infrastructure*?
   The project helps protect infrastructure in the immediate area such as LA-1 and nearby port terminal/marina infrastructure along Bayou Lafourche/Belle Pass to the east.

6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects*?
   There are no currently constructed projects within the near vicinity.

Identification of Potential Issues
There are several pipeline terminals and other facilities within the area that will need access preserved; extensive planning with the landowner is currently in progress. A survey of spoil bank height within Cells 4, 6, and 7 would be needed to determine suitability for creating marsh within the canals.

Preliminary Construction Costs
Cells A&B w/borrow from Little Lake: $19.2 million
2 mi backfill: $753,000
Total Cost +25% contingency = $25 million

Preparer of Fact Sheet
Aaron Hoff, EPA (214) 665-7319, hoff.aaron@epa.gov
Adrian Chavarria, EPA (214) 665-3103, chavarria.adrian@epa.gov



Features

- L3 Concept
- Planned Cells
- Marsh Creation
- Facilities
- Backfill

Leeville Canal Backfill and Marsh Creation

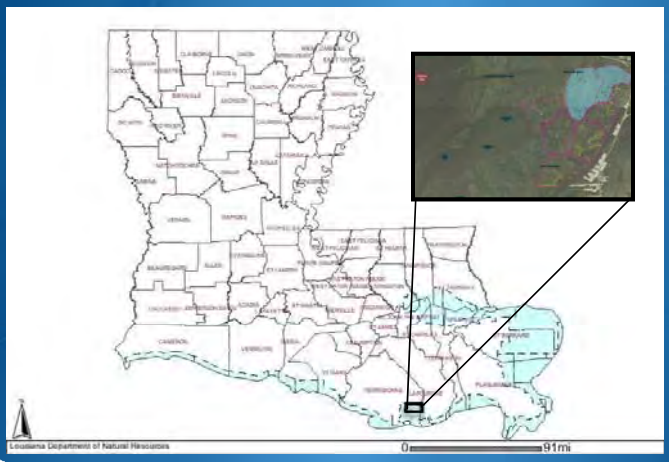
Basemap: 2013 NAIP DOQQ
Produced by: EPA Region 6, Dallas, TX

Miles
0 0.15 0.3 0.6 0.9

N

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Leeville Canal Backfill and Marsh Creation



Coastal Wetlands Planning, Protection and Restoration Act

Problem

- Terrebonne Basin's vulnerability to land loss
  - ~324,000 ac lost from 1932-2010
  - Highest land loss rate across state from 1985-2004
- Compound effects driving marsh loss
  - Subsidence, storm losses, & human intervention
  - Numerous oil & gas canals in project area have altered hydrology

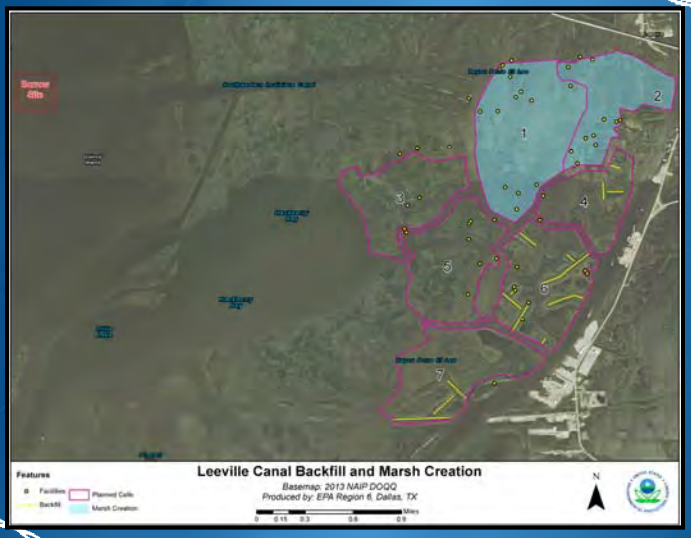
Coastal Wetlands Planning, Protection and Restoration Act

Solution

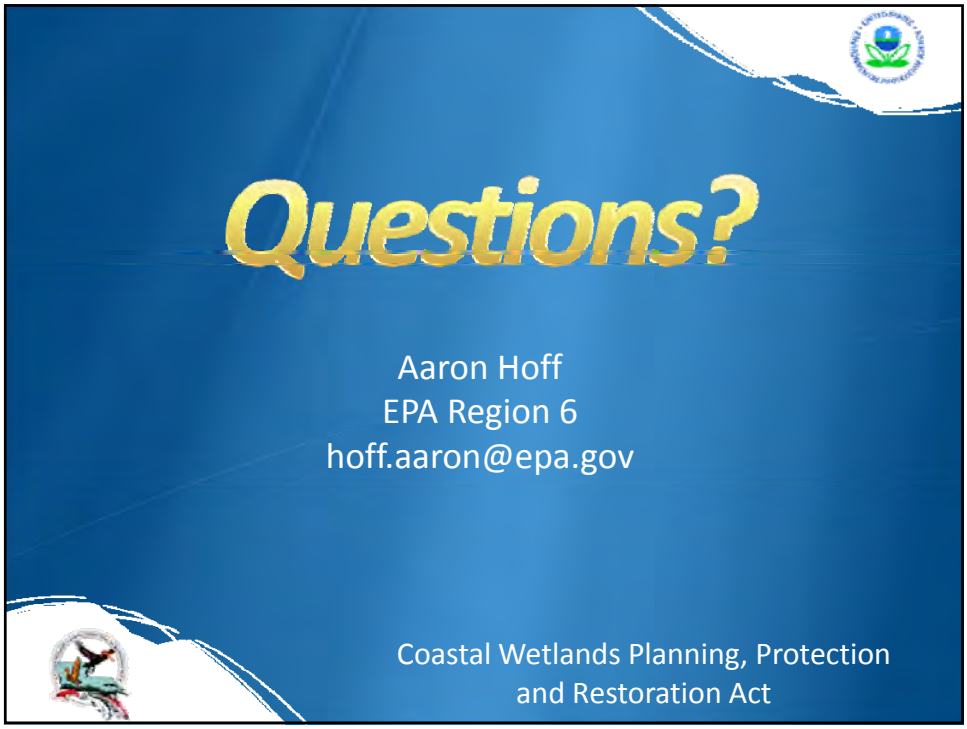
- Create 318 acres and nourish 106 acres of emergent marsh with sediment from Lost Lake
- Backfill 2 miles of canal to create an additional 37 ac of emergent marsh and 18 ac of shallow water habitat
- Net benefit at TY 20 = 333 ac
- Backfilling will partially restore hydrology to project area
- Estimated preliminary cost $25 million

Coastal Wetlands Planning, Protection and Restoration Act

Project Features



Coastal Wetlands Planning, Protection and Restoration Act


Questions?
Aaron Hoff
EPA Region 6
hoff.aaron@epa.gov
Coastal Wetlands Planning, Protection
and Restoration Act

R3-TE-04

Bayou Terrebonne Ridge Restoration & Marsh Creation

PPL 24 PROJECT NOMINEE FACT SHEET

Project Name
Bayou Terrebonne Ridge Restoration and Marsh Creation

Master Plan Strategy:
- 03a.RC.05 – Bayou Terrebonne Ridge Restoration

Project Location
The project is located directly along Bayou Terrebonne, northwest of Cocodrie, in Terrebonne Parish, Louisiana.

Problem
Terrebonne basin was historically structured by a series of north-south ridges—remnants of the many distributaries of Bayou Lafourche. Much of the habitat function of these ridges has been lost over the last half-century to erosion, subsidence, and development. Land loss projections predict that the ridge and surrounding marshes will be converted to open water by 2050.

Goals
1) Restore both the structural and habitat functions of 3.9 miles of Bayou Terrebonne Ridge.
2) Create and nourish 221 acres of marsh habitat.
3) Install 7,100 feet of artificial oyster reef, to provide habitat and help protect the newly created marsh and ridge.

Proposed Project Features
Create a 20,461 foot ridge along the east bank of Bayou Terrebonne. The ridge will have a +5.2 ft settled top height, a 15-foot top width, and 1:7 side slopes. The ridge feature would result in 7 acres of marsh and 24 acres of ridge habitat (Figure 2). Ridge material will come from Bayou Terrebonne. The borrow sites will be noncontiguous, as not to facilitate the northward flow of saltwater. The project will also include 214 acres of marsh creation and nourishment adjacent to the ridge component and 7,100 feet of artificial oyster reef. Borrow for the marsh creation component will come from Terrebonne Bay.

Preliminary Project Benefits
The project would restore 24 acres of resting and foraging habitat necessary to support transient migratory land birds in the spring and fall. Additional benefits of restoring the ridge include helping reduce storm surge and restoring natural hydrologic patterns in the area. The ridge and marsh components of this project would also help restore and protect the eastern bank of Bayou Terrebonne.

Preliminary Project Benefits

1) *What is the total acreage benefited both directly and indirectly?*
   246 acres

2) *How many acres of wetlands will be protected/created over the project life?*
   This project will create a net benefit of 185 acres of marsh and ridge habitats over the 20-year project life.

3) *What is the anticipated loss rate reduction throughout the area of direct benefits over the project life (e.g., 50% reduction in the background loss rate)?*
The anticipated land loss rate reduction throughout the area of direct benefits will be 50% for the MC feature and 50% for the ridge feature over the projects life.

4) *Do any project features maintain or restore structural components of the coastal ecosystem such as barrier islands, natural or artificial levee ridges, beach and lake rims, cheniers, etc?*
The project will help restore nearly 4 miles of the natural ridge habitat along the east bank of Bayou Terrebonne. The project also helps maintain the Bayou Terrebonne bank line, keeping the bayou from coalescing with Lake Barre.

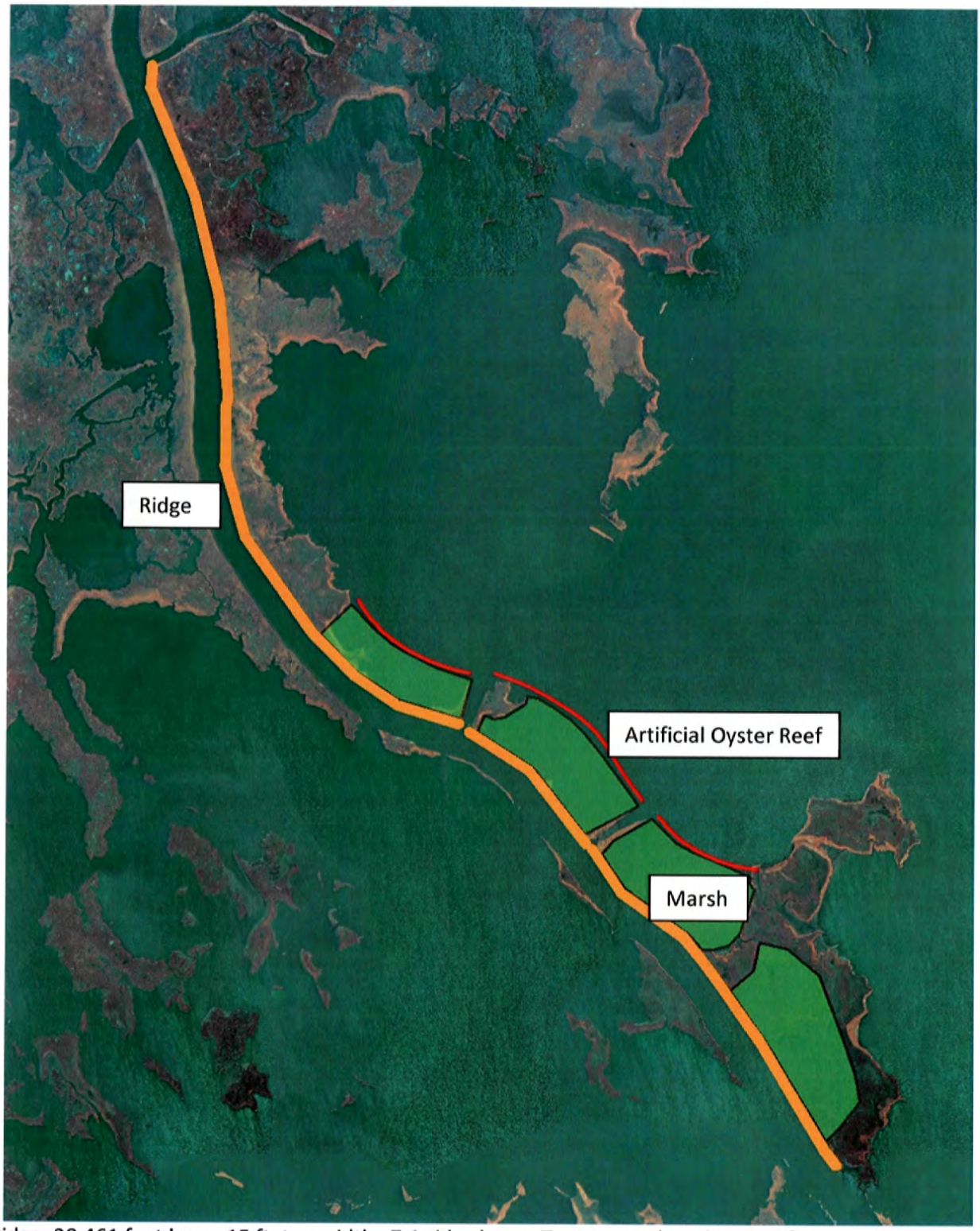
5) *What is the net impact of the project on critical and non-critical infrastructure?*
The project would help maintain Bayou Terrebonne which sees heavy commercial and recreational boat traffic. The ridge may offer some protection to infrastructure (LA-56) and communities to the west and north of the project.

6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?*
The project will have a synergistic effect with other efforts to protect and restore Terrebonne Bay rim, including Terrebonne Bay Shore Protection Demonstration (TE-45), and Terrebonne Bay Marsh Creation and Nourishment Project (TE-83).

Preliminary Construction Cost +25% Contingency: $21.2M

Preparer of Fact Sheet
Stuart Brown, CPRA (225) 342-4596, stuart.brown@la.gov

Figure 1 - Bayou Terrebonne Ridge Restoration and Marsh Creation



Ridge: 20,461 feet long. 15 ft. top width. 7:1 side slopes. Target top elevation +5.2 ft.
Marsh Creation/Nourishment Cells: 214 acres. (An additional 7 acres of marsh will be created on the bayou side of the ridge feature). 7,100 feet of artificial oyster reef.

PPL-23
Bayou Terrebonne Ridge and Marsh Restoration

2/12/2014

Bayou Terrebonne Ridge South Increment

Ridge: 21,000 feet long. 15 ft. top width. 7:1 side slopes. Target top elevation +5.2 ft.

Marsh: 200 acres.

7,100 ft of artificial oyster reef.

Borrow material will be dredged form a noncontiguous borrow area in Bayou Terrebonne.

Preliminary Construction + 25% =
$21.2M

R3-TE-05

West Fouchon Marsh Creation & Marsh Nourishment

R3 TE 05

PPL 24 PROJECT NOMINEE FACT SHEET

Project Name
West Fourchon Marsh Creation and Marsh Nourishment

Master Plan Strategy:
- 03a.MC.07 - Belle Pass-Golden Meadow Marsh Creation.

Project Location
The project is located west of Port Fourchon, north of West Belle Pass, in Lafourche Parish, Louisiana.

Problem
Historic wetland loss in the project area stems from interior marsh loss stems from subsidence, sediment deprivation, and construction of pipeline canals. Over the last twenty years the interior marsh in the project area has deteriorated dramatically (Figure 1).

Goals
The goals of this project are to create and nourish 614 acres of marsh, by pumping sediment from an offshore borrow site.

Proposed Project Features
This project would create 314 acres of marsh and nourish 300 acres of emergent marsh, using material dredged from the Gulf of Mexico.

Preliminary Project Benefits
This project would create and nourish 614 acres of marsh habitat, utilizing offshore borrow. The project will fill in pipeline canals, reducing the artificial exchange of saltwater. In addition to habitat benefits, this project will restore and increase the longevity of marshes that help protect Highway 1, Port Fourchon and Bayou Lafourche.

Identification of Potential Issues
Pipelines: at least three pipelines bisect the project. *The landowner, LL&E, has indicated that we would be able to place material and create marsh in the pipeline canals.

Preliminary Construction Costs
Preliminary Construction Costs + 25% contingency: $27.0M

Preparer of Fact Sheet
Stuart Brown, CPRA (225) 342-4596, stuart.brown@la.gov

Figure 1 - CRMS Land-Water Data

1988	2008
	

Figure 2 - Project Map:

PPL 23
West Fourchon Marsh Creation and Nourishment

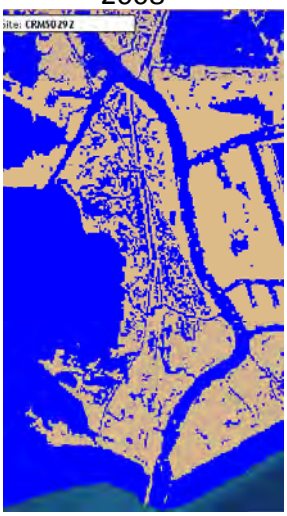
2/12/2014

Project Area

Land-Water

1988

2008



Current Alignment

614 Acres

314 Marsh Creation
300 Marsh Nourishment

Offshore Borrow Source

Construction +25%:
$26.5M

R3-TE-06

Grand bayou Freshwater Enhancement

PPL24 PROJECT NOMINEE FACT SHEET
January 29, 2014

Project Name
Grand Bayou Freshwater Enhancement

Project Location
Region 3, Terrebonne Basin, Lafourche Parish

Problem
The project area is located within the North Bully Camp Marsh (43,882) and St. Louis Canal (25,563 acres) mapping units. Between the years 1932 and 1990, these two mapping units lost an estimated 12,840 and 3,450 acres of marsh, respectively. A significant amount of the land loss in these areas since 1949 may be attributed to direct removal and altered hydrology from canal dredging. Altered hydrology remains a current cause of land loss along with high rates of subsidence which are estimated to be between 2.1 and 3.5 ft/century (LCWCRTF 1999).

Because of the high number of canals that have been dredged in the area, high salinity Gulf waters move rapidly northward into the marshes within the project area. The amount of high salinity waters moving north is increasing as the marshes continue to breakup and disappear. The only freshwater input to this area originates from the Gulf Intracoastal Waterway (GIWW) along the northern project boundary. The freshwater inflow from the GIWW is restricted by the small cross-section of the channel north of the Hwy. 24 bridge and continuing for several thousand feet south of that bridge. There is also a restriction (earthen plug) in Margaret's Bayou which prevents fresh water from moving east from Grand Bayou into the broken marshes.

Goals
The primary goal of this project is to increase the flow of fresh water from the GIWW down Grand Bayou Canal. That increase is water would lower salinities and add nutrients to the wetlands south of the GIWW along the east and west banks of Grand Bayou Canal. ***Specific goals***: 1) Increase the flow of fresh water from the GIWW into Grand Bayou Canal from approximately 600 cfs to 1,600 cfs; 2) redirect much of the freshwater from Grand Bayou Canal into the marshes east and west of Grand Bayou Canal, and 3) Create 112 acres of fresh marsh and nourish an additional 14 acres of intermediate marsh west of Grand Bayou near Hwy 24.

Proposed Solution
This project would increase the Grand Bayou cross-section from an average of 628 cfs to 1,604 cfs with the use of a hydraulic dredge. Material dredged from the channel would be beneficially used to create approximately 126 acres of intermediate marsh. Along the west bank of the channel a rock plug would be replaced with a 5-48" flap-gated culvert water control structure, an increase of 122 cfs. Along the east bank an earthen plug would be removed to allow freshwater to flow directly into the marshes to the east down Margaret's Bayou, an increase in 385 cfs.

Preliminary Project Benefits
1) What is the total acreage benefited both directly and indirectly?
This total project area is 26,533 ac.

2) *How many acres of wetlands will be protected/created over the project life?*
Approximately 676 acres of intertidal marsh habitat will be protected/created over the project life.

3) *What is the anticipated loss rate reduction throughout the area of direct benefits over the project life (e.g., 50% reduction in the background loss rate)?*
The anticipated land loss rate reduction throughout the area of direct benefits will be 50-74% over the projects life.

4) *Do any project features maintain or restore structural components of the coastal ecosystem such as barrier islands, natural or artificial levee ridges, beach and lake rims, cheniers, etc?*
No.

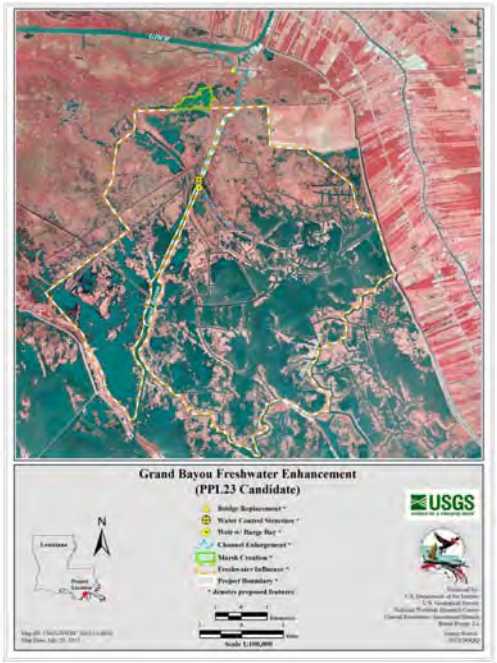
5) *What is the net impact of the project on critical and non-critical infrastructure?*
The project would have moderate net positive impact to critical infrastructures which consists of Larose to Golden Meadow Levee, oil and gas infrastructure, and businesses near Hwy. 24.

6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?*
The project will have a synergistic effect with several Ducks Unlimited projects, Bayou Point aux Chenes WMA management units, and several mitigation projects located within the project area.

Identification of Potential Issues
The proposed project has the following potential issues: O&M, utility/pipeline, and DOTD bridge replacement.

Preliminary Construction Costs
The estimated construction cost including 25% contingency is $15 M.

Preparer(s) of Fact Sheet:
Robert Dubois, FWS, (337) 291-3127; robert_dubois@fws.gov

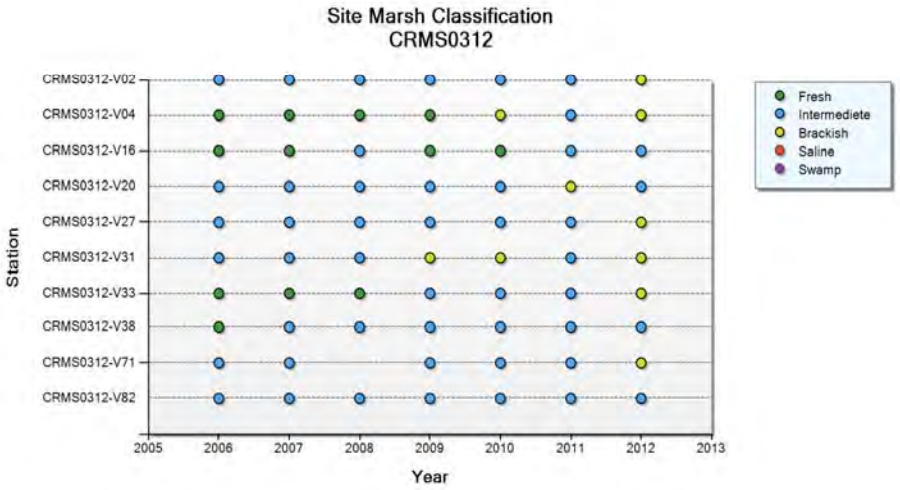


GRAND BAYOU FRESHWATER ENHANCEMENT

Problem:

- Project area salinities are increasing due to the continued loss of marshes south of the project area
- Freshwater inflows into the project area originate from the GIWW are restricted by small channel cross-sections along the northern section of Grand Bayou Channel (GBC)
- Margaret's Bayou is also plugged keeping fresh water from moving east from GBC into the broken marshes
- Land loss rates are estimated between -0.328 and -0.583 %/year .
- Project area encompasses 26,533 acres of which 10,018 acres (38%) was marsh and the remaining 16,515 acres (62%) was open water as of 2010

GRAND BAYOU FRESHWATER ENHANCEMENT



GRAND BAYOU FRESHWATER ENHANCEMENT

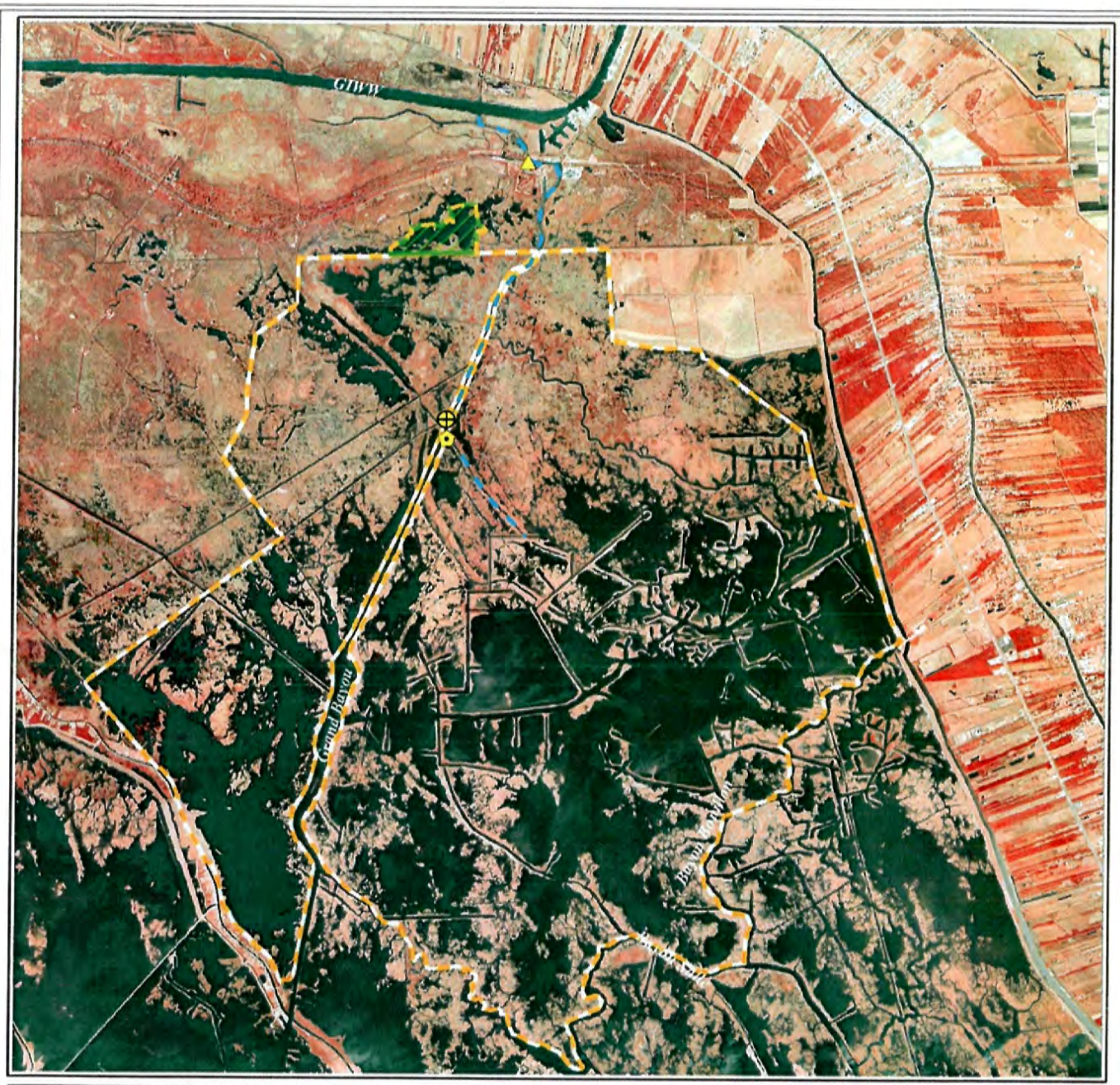
Proposed Solution:

- Increase the GBC cross-section from an average of 600 cfs to 1,604 cfs with the use of a hydraulic dredge (1,000 cfs increase)
- Use that material to create/nourish approximately 126 acres of intermediate marsh.
- Replace a rock plug with 5-48" flap-gated culverts (increase 122 cfs)
- Increase flow down Bayou Blue and two other canals totaling 25 cfs
- Remove earthen plug at Margaret's Bayou allowing freshwater to flow directly into the marshes east (increase 385 cfs)
- Place fixed crest weir with barge bay below Margaret's Bayou (increase 449 cfs)

GRAND BAYOU FRESHWATER ENHANCEMENT

- Increase the flow of fresh water from the GIWW down Grand Bayou Canal from an average 600 cfs to 1,600 cfs
- Redirect a portion of the freshwater from Grand Bayou Canal into the marshes east and west of Grand Bayou Canal
- Create/nourish 126 acres of fresh marsh
- The project would result in approximately 676 net acres over the 20-year project life.
- The construction cost plus 25% contingency is **$15 M.**
- Project is currently not part of the State's Convey Atchafalaya River Water East

R3-TE-06



Grand Bayou Freshwater Enhancement
(PPL23 Candidate)

- Bridge Replacement *
- Water Control Structure *
- Weir w/ Barge Bay *
- Channel Enlargement *
- Marsh Creation *
- Freshwater Influence *
- Project Boundary *

* denotes proposed features

1 0 1 Kilometers

1 0 1 Miles

Scale 1:100,000

USGS science for a changing world

Produced by:
U.S. Department of the Interior
U.S. Geological Survey
National Wetlands Research Center
Coastal Restoration Assessment Branch
Baton Rouge, La

Image Source:
2012 DOQQ

Map ID: USGS-NWRC 2013-11-0043
Map Date: July 29, 2013

R3-TE-07

Lake Felicity Oyster Reef Shoreline Protection & Marsh Creation

R3-TE-07

PPL24 PROJECT NOMINEE FACT SHEET
January 29, 2014

Project Name
Lake Felicity Oyster Reef Shoreline Protection and Marsh Creation

Project Location
Region 3, Terrebonne Basin, Terrebonne Parish, Terrebonne Bay

Problem
Marshes along the northern shoreline of Terrebonne Bay have a high interior marsh loss rate, estimated to be 1.2%/yr (USGS-1985-2009-TE-83). The shoreline erosion rate in some areas along the northern Terrebonne Bay shoreline has been shown to be 8 to 34 ft/yr (TE-45 Demo Project). Other estimates (FWS –Ronnie Paille) are as high as 30 ft/yr. The reasons for these high erosion rates include subsidence, a lack of sediment input, a limited supply of freshwater, and a dramatically increase in the tidal prism north of Terrebonne Bay. The increase in the tidal prism directly contributes to the increasing flooding problems of many communities along Bayou Terrebonne including the town of Montegut. As emergent marshes in this area convert to open water, tidal surges will continue to increase thus increasing the flooding north of the bay.

Goals
The goals of the project are to reduce shoreline erosion along 30,030 linear feet of Terrebonne Bay shoreline and to prevent the bay shoreline from breaking into interior marsh ponds. Protect 82 acres of existing highly productive marsh with the construction of 30,030 LF of oyster reef shoreline protection. Create 131 acres of marsh and nourish 11 acres of marsh with hydraulic dredge.

Proposed Solution
This project would create approximately 131 acres and nourish 11 acres of marsh by filling small shallow open-water areas with material dredged from the bottom of Terrebonne Bay with a small hydraulic dredge. Limited containment dikes would be used and there would be a net gain of 181 acres of marsh after 20 years.

This project would also protect approximately 30,030 linear feet of Terrebonne Bay shoreline through the construction of habitats suitable for the establishment of oyster reefs. This would be done by installing rock-filled gabion mats along the shoreline and foreshore structures across any open water areas to enhance oyster reef production. This would promote the creation of oyster reefs which would reduce the shoreline erosion rates with little to no maintenance. Shoreline loss rates associated with this proposed project is estimated to be 12 ft./yr. This project should reduce area loss rates by over 95%. This equates to protecting approximately 181 acres of existing or created emergent marsh throughout the 20 project life.

Preliminary Project Benefits
1) *What is the total acreage benefited both directly and indirectly?*
This total project area is 307 ac.

2) *How many acres of wetlands will be protected/created over the project life?*
Approximately 181 acres of intertidal marsh habitat will be protected/created over the project life.

3) *What is the anticipated loss rate reduction throughout the area of direct benefits over the project life (e.g., 50% reduction in the background loss rate)?*
The anticipated land loss rate reduction throughout the area of direct benefits will a 95% reduction in shoreline erosion rates associated with the shoreline protection and 50%-74% for marsh creation and marsh nourishment over the 20 year projects life.

4) *Do any project features maintain or restore structural components of the coastal ecosystem such as barrier islands, natural or artificial levee ridges, beach and lake rims, cheniers, etc?*
The project will help maintain the Terrebonne Bay shoreline.

5) *What is the net impact of the project on critical and non-critical infrastructure?*
None

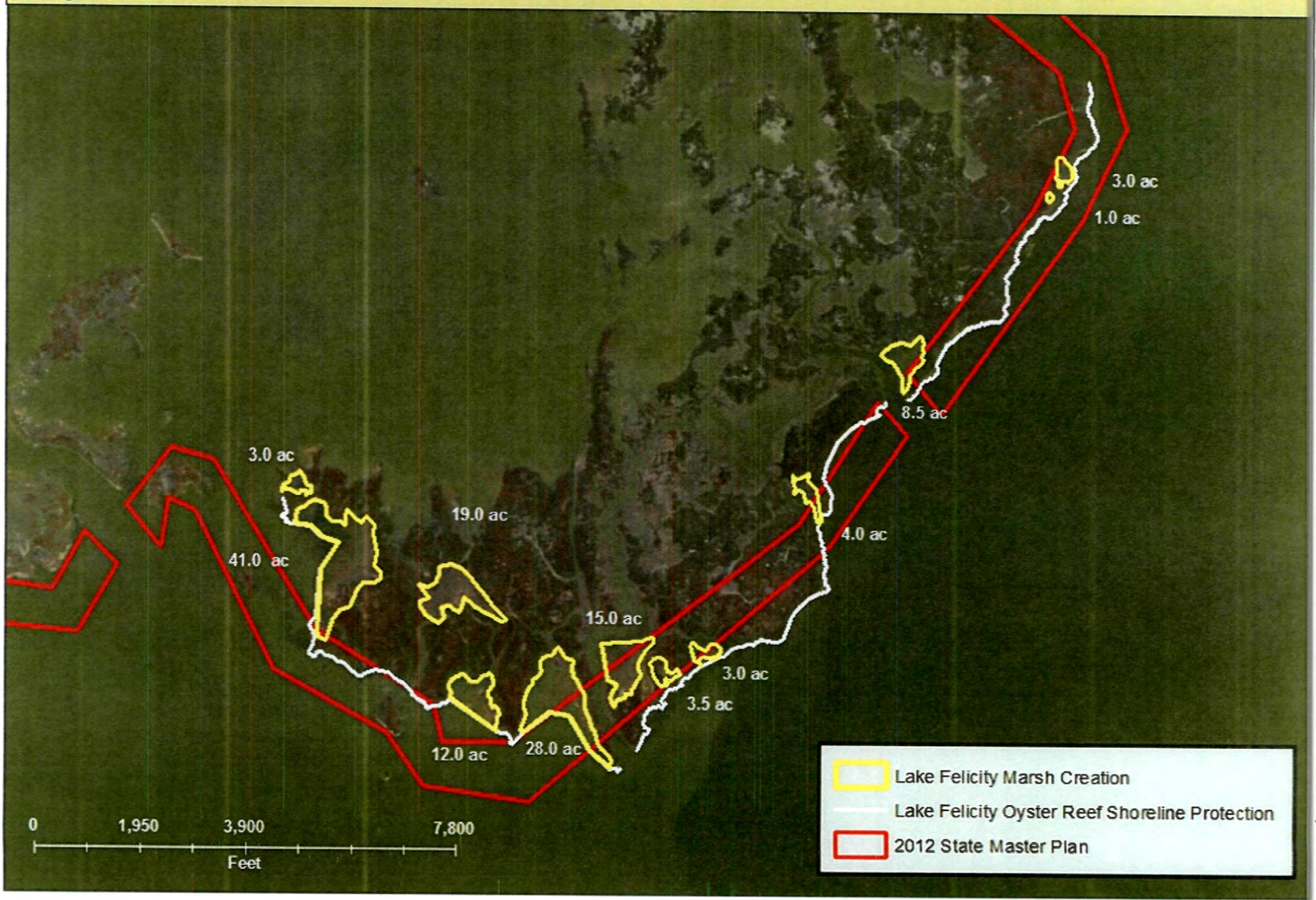
6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?*
The project will have a synergistic effect with Terrebonne Bay Oyster Demo (TE-45) and Terrebonne Bay Marsh Creation Project (TE-83).

Identification of Potential Issues
This area has many oyster leases, but through the light loading of material and shallow draft equipment the impacts to the leases should be minimal. Potential issues include the following: Oysters and pipelines.

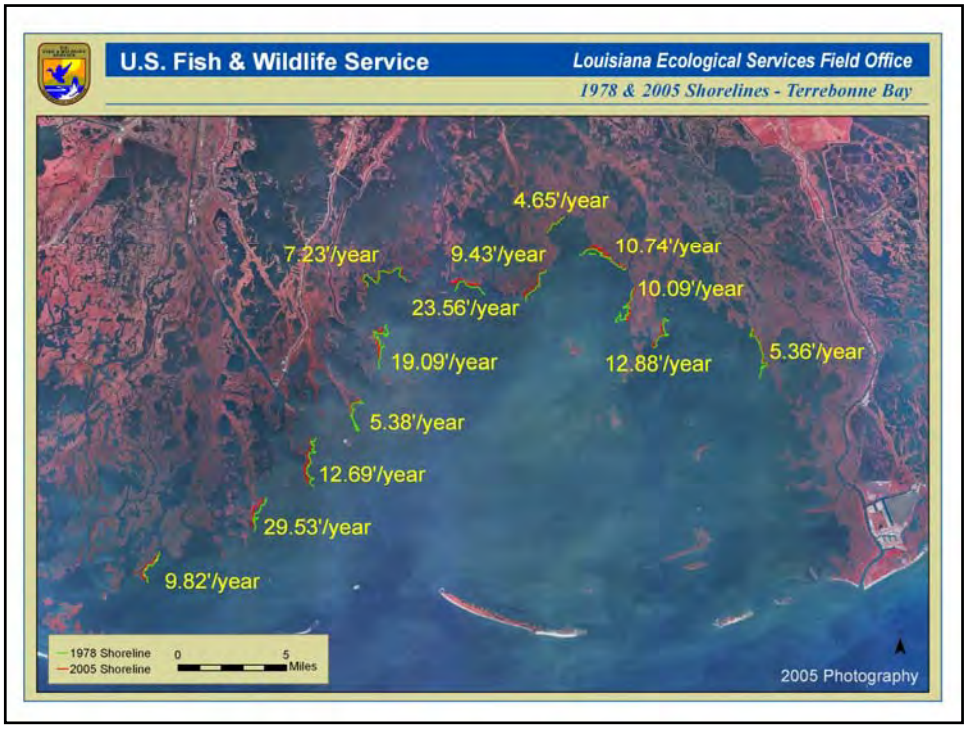
Preliminary Construction Costs
The estimated construction cost including 25% contingency is between $15 - $20 M.

Preparer(s) of Fact Sheet:
Robert Dubois, USFWS, (337) 291-3127, robert_dubois@fws.gov

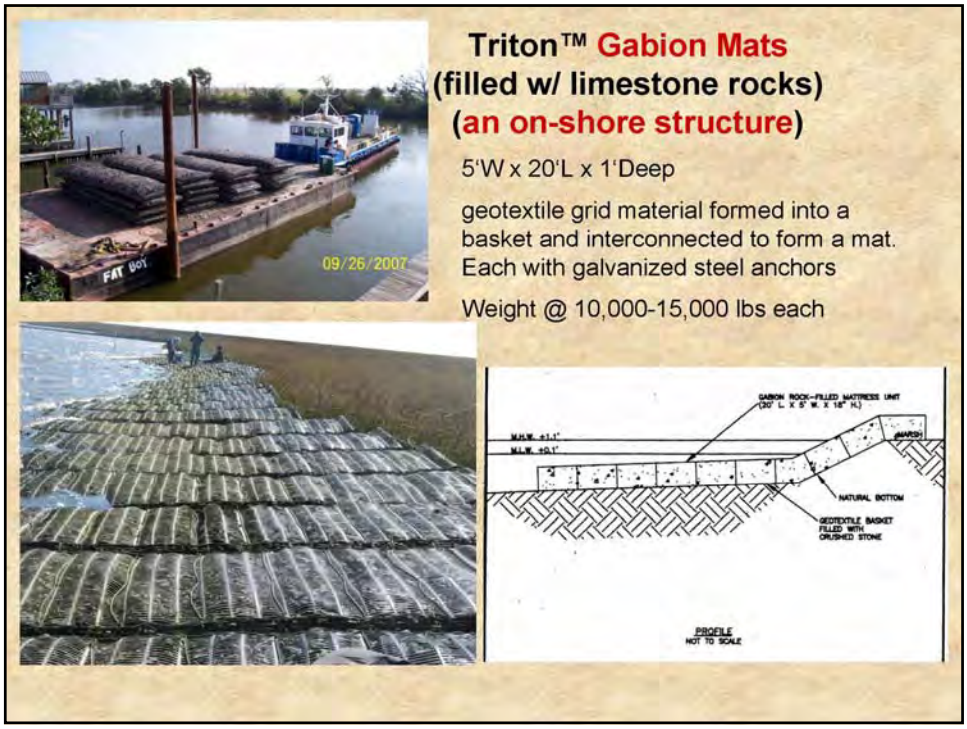
LAKE FELICITY OYSTER REEF SHORELINE PROTECTION AND MARSH CREATION

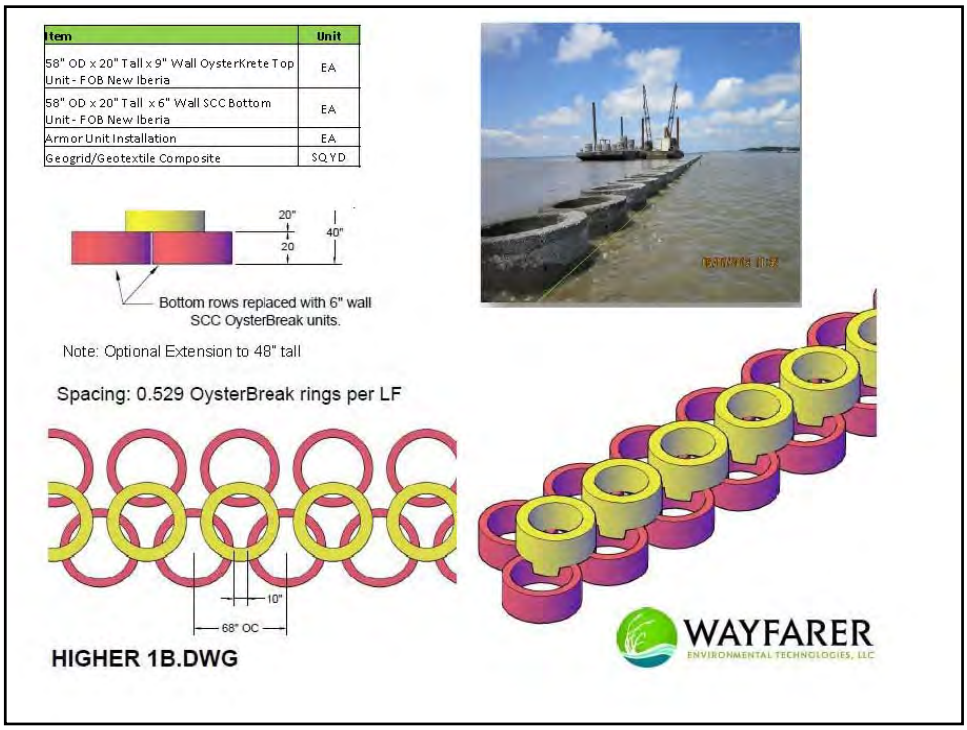


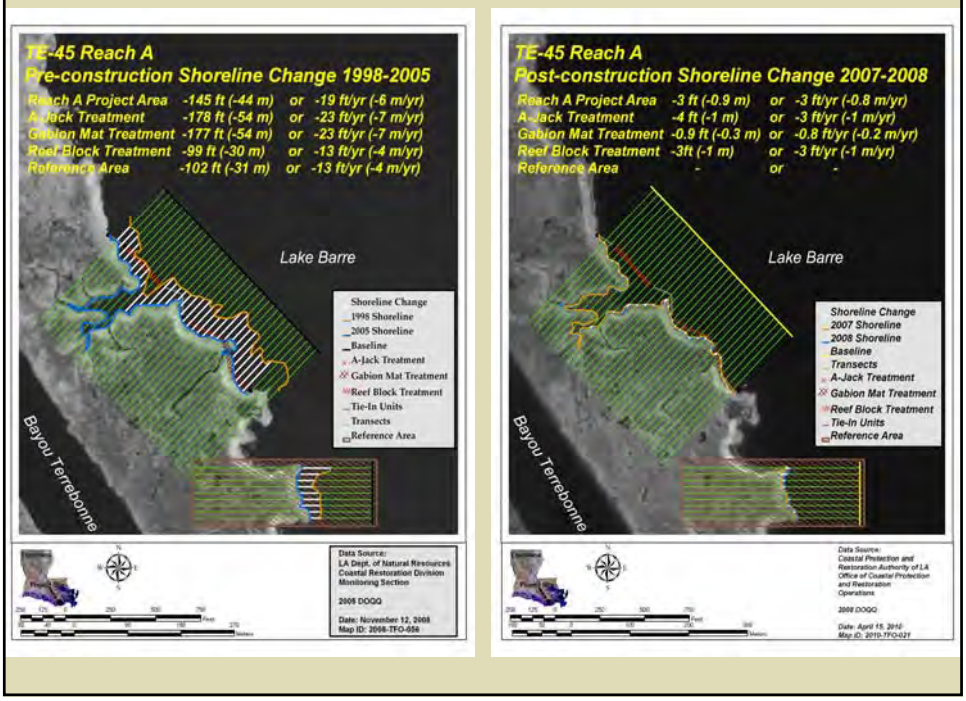
K5-TE-9


U.S. Fish & Wildlife Service
Louisiana Ecological Services Field Office
1978 & 2005 Shorelines - Terrebonne Bay
4.65'/year
7.23'/year
9.43'/year
10.74'/year
10.09'/year
23.56'/year
19.09'/year
12.88'/year
5.36'/year
5.38'/year
12.69'/year
29.53'/year
9.82'/year
1978 Shoreline
2005 Shoreline
0
5
Miles
2005 Photography


N
W
E
S
LAKE FELICITY OYSTER REEF SHORELINE PROTECTION
AND MARSH CREATION
3.0 ac
1.0 ac
8.5 ac
3.0 ac
19.0 ac
41.0 ac
4.0 ac
15.0 ac
3.0 ac
3.5 ac
12.0 ac
28.0 ac
0
1,950
3,900
7,800
Feet
Lake Felicity Marsh Creation
Lake Felicity Oyster Reef Shoreline Protection
2012 State Master Plan


Triton™ Gabion Mats
(filled w/ limestone rocks)
(an on-shore structure)
5'W x 20'L x 1'Deep
geotextile grid material formed into a basket and interconnected to form a mat. Each with galvanized steel anchors
Weight @ 10,000-15,000 lbs each
09/26/2007
NATURAL BOTTOM
PROFILE
NOT TO SCALE


Item
Unit
58" OD x 20" Tall x 9" Wall OysterKrete Top Unit - FOB New Iberia
EA
58" OD x 20" Tall x 6" Wall SCC Bottom Unit - FOB New Iberia
EA
Armor Unit Installation
EA
Geogrid/Geotextile Composite
SQ YD
20"
40"
20
Bottom rows replaced with 6" wall SCC OysterBreak units.
Note: Optional Extension to 48" tall
Spacing: 0.529 OysterBreak rings per LF
10"
68" OC
HIGHER 1B.DWG
WAYFARER
ENVIRONMENTAL TECHNOLOGIES, LLC



LAKE FELICITY OYSTER REEF SHORELINE PROTECTION AND MARSH CREATION

- **Protect 30,000 feet of bay shoreline and 85 acres of highly productive natural marshes**
- **Little to no maintenance for shoreline protection and created/nourished marshes**
- **Create 131 acres and nourish 11 acres of marsh with small hydraulic dredge**
- **Net acres = 181 acres**
- **Project Cost plus 25% contingency = < $20 M**
- **First demonstration project to expand to a full project**

R3-TE-08

Lake Barre Marsh Creation

K3-TE-08

PPL24 PROJECT NOMINEE FACT SHEET
January 29, 2014

Project Name:
Lake Barre Marsh Creation

Project Location:
Region 3, Terrebonne Basin, Terrebonne Parish. Southeast Montegut between Wonder Lake and Madison Bay.

Problem:
The marshes near the Madison Bay area have experienced tremendous wetland loss due to a variety of factors, including subsidence, saltwater intrusion, a lack of sediment supply, and oil and gas activities. The loss of the marshes have exposed significant infrastructure to open water conditions and has made the area less suitable for various wildlife and fisheries. The 1983 to 1990 loss rate for the Montegut area is 3.5%/yr (Coast 2050). With high wetland loss in the vicinity, the Montegut Levee to the north of the project area has become extremely susceptible to high wave energies caused by the increased fetch distance in the now the open water areas of Madison Bay and Wonder Lake. The Montegut Levee breached during Hurricanes Lili and Rita in 2002 and 2005, respectively.

Goals :
This project would strategically tie together three ridges (Bayou Terrebonne Ridge, Bayou St. Jean Charles Ridge, and Point au Chein Ridge) and two other CWPPRA projects (Maddison Bay Marsh Creation and Terracing project and Island Road Marsh Creation project).
Specific goals: 1) Create 440 acres and nourish 19 acres of emergent brackish marsh.

Proposed Solution:
This project would propose to create/nourish approximately 459 acres of emergent marsh by hydraulically dredging material from Maddison Bay and placing that material in in shallow open water areas between Wonder Lake and Maddison Bay. Dredge material would be placed in open water areas to a target height of +1.4 NAVD 88. All constructed containment dikes would be sufficiently gapped or degraded no later than 3 years post construction to allow for fisheries access.

Preliminary Project Benefits:
1) What is the total acreage benefited both directly and indirectly?
This total project area is 459 ac.

2) How many acres of wetlands will be protected/created over the project life?
Approximately 353 ac of brackish marsh will be protected/created over the 20 year project life.

3) What is the anticipated loss rate reduction throughout the area of direct benefits over the project life (<25%, 25-49%, 50-74%, and >75%)?
The anticipated land loss rate reduction throughout the area of direct benefits would be 50-74% over the 20 year project life.

4) Do any project features maintain or restore structural components of the coastal ecosystem such as barrier islands, natural or artificial levee ridges, beach and lake rims, cheniers, etc?
The project would help restore portions of the Wonder Lake shoreline and portions of the Bayou Barre bankline.

5) What is the net impact of the project on critical and non-critical infrastructure?
This project would help protect the Point Barre road, several camps, and some oil and gas infrastructure.

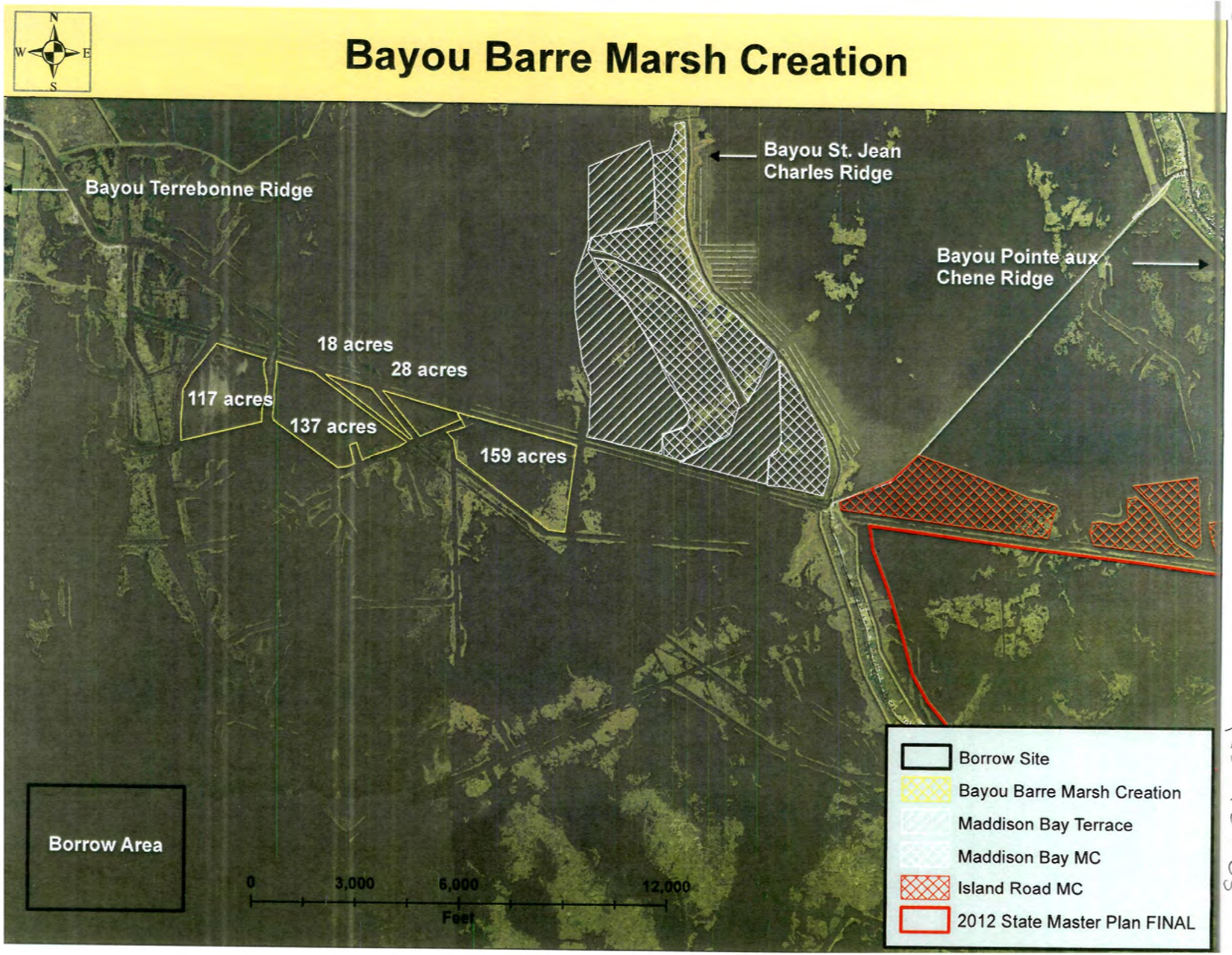
6) To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?
This project would work synergistically with two other projects (Maddison Bay Marsh Creation and Terracing project and Island Road Marsh Creation project) which would tie together three ridges (Bayou Terrebonne Ridge, Bayou St. Jean Charles Ridge, and Pointe aux Chene Ridge). This would also work synergistically with the TE-83 project that will be located just south of the project area.

Identification of Potential Issues:
There would most likely be some pipeline issues and numerous oyster leases within the project area.

Preliminary Construction Costs:
The estimated construction cost including 25% contingency is estimated between $25-$30 M.

Preparer(s) of Fact Sheet:
Robert Dubois, USFWS, (337) 291-3127, Robert_Dubois@fws.gov

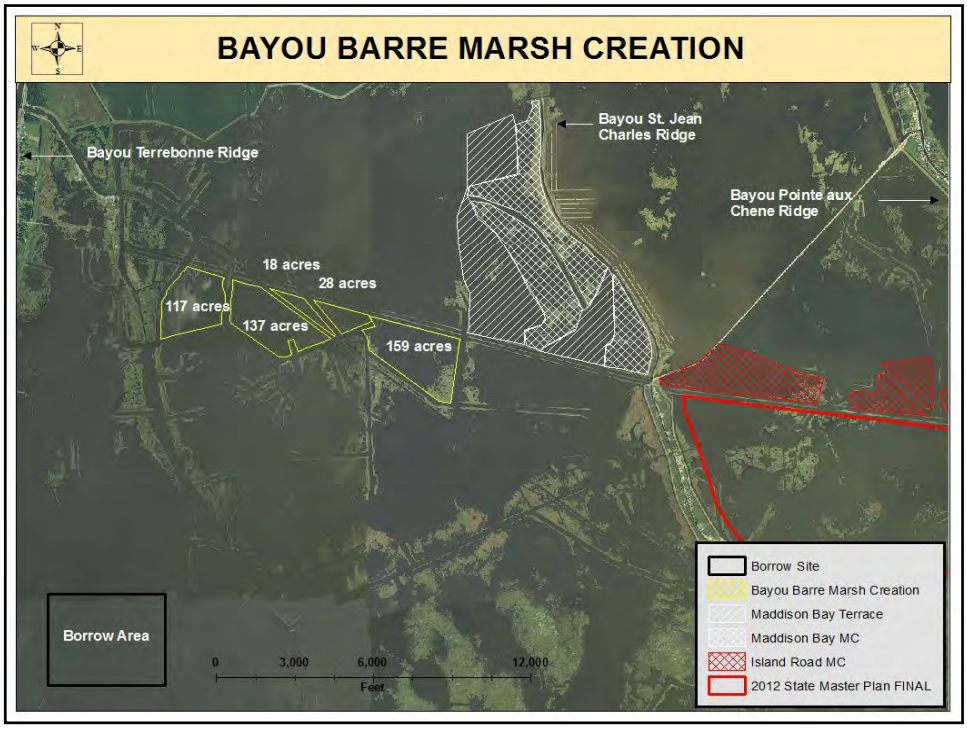
Bayou Barre Marsh Creation



BAYOU BARRE MARSH CREATION

Problem:

- Project area wetlands loss is due to subsidence, saltwater intrusion, a lack of sediment supply, and oil and gas activities.
- The 1984 to 2011 loss rate 2.29%/yr. (Madison Bay project).
- Losses have exposed infrastructure to open water conditions and has made habitats in the area less suitable for various wildlife and fisheries .
- Montegut Levee north of the project area more susceptible to high wave energies. Breached during Hurricanes Lili and Rita in 2002 and 2005, respectively.



BAYOU BARRE MARSH CREATION

- This project would strategically tie together three ridges (Bayou Terrebonne Ridge, Bayou St. Jean Charles Ridge, and Point au Chene Ridge)
- Tie together two other CWPPRA projects (Maddison Bay Marsh Creation and Terracing project and Island Road Marsh Creation project)
- Create 440 acres and nourish 19 acres of emergent brackish marsh
- Nearby borrow source Maddison Bay

BAYOU BARRE MARSH CREATION

Net Acres:

Approximately 353 ac of brackish marsh will be protected/created over the 20 year project life.

Identification of Potential Issues:

There would most likely be some pipeline issues and numerous oyster leases within the project area.

Preliminary Construction Costs:

The estimated construction cost plus 25% contingency $25-30 M.

R3-TE-09

East Catfish Lake Marsh Creation & Terracing

PPL24 PROJECT NOMINEE FACT SHEET
February 12, 2014

Project Name
East Catfish Lake Marsh Creation and Terracing

Project Location
Region 3, Terrebonne Basin, Lafourche Parish, east of Catfish Lake

Problem
Examination of historical aerial photography clearly indicates significant marsh loss around Catfish Lake. Subsidence, canal dredging, a lack of freshwater input, saltwater intrusion, and altered hydrology are all important factors contributing to this loss. Of particular note, is the area between Catfish Lake and Golden Meadow. Canal dredging, associated with oil and gas activities, has resulted in the rapid deterioration of this area. USGS calculated a 1985-2010 loss rate of -0.79% per year for the PPL22 North Catfish Lake Marsh Creation Project.

Goals
Goals are to restore a portion of the eastern Catfish Lake shoreline via marsh creation and restore marsh along the alignment of the Golden Meadow hurricane protection levee.

Proposed Project Features
1. Sediments will be hydraulically dredged in Catfish Lake and pumped via pipeline to create/nourish approximately 610 acres of marsh. The maximum pump distance for a Catfish Lake borrow site is approximately 31,000 feet (5.9 miles).
2. Containment dikes will be constructed as necessary and gapped upon project completion.
3. Terraces (25,800 linear ft-18 ac) will be constructed in deteriorated marsh areas to reduce fetch, promote SAV production, and provide marsh edge habitat.

Preliminary Project Benefits
1) *What is the total acreage benefited both directly and indirectly*? Approximately 1,070 acres would be benefited directly and indirectly. Direct benefits include 610 acres of marsh creation and 18 acres of terraces. Indirect benefits would occur to surrounding marshes and within the 460-acre terrace field.

2) *How many acres of wetlands will be protected/created over the project life*? The total net acres protected/created over the project life is approximately 502 acres.

3) *What is the anticipated loss rate reduction throughout the area of direct benefits over the project life (<25%, 25-49%, 50-74% and >75%).* The anticipated loss rate reduction throughout the area of direct benefit is estimated to be 50%.

4) *Do any project features maintain or restore structural components of the coastal ecosystem such as barrier islands, natural or artificial levee ridges, beach and lake rims, cheniers, etc.* The project would restore marsh along the eastern Catfish Lake shoreline.

5) *What is the net impact of the project on critical and non-critical infrastructure*? The project would afford protection to the Golden Meadow Hurricane Protection Levee.

6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects*? The project would complement other restoration projects in the area including the PPL22 North Catfish Lake Marsh Creation Project and CIAP/Parish marsh creation projects in the Catfish Lake area.

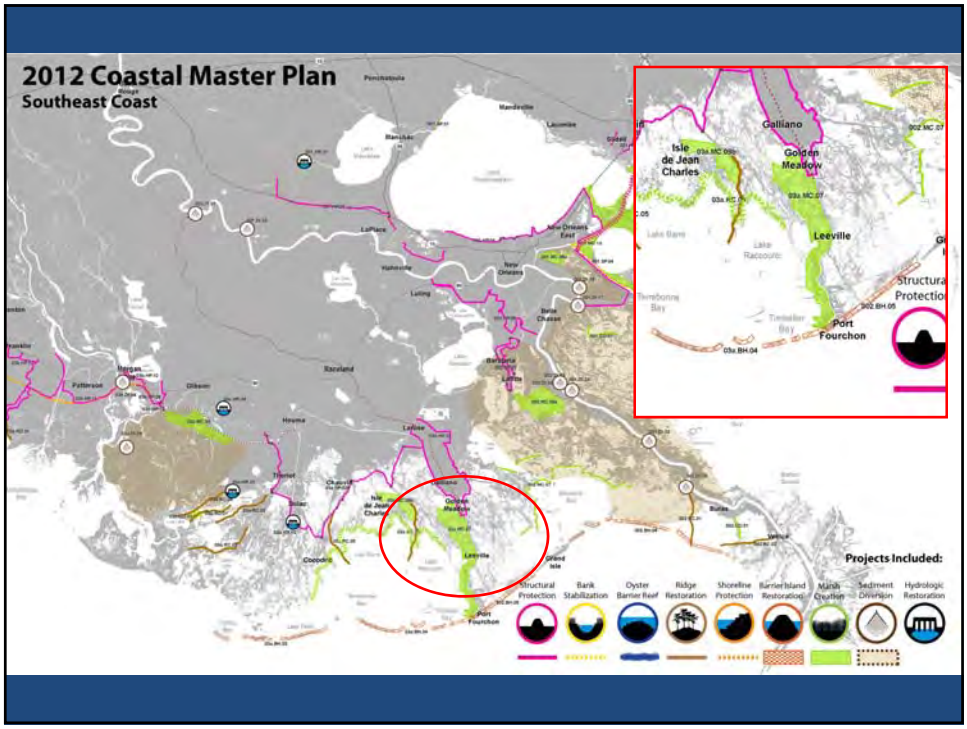
Identification of Potential Issues
Oil and gas infrastructure and oyster leases in Catfish Lake.

Preliminary Construction Costs
The estimated construction cost including 25% contingency is $25.6M.

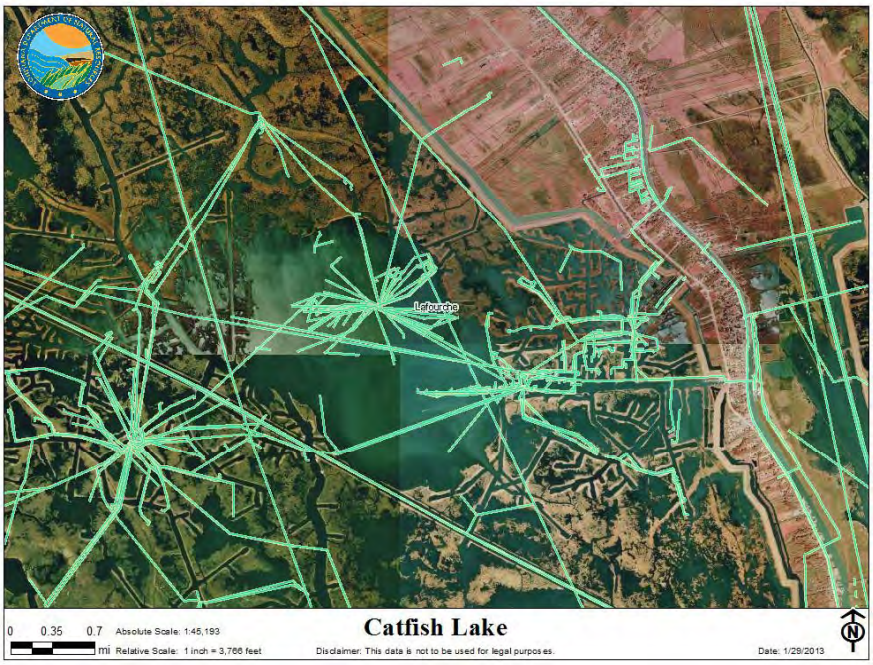
Preparer of Fact Sheet
Kevin Roy, USFWS, (337) 291-3120, kevin_roy@fws.gov


U.S. Fish & Wildlife Service
Louisiana Ecological Services Field Office
East Catfish Lake Marsh Creation and Terracing
Borrow Area
610 acres of marsh creation
25,800 ft of terraces (18 ac)
Catfish Lake
21,000 ft
200 ac
70 ac
40 ac
Borrow Area
65 ac
235 ac
9,700 ft
0
1,375
2,750
5,500 Feet

R3-TE-09


2012 Coastal Master Plan
Southeast Coast
Galliano
Isle de Jean Charles
Golden Meadow
Leeville
Port Fourchon
Projects Included:
Structural Protection
Bank Stabilization
Oyster Barrier Reef
Ridge Restoration
Shoreline Protection
Barrier Island Restoration
Marsh Creation
Sediment Diversion
Hydrologic Restoration


U.S. Fish & Wildlife Service
Louisiana Ecological Services Field Office
East Catfish Lake Marsh Creation and Terracing
Borrow Area
610 acres of marsh creation
25,800 ft of terraces (18 ac)
Catfish Lake
21,000 ft
200 ac
70 ac
40 ac
Borrow Area
65 ac
235 ac
9,700 ft
0 1,375 2,750 5,500 Feet



East Catfish Lake Marsh Creation

- Catfish Lake borrow site
- Maximum pump distance of 31,000 feet
- 610 acres of marsh creation/nourishment
- 25,000 linear feet of terraces – 18 acres
- Net acres = 502
- Construction plus contingency = $25.6M

R3-TE-10

Small Bayou LaPointe Marsh & Ridge Restoration

R3-TE-10

PPL24 PROJECT NOMINEE FACT SHEET
February 12, 2014

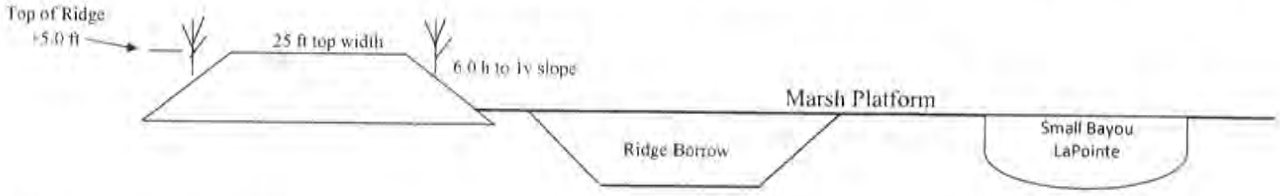
Project Name
Small Bayou LaPointe Marsh and Ridge Restoration

Project Location
Region 3, Terrebonne Basin, Terrebonne Parish, east of Raccourci Bay, adjacent to Small Bayou LaPointe

Problem
Examination of historical aerial photography clearly indicates significant marsh loss in the vicinity of the project area, particularly in the area between Small Bayou LaPointe and Bayou DeCade. Subsidence, canal dredging, saltwater intrusion, and altered hydrology are all important factors contributing to marsh loss in the area. USGS calculated a 1985-2009 loss rate of -0.45% per year for the Lake Mechant LCA polygon. In addition, forested ridge no longer exists along Small Bayou LaPointe. The ridge has subsided over several centuries and is now marsh.

Goals
The goals are to: 1) Restore 393 acres of intermediate/brackish marsh habitat along the northern side of Small Bayou LaPointe and 2) Restore ridge habitat along Small Bayou LaPointe.

Proposed Project Features
1. Sediments will be hydraulically dredged in Lake Mechant and pumped via pipeline to create/nourish approximately 393 acres of marsh.
2. Containment dikes will be constructed as necessary and gapped upon project completion.
3. The maximum pump distance for the Lake Mechant borrow site is approximately 29,000 feet.
4. Approximately 18,500 ft (23 acres) of ridge will be constructed along the southern bank of Small Bayou LaPointe. Ridge material will be obtained north of the ridge alignment and the borrow area filled during construction of the marsh platform. Proposed ridge dimensions include a settled elevation of +5 ft, a 25 ft top width, 1V:6H side slopes, and a base width of 55 ft. Chinese tallow tree control and hardwood plantings are included.



Preliminary Project Benefits
1) *What is the total acreage benefited both directly and indirectly?* Approximately 393 acres of marsh would be benefited directly from marsh creation. Ridge restoration would result in 23 acres of ridge habitat.

2) *How many acres of wetlands will be protected/created over the project life?* The total net acres protected/created over the project life is approximately 279 acres.

3) *What is the anticipated loss rate reduction throughout the area of direct benefits over the project life (<25%, 25-49%, 50-74% and >75%).* The anticipated loss rate reduction throughout the area of direct benefit is estimated to be 50%.

4) *Do any project features maintain or restore structural components of the coastal ecosystem such as barrier islands, natural or artificial levee ridges, beach and lake rims, cheniers, etc.* Yes. The project would restore a forested ridge along Small Bayou LaPointe.

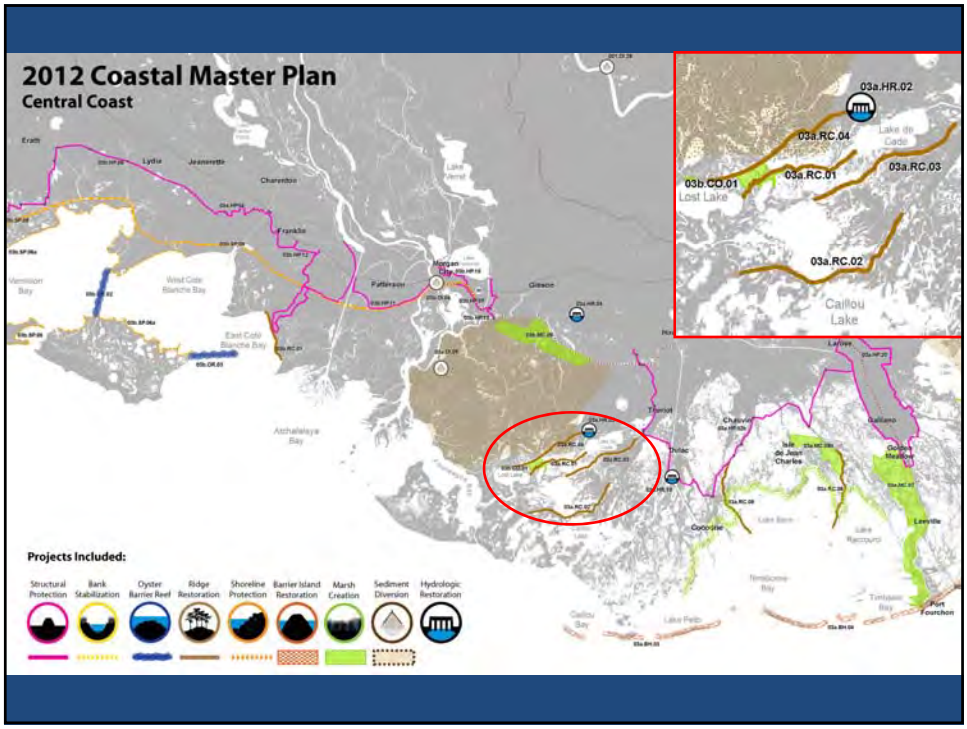
5) *What is the net impact of the project on critical and non-critical infrastructure*? None.

6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects*? The project would provide a synergistic effect with the North Lake Mechant Landbridge Restoration Project (TE-44) located to the west. Both projects would work together to maintain ridge/marsh landbridge along the intermediate zone between Lake Mechant and Bayou DeCade.

Identification of Potential Issues
Oyster leases in Lake Mechant.

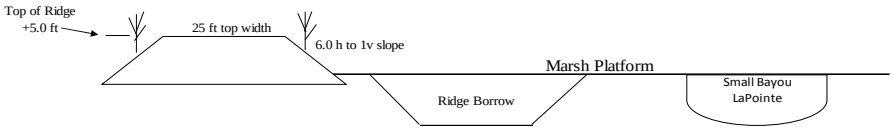
Preliminary Construction Costs
The estimated construction cost including 25% contingency is $18.9M.

Preparer of Fact Sheet
Kevin Roy, USFWS, (337) 291-3120, kevin_roy@fws.gov


2012 Coastal Master Plan
Central Coast
03a.HR.02
03a.RC.04
03a.RC.01
03a.RC.03
03b.CO.01
Lost Lake
03a.RC.02
Caillou Lake
Projects Included:
Structural Protection
Bank Stabilization
Oyster Barrier Reef
Ridge Restoration
Shoreline Protection
Barrier Island Restoration
Marsh Creation
Sediment Diversion
Hydrologic Restoration

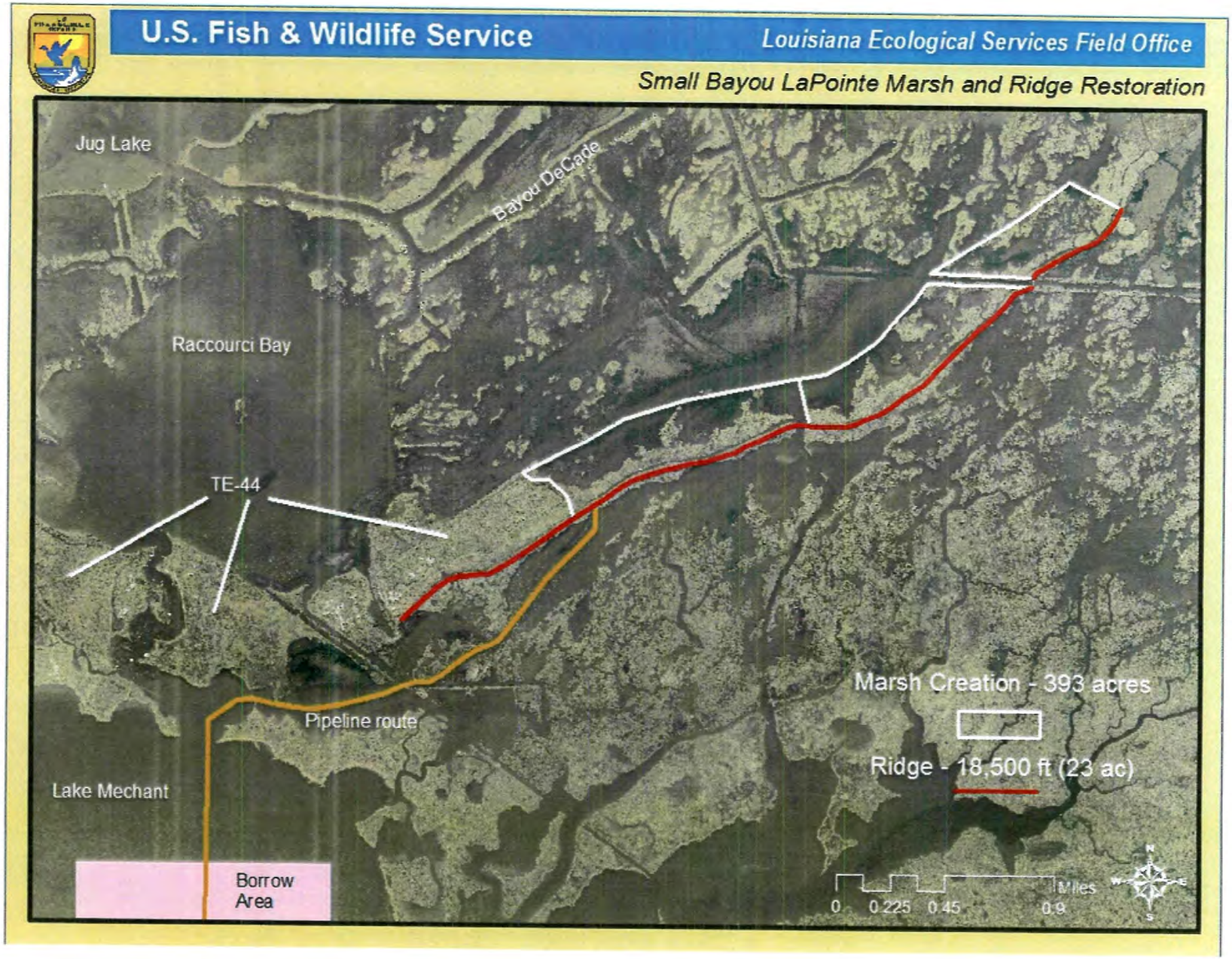

U.S. Fish & Wildlife Service
Louisiana Ecological Services Field Office
Small Bayou LaPointe Marsh and Ridge Restoration
Jug Lake
Bayou DeCade
Raccourci Bay
TE-44
Pipeline route
Lake Mechant
Borrow Area
Marsh Creation - 393 acres
Ridge - 18,500 ft (23 ac)
0 0.225 0.45 0.9
Miles

Small Bayou LaPointe Ridge Feature



Small Bayou LaPointe Marsh and Ridge Restoration

- Lake Mechant borrow site
- Maximum pump distance of 29,000 feet
- 395 acres of marsh creation/nourishment
- 18,500 ft of ridge restoration (23 ac)
- Net acres = 279
- Construction plus contingency = $18.9M


U.S. Fish & Wildlife Service
Louisiana Ecological Services Field Office
Small Bayou LaPointe Marsh and Ridge Restoration
Jug Lake
Bayou DeCade
Raccourci Bay
TE-44
Pipeline route
Lake Mechant
Borrow Area
Marsh Creation - 393 acres
Ridge - 18,500 ft (23 ac)
0
0.225
0.45
0.9
Miles

R3-TE-10

R3-TE-11

Carencro Bayou Marsh Creation and Freshwater Introduction

PPL24 PROJECT NOMINEE FACT SHEET
February 12, 2014

Project Name: Carencro Bayou Marsh Creation and Freshwater Introduction Project

Coast 2050 Strategies:

- Regional Strategy # 4 (enhance Atch River influence to Terrebonne marshes)
- Regional Strategy # 8 (dedicated sediment delivery to create marshes)
- Regional Strategy # 10 (restore lake/marsh tidal exchange)

Project Location: Region 3, western Terrebonne Basin, northeast shore of Lost Lake

Problem: Erosion of the northeast Lost Lake shoreline is creating new water exchange points and threatening to accelerate loss of interior broken marshes. Additional lakeshore breaching will reduce the effectiveness of existing and future freshwater inputs. Freshwater inputs to the north Lost Lake marshes could be increased if structures were constructed to discharge freshwater into Carencro Bayou.

.

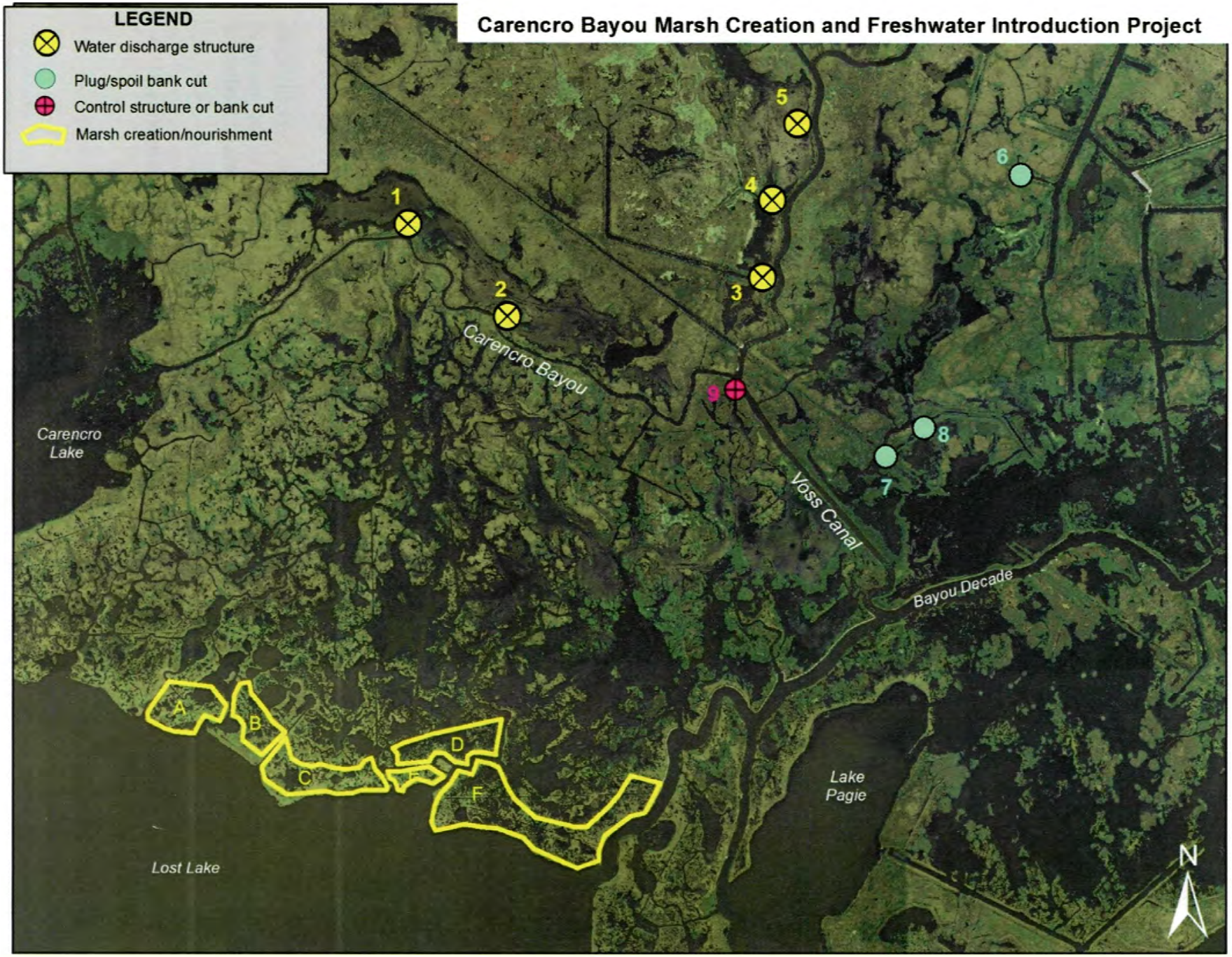
Proposed Solution: Strategically create 211 ac of marsh and nourish 187 ac of existing marsh along the northeast Lost Lake shoreline. Increase freshwater discharge into Carencro Bayou by installing 5 discharge structures in the north bayou bank. A structure would also be installed in the west Voss Canal bank to facilitate entry of that fresh water into marshes north of Lost Lake. Additionally, a canal plug would be gapped to increase flows of Bayou Penchant freshwater into marshes within the CWPPRA Brady Canal project area. Existing oil-field canal spoil banks would be cut in one or two locations to improve the distribution of that additional freshwater within existing open water areas of the lower Brady Canal project area.

The proposed freshwater introduction structures will in part utilize the Ducks Unlimited (DU) Carencro Bayou West Leg Project (that was recently on Joint Public Notice) by drawing additional freshwater from canals which the DU project is connecting to Bayou Penchant. This will help to increase suspended sediment concentrations of the introduced freshwater and over time, may result in formation of mineral soil marshes as has occurred in nearby areas where this brown water is flowing. The proposed features would enhance the function of the Brady Canal Hydrologic Restoration CWPPRA Project (TE-28), the Lost Lake Marsh Creation and Hydrologic Restoration CWPPRA Project (TE-72), and the Ducks Unlimited Carencro Bayou West Leg Project. The proposed marsh creation/nourishment along the northeast rim of Lost Lake will protect broken interior organic soil marshes from increased wave erosion and loss expected to occur as the very narrow lake rim erodes away.

Project Benefits: Freshwater discharge from marshes north of Carencro Bayou might benefit 1,000 acres or more. Freshwater introduction benefits within the Brady Canal Project area might benefit an additional 1,000 acres. Benefits to north Lost Lake marshes associated with the increased freshwater inputs and lakeshore protection would accrue to approximately 4,000 acres of marsh.

Project Costs: The estimated construction cost including 25% contingency, is approximately $18.5 million.

Preparers of Fact Sheet: Ronny Paille, Fish and Wildlife Service, (337) 291-3117, Ronald_Paille@FWS.GOV

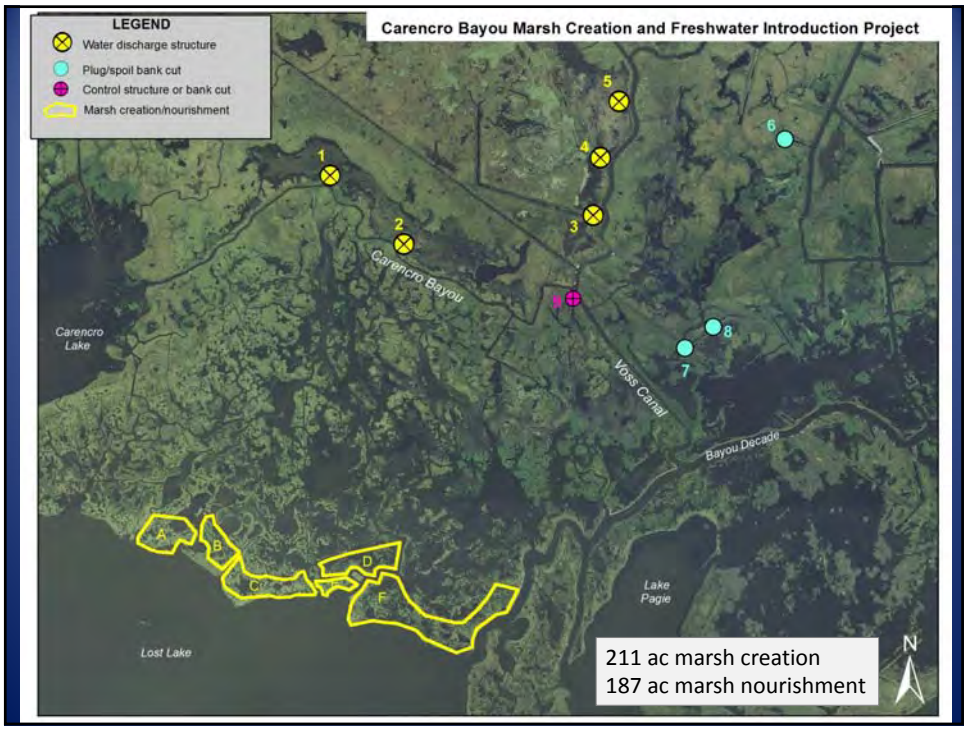

LEGEND
Water discharge structure
Plug/spoil bank cut
Control structure or bank cut
Marsh creation/nourishment
Carencro Bayou Marsh Creation and Freshwater Introduction Project
1
2
3
4
5
6
7
8
9
Carencro Bayou
Voss Canal
Bayou Decade
Carencro Lake
Lake Pagie
Lost Lake
A
B
C
D
E
F
N

Carencro Bayou Marsh Creation and Freshwater Introduction Project

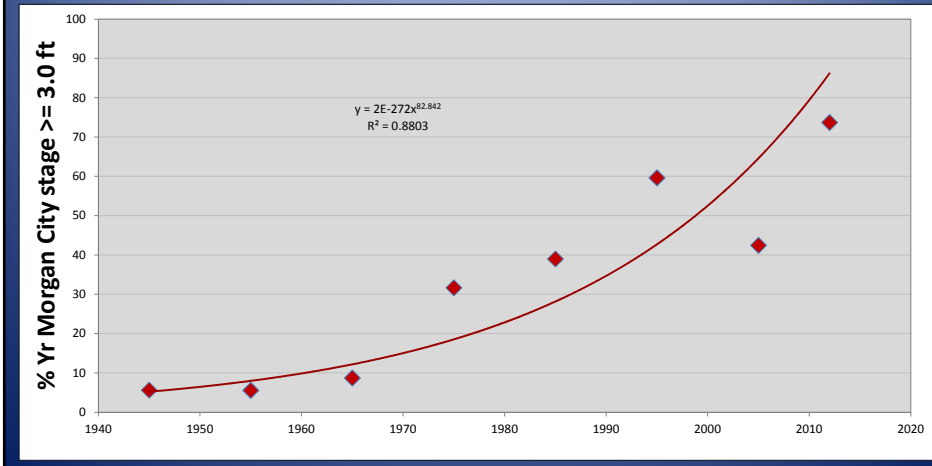
CWPPRA Nominee

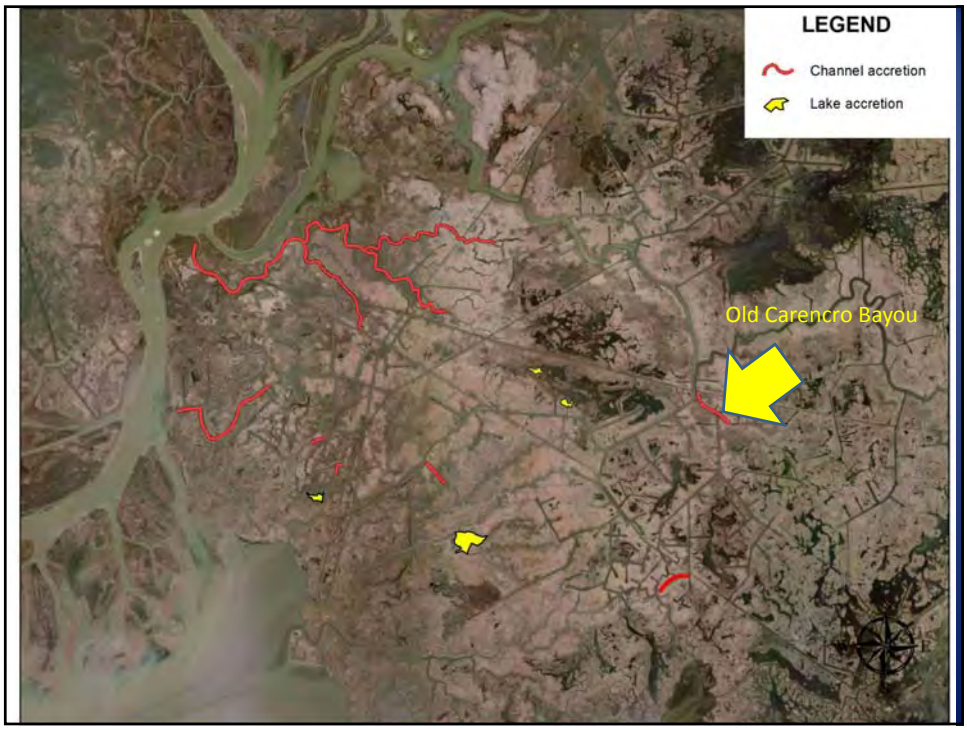
For PPL 24

January 2014

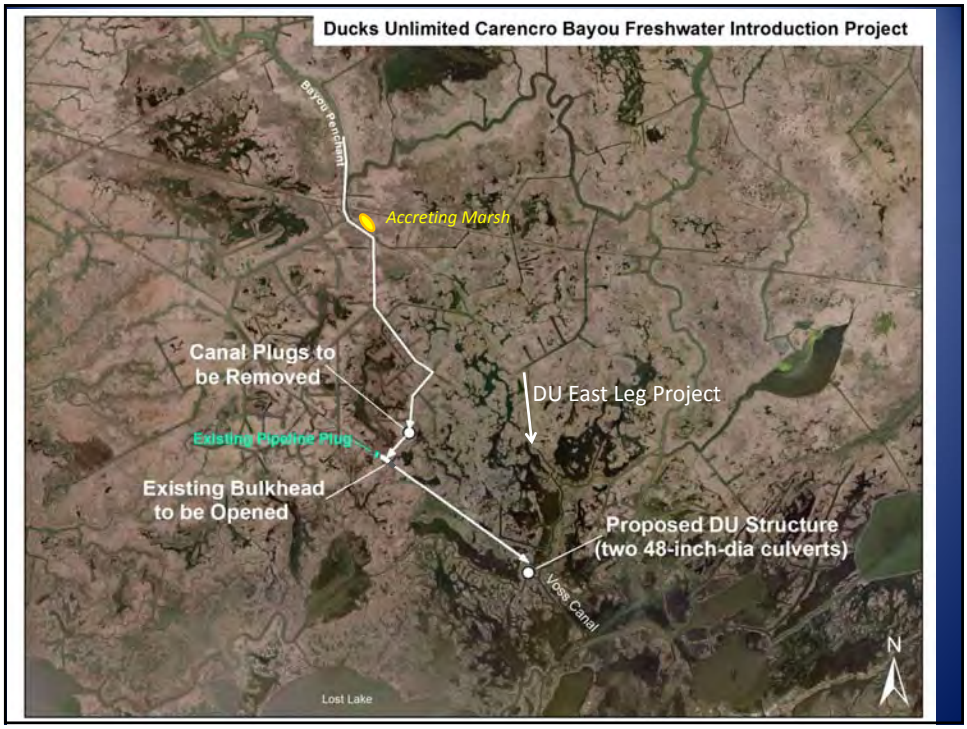


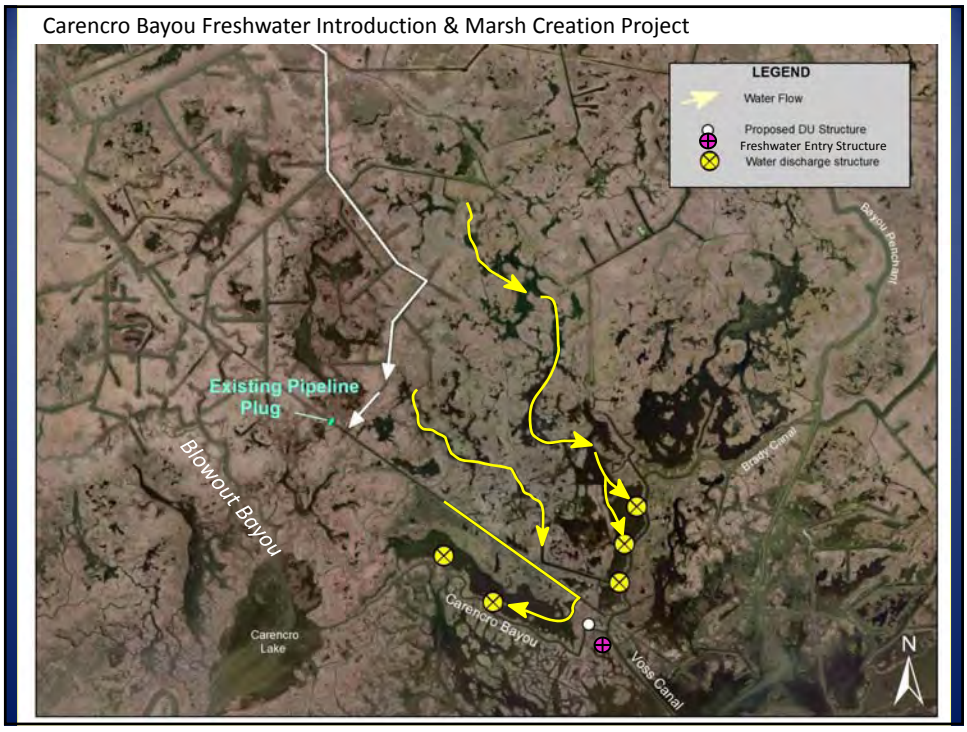
Lower Atchafalaya River Stages Are Rising

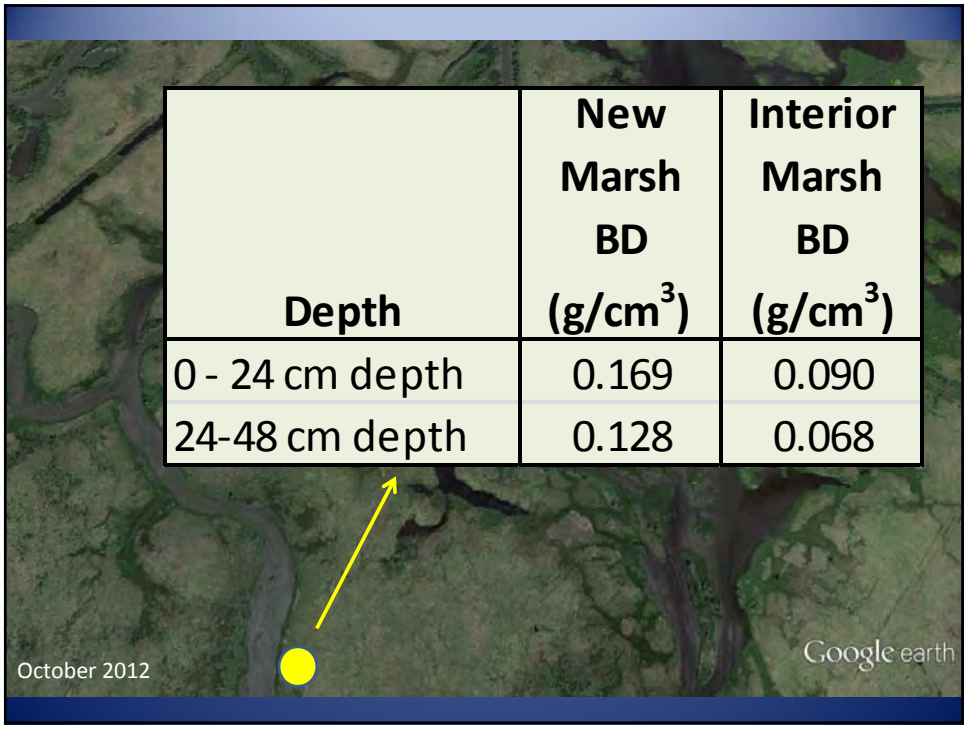




Depth	New Marsh BD (g/cm^3)	Interior Marsh BD (g/cm^3)
0 - 24 cm depth	0.269	0.046
24-48 cm depth	0.287	0.133


Ducks Unlimited Carencro Bayou Freshwater Introduction Project
Bayou Pierre Part
Accreting Marsh
Canal Plugs to be Removed
DU East Leg Project
Existing Pipeline Plug
Existing Bulkhead to be Opened
Proposed DU Structure (two 48-inch-dia culverts)
Voss Canal
Lost Lake
N

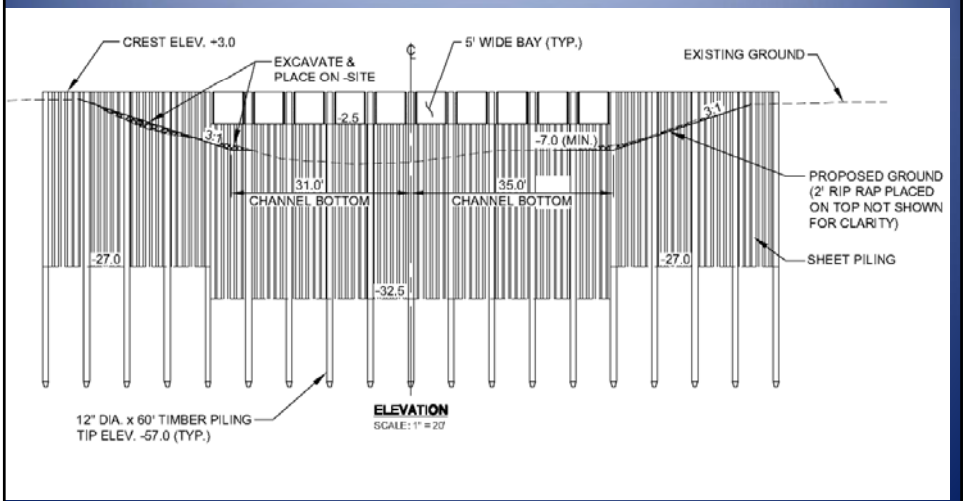

Carencro Bayou Freshwater Introduction & Marsh Creation Project
LEGEND
Water Flow
Proposed DU Structure
Freshwater Entry Structure
Water discharge structure
Bayou Pierre Part
Existing Pipeline Plug
Blowout Bayou
Brady Canal
Carencro Bayou
Carencro Lake
Voss Canal
N

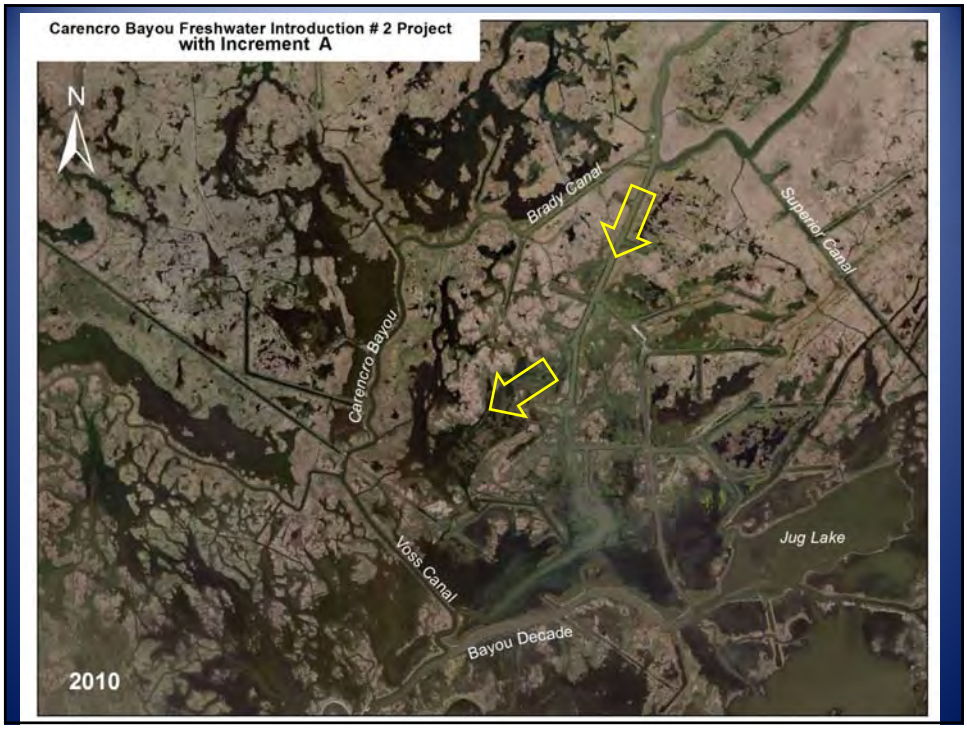


Depth	New Marsh BD (g/cm^3)	Interior Marsh BD (g/cm^3)
0 - 24 cm depth	0.169	0.090
24-48 cm depth	0.128	0.068

Structure Design

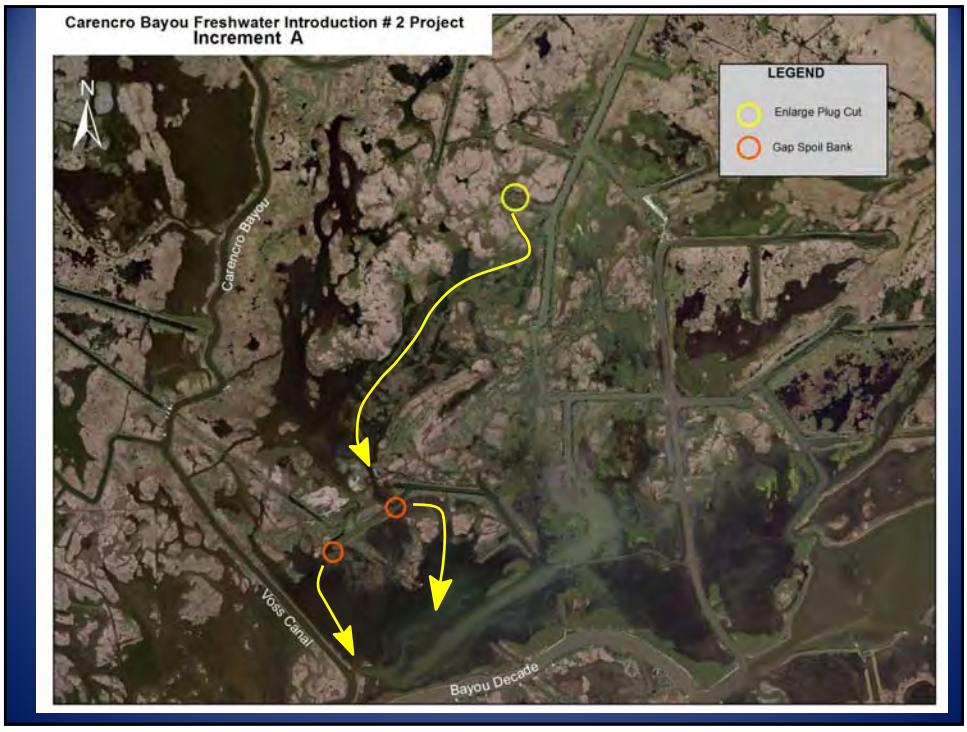
(each structure would be ~ 5 bays)



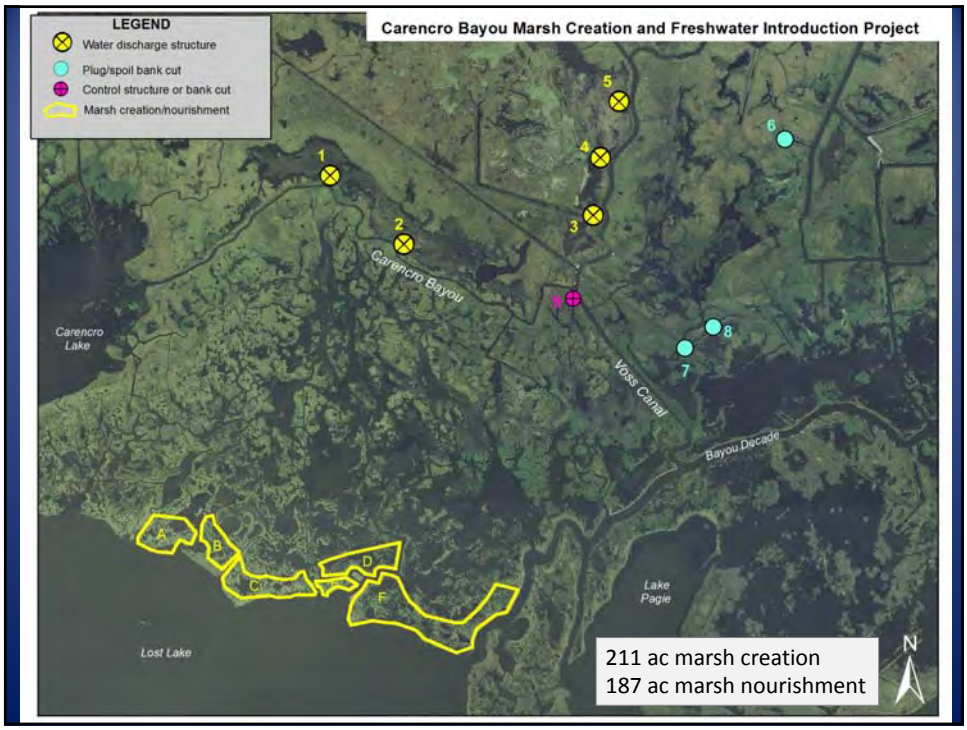

Carencro Bayou Freshwater Introduction # 2 Project
with Increment A
N
Brady Canal
Superior Canal
Carencro Bayou
Voss Canal
Jug Lake
Bayou Decade
2010


Proposed plug cut
enlargement
November 2005
Google earth

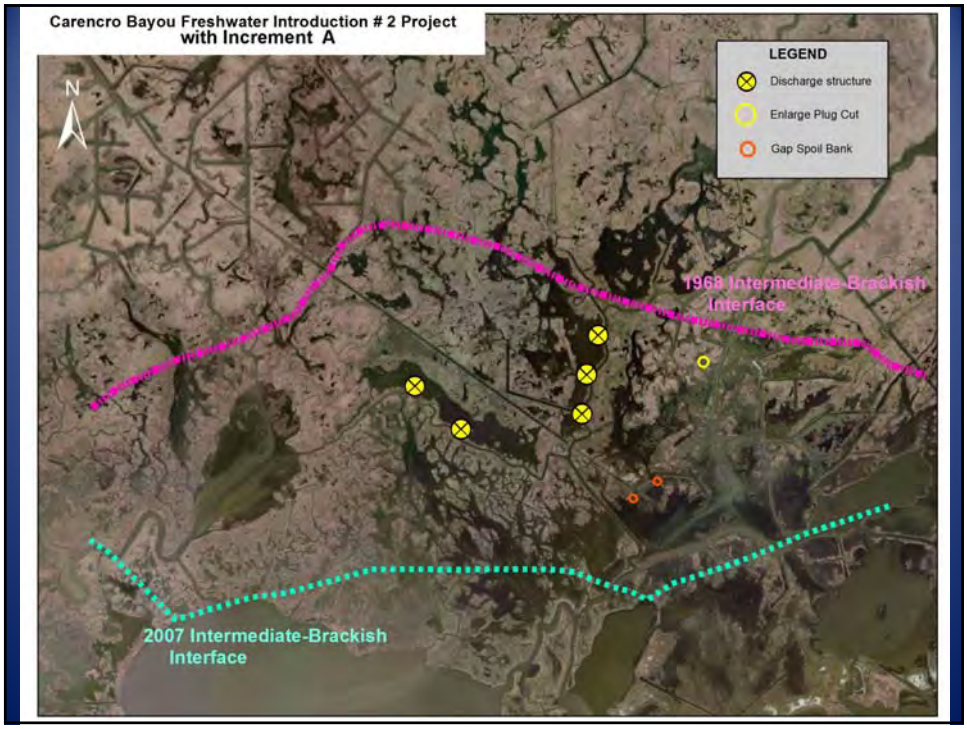

flow
flow
November 2005
October 2012


Carencro Bayou Freshwater Introduction # 2 Project
Increment A
N
LEGEND
Enlarge Plug Cut
Gap Spoil Bank
Carencro Bayou
Voss Canal
Bayou Decade

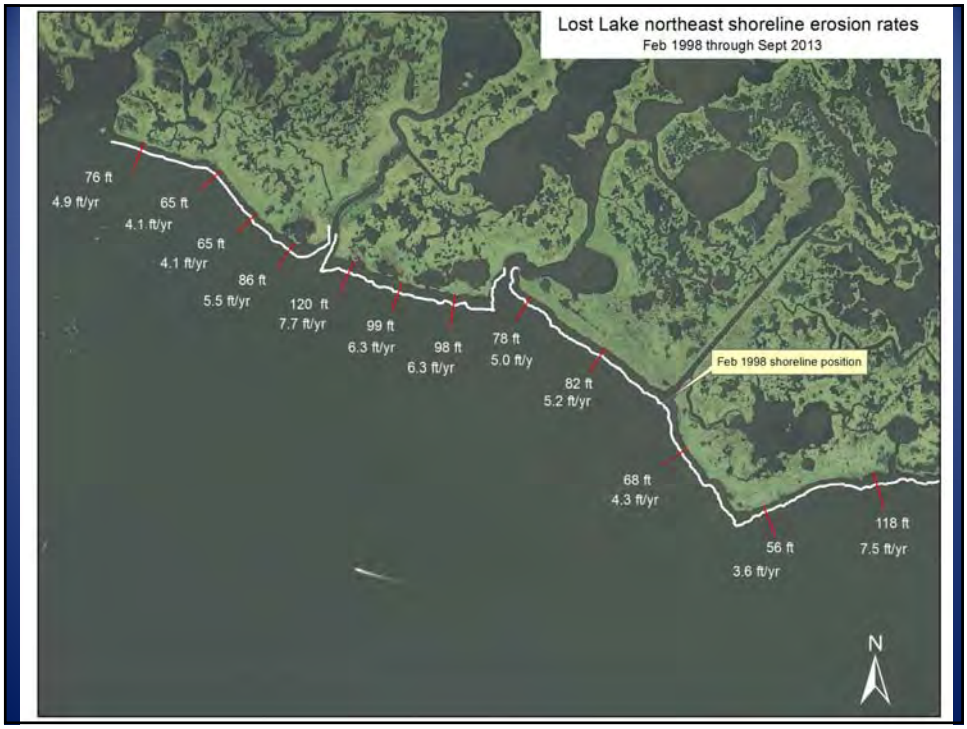

211 ac marsh creation
187 ac marsh nourishment


LEGEND
Water discharge structure
Plug/spoil bank cut
Control structure or bank cut
Marsh creation/nourishment
Carencro Bayou Marsh Creation and Freshwater Introduction Project
Carencro Lake
Carencro Bayou
Voss Canal
Bayou Decade
Lake Pagie
Lost Lake
211 ac marsh creation
187 ac marsh nourishment
N

END


Carencro Bayou Freshwater Introduction # 2 Project
with Increment A
N
LEGEND
Discharge structure
Enlarge Plug Cut
Gap Spoil Bank
1968 Intermediate-Brackish Interface
2007 Intermediate-Brackish Interface


Proposed plug cut enlargement
November 2005
Google earth


Lost Lake northeast shoreline erosion rates
Feb 1998 through Sept 2013
76 ft
4.9 ft/yr
65 ft
4.1 ft/yr
65 ft
4.1 ft/yr
86 ft
5.5 ft/yr
120 ft
7.7 ft/yr
99 ft
6.3 ft/yr
98 ft
6.3 ft/yr
78 ft
5.0 ft/y
82 ft
5.2 ft/yr
Feb 1998 shoreline position
68 ft
4.3 ft/yr
56 ft
3.6 ft/yr
118 ft
7.5 ft/yr
N


Lost Lake northeast shoreline erosion rates
Feb 1998 through Sept 2013
4.1 ft/yr
64 ft
118 ft
7.5 ft/yr
67 ft
4.3 ft/yr
59 ft
3.8 ft/yr
Feb 1998 shoreline position
55 ft
3.5 ft/yr
53 ft
3.4 ft/yr
62 ft
4.0 ft/yr
45 ft
2.9 ft/yr
Lost Lake
N

R3-TE-12

Bayou De Cade Bankline & Marsh Restoration

PPL24 Bayou De Cade Bankline and Marsh Restoration
February 12, 2014

Louisiana's 2012 Coastal Master Plan:
Consistent Ridge Restoration Subunit - 03a.RC.01

Project Location:
Region 3, Terrebonne Basin, Terrebonne Parish, Lake Mechant Mapping Unit

Problem:
The Terrebonne Basin is an abandoned delta complex, characterized by a thick section of unconsolidated sediments that are undergoing dewatering and compaction, contributing to high subsidence, and a network of old distributary ridges extending southward from Houma. Historically, subsidence and numerous oil and gas canals and pipelines in the area have contributed significantly to wetland losses. Since 1932, the Terrebonne Basin has lost approximately 20% of its wetlands. Current loss rates range from approximately 4,500 to 6,500 acres/year. This loss amounts to up to 130,000 acres during the next 20 years. One-third of the Terrebonne Basin's remaining wetlands would be lost to open water by the year 2040. The wetland loss rate for the Lake Mechant subunit is -0.45%/year based on USGS data from 1995 to 2009.

Goals:
The project goals are to:

- Create and/or nourish up to 400 acres of emergent intermediate marsh along the northern bank of Bayou Decade and a portion of the western shoreline of Lake Decade
- Construct 10,560 linear feet of ridge along the northern bank of Bayou Decade

Proposed Solutions:
The proposed project's primary feature for either option is to create and/or nourish approximately 400 acres of intermediate marsh adjacent to Lake Decade and restore 10,560 ft of Bayou Decade northern bankline. In order to achieve this, **s**ediment will be hydraulically pumped from a borrow source in Lake Decade. The borrow area in Lake Decade would be located and designed in a manner to avoid and minimize environmental impacts (e.g., to submerged aquatic vegetation and water quality) to the maximum extent practicable. Containment dikes will be constructed around the marsh creation area to retain sediment during pumping. No later than three years post construction, the containment dikes will be degraded and/or gapped. Additionally, the half of the newly constructed marsh will be planted following construction to stabilize the platform and reduce time for full vegetation. Material for the ridge feature will also be hydraulically pumped from a borrow source in Lake Decade and lifted to a crown elevation of +6.0 feet, 25 feet wide, and will be planted.

Preliminary Project Benefits

1) *What is the total acreage benefited both directly and indirectly?*
   The total project area is approximately 418 acres (350 acres of marsh creation and 50 acres of marsh nourishment + 18 acres of ridge).

2) *How many acres of wetlands will be protected/created over the project life?*

Assuming a 50% reduction in the background loss rate (Lake Mechant Subunit, -0.45%/year), for the marsh creation and nourishment; and, no loss for the ridge feature would result in 355 net acres after 20 years.

3) *What is the anticipated loss rate reduction throughout the area of direct benefits over the project life (e.g., 50% reduction in the background loss rate)?*
A 50% loss rate reduction is assumed for the marsh creation and marsh nourishment. (Lake Mechant Mapping Unit, from -0.45%/year to -0.27%/year)

4) *Do any project features maintain or restore structural components of the coastal ecosystem such as barrier islands, natural or artificial levee ridges, beach and lake rims, cheniers, etc.?*
The project will help restore Bayou Decade bankline and a portion of the Lake Decade shoreline.

5) *What is the net impact of the project on critical and non-critical infrastructure?*
N/A

6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?*
(TE-39) South Lake Decade Freshwater Introduction Project and (TE-44) North Lake Mechant Landbridge Restoration

Identification of Potential Issues:
The proposed project has the following potential issues: utilities/pipelines, etc. The fill areas are located on Apache Corporation property and the conceptual features have been coordinated with them.

Preliminary Construction Costs
The estimated construction cost including 25% contingency is $22,607,918. The fully-funded cost range is $25M - $30M.

Preparer(s) of Fact Sheet:
Kimberly Clements, NOAA Fisheries, 225-389-0508 ext 204, kimberly.clements@noaa.gov
Patrick Williams, NOAA Fisheries, 225-389-0508, ext 208, patrick.williams@noaa.gov

PPL24 Bayou De Cade Bankline and Marsh Restoration

Lake De Cade

BORROW

Jug Lake

Raccourci Bay

Project Features Option 1 – Lake De Cade:

400 acres marsh creation

10,560 feet of ridge construction

Google earth

4461 ft

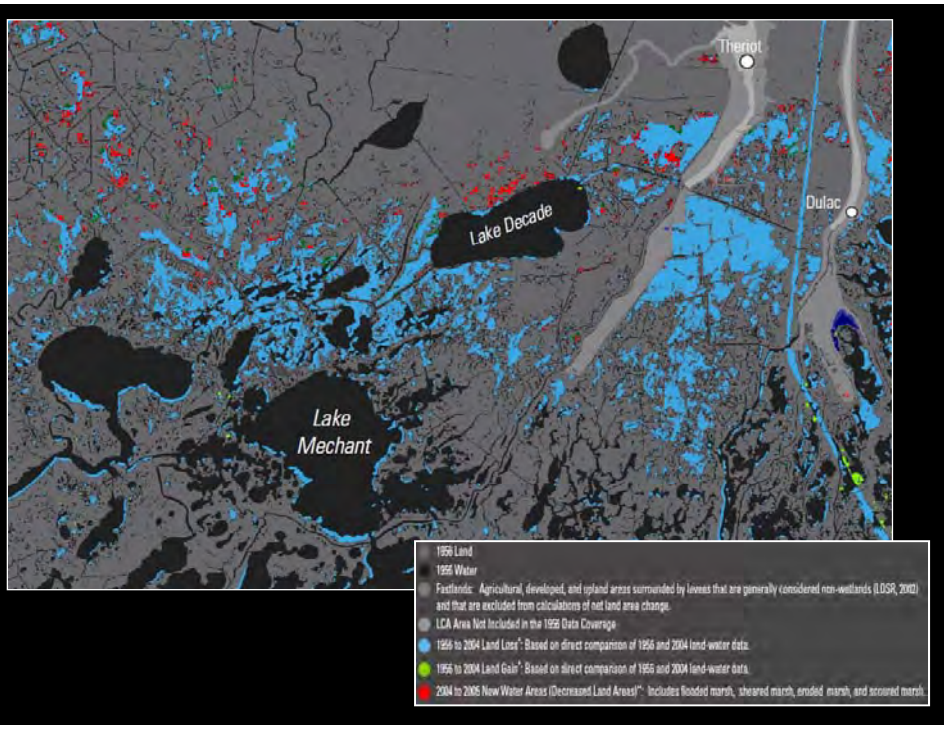
1990

Imagery Date: 10/28/2012 29°22'27.23" N 90°55'16.05" W elev 0 ft eye alt 20225 ft

PPL24 BAYOU DECADE BANKLINE AND MARSH RESTORATION

PPL24 Region 2 RPT, February 13, 2014

Kimberly Clements
National Marine Fisheries Service

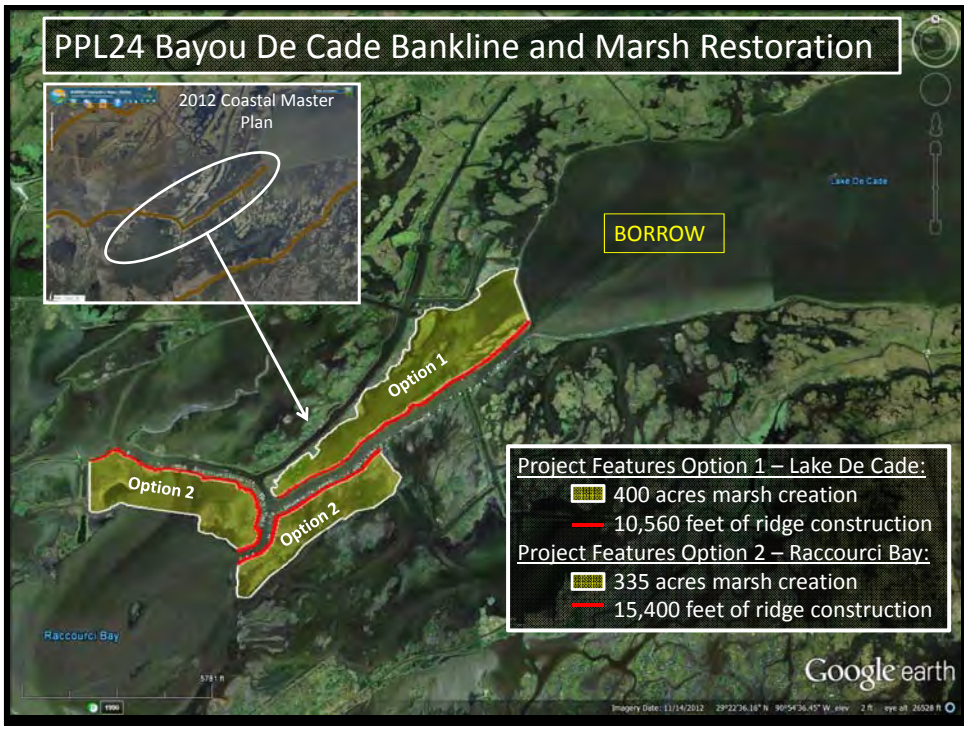



1998
2008
PPL 21: Lake Deacde
PPL 21 Project Features:
0
10246ft
0
9634ft


Louisiana 2012 Coastal Master Plan
Table of Contents

Problems near Bayou De Cade Area:

- High Land Loss rates in Terrebonne Basin, 20% since 1932 and currently 4,000-6,500 acres lost per year
- High Subsidence in the area, 2.1-3.5 ft/century, Coast 2050 Mechant/Decade Unit
- Wetland Loss Rate for the Lake Mechant subunit is -0.45%/year
- Reduced intermediate/brackish habitat for fisheries in the area



Project Features and Benefits

- Total habitat restored range between 362-418 acres, including 335-400 acres of marsh (depending on option) and 2 miles of ridge construction
- Borrow from outside immediate project area in Lake Decade
- Consistent with State Master Plan, Ridge Creation Subunit – 03a.RC.01, “restoration of historic ridge along Bayou Decade from Lake Decade to Raccourci Bay to provide coastal upland habitat, restore natural hydrology, and provide wave and storm surge attenuation”
- Supports “T9” Concept for Terrebonne Parish, 4th Annual Coastal Restoration Workshop
- Construction + 25% Contingency is $22.6 M

R3-TE-13

Bayou Jean Lacroix to Bayou Pointe au Chien Marsh Creation & Terracing

R3 TE-13

PPL24 Bayou Jean Lacroix to Bayou Pointe au Chien Marsh Creation and Terracing
February 12, 2014

Louisiana's 2012 Coastal Master Plan:
Consistent with Marsh Creation Subunit – 03a.MC.09b

Project Location
Region 3, Terrebonne Basin, Terrebonne and Lafourche Parish

Problem
The Terrebonne Basin is an abandoned delta complex, characterized by a thick section of unconsolidated sediments that are undergoing dewatering and compaction, contributing to high subsidence, and a network of old distributary ridges extending southward from Houma. Historically, subsidence and numerous oil and gas canals and pipelines in the area have contributed significantly to wetland losses. Since 1932, the Terrebonne Basin has lost approximately 20% of its wetlands. Current loss rates range from approximately 4,500 to 6,500 acres/year. This loss amounts to up to 130,000 acres during the next 20 years. One-third of the Terrebonne Basin's remaining wetlands would be lost to open water by the year 2040. The wetland loss rate for the Wonder Lake subunit is -0.87%/year based on USGS data from 1985 to 2009.

Goals
The project goals are to:

- create and/or nourish up to 360 acres of emergent brackish marsh;
- construct 27,300 linear ft. of terraces (17 acres) south of and adjacent to the newly restored marsh platform

Proposed Solution
The proposed project's primary feature is to create 288 acres and nourish 72 acres of existing marsh to form a land bridge south of the Twin Pipeline Canal between Bayou Jean Lacroix and Bayou Pointe au Chien. Sediment will be hydraulically pumped from a borrow source near Lake Felicity. Containment dikes will be constructed around the marsh creation area to retain sediment during pumping. Dikes will be degraded and/or gapped no later than three years post construction to allow greater tidal exchange and estuarine organism access. Half of the newly constructed marsh (144 acres) will be planted following construction to stabilize the platform and reduce time for full vegetation. The project will also construct 27,300 ft. (17 acres) of terraces in 390 acres of shallow open water just south of the marsh platform to help reduce wave fetch generated from the south in Terrebonne Bay. Terraces would be constructed to an elevation of +2.5 feet NAVD 88, with a 15-ft crown width, and would be planted. The proposed solution is synergistic with (TE-53) Madison Bay Marsh Creation and Terracing and (TE-117) Island Road Marsh Creation and Nourishment projects currently authorized under the CWPPRA program.

Preliminary Project Benefits
1) What is the total acreage benefited both directly and indirectly?
This total project area is approximately 750 acres (288 acres of marsh creation and 72 acres of marsh nourishment + 390 acres of terrace field).

2) *How many acres of wetlands will be protected/created over the project life?*
Assuming a 50% reduction in the background loss rate (Wonder Lake Mapping Unit, -0.87%/year), the marsh creation, nourishment, and constructed terraces would result in 286 net acres after 20 years.

3) *What is the anticipated loss rate reduction throughout the area of direct benefits over the project life (e.g., 50% reduction in the background loss rate)?*
A 50% loss rate reduction is assumed for the marsh creation, marsh nourishment, and terraces. (Wonder Lake Mapping Unit, from -0.87%/year to -0.43%/year)

4) *Do any project features maintain or restore structural components of the coastal ecosystem such as barrier islands, natural or artificial levee ridges, beach and lake rims, chéniers, etc?*
The project will help restore a small portion of Bayou Jean Lacroix.

5) *What is the net impact of the project on critical and non-critical infrastructure?*
The project would provide positive impacts to non-critical (i.e., minor oil and gas facilities) infrastructure. Minor oil and gas facilities and pipelines in the area would benefit from an increase in marsh acreage. The loss of wetlands in this area increases the vulnerability of infrastructure to wave energy.

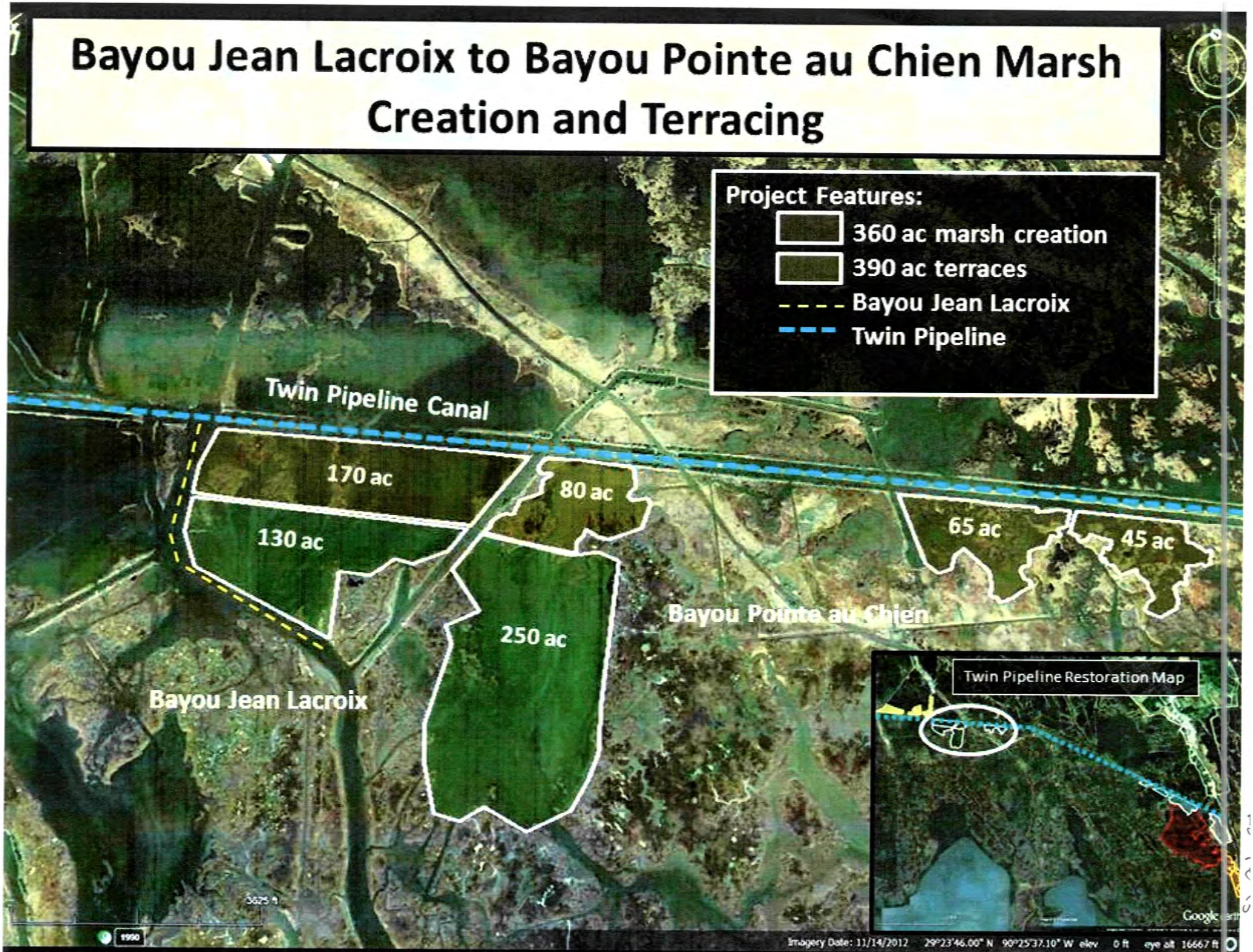
6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?*
The project may have indirect synergy with the (TE-53) Madison Bay Marsh Creation and Terracing project and (TE-117) Island Road Marsh Creation and Nourishment project; and, the Ducks Unlimited marsh management unit on Point aux Chien Wildlife Management Area.

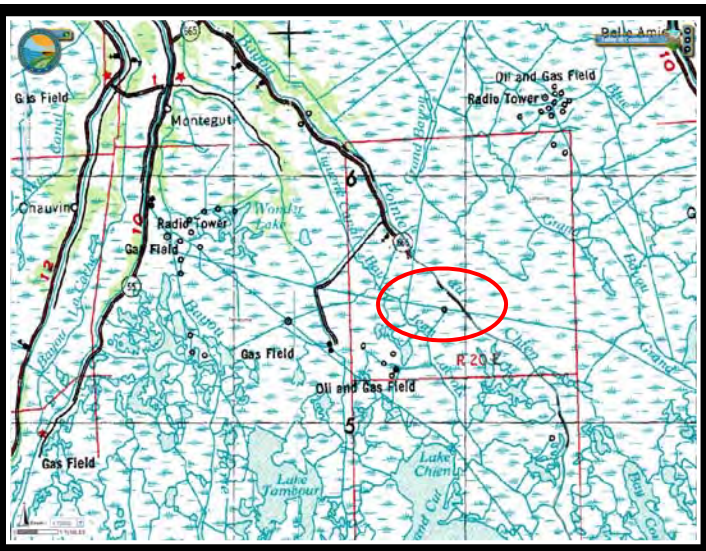
Identification of Potential Issues
The proposed project has potential utility/pipeline issues and oyster leases.

Preliminary Construction Costs
The estimated construction cost including 25% contingency is $20,556,249. The fully-funded cost range is $25M - $30M.

Preparer(s) of Fact Sheet:
Kimberly Clements, NOAA Fisheries, 225-389-0508 ext 204, kimberly.clements@noaa.gov
Patrick Williams, NOAA Fisheries, 225-389-0508, ext 208, patrick.williams@noaa.gov

Bayou Jean Lacroix to Bayou Pointe au Chien Marsh Creation and Terracing

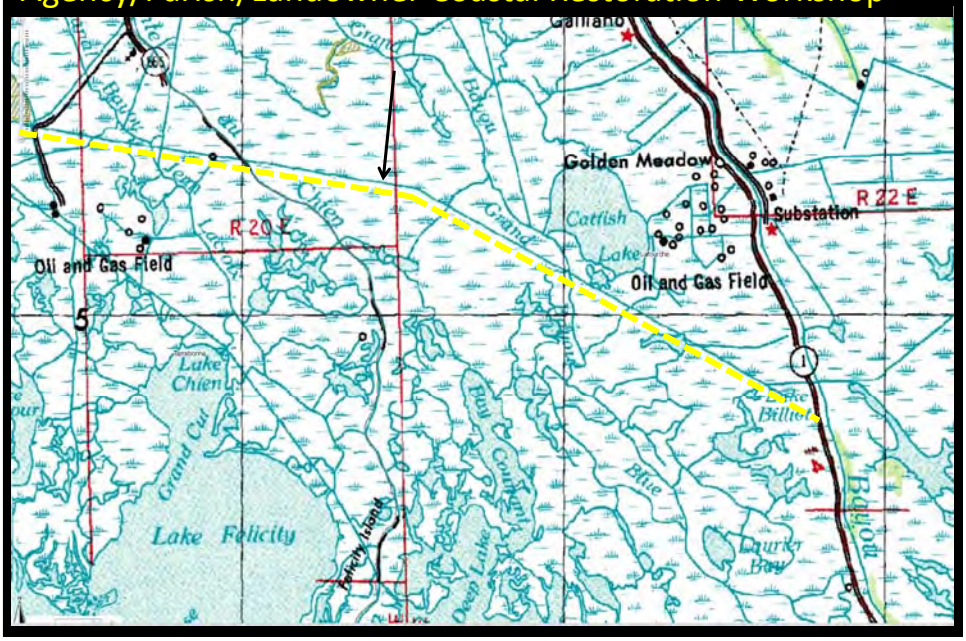




PPL24 BAYOU JEAN LACROIX TO BAYOU POINTE AU CHIEN MARSH CREATION AND TERRACES

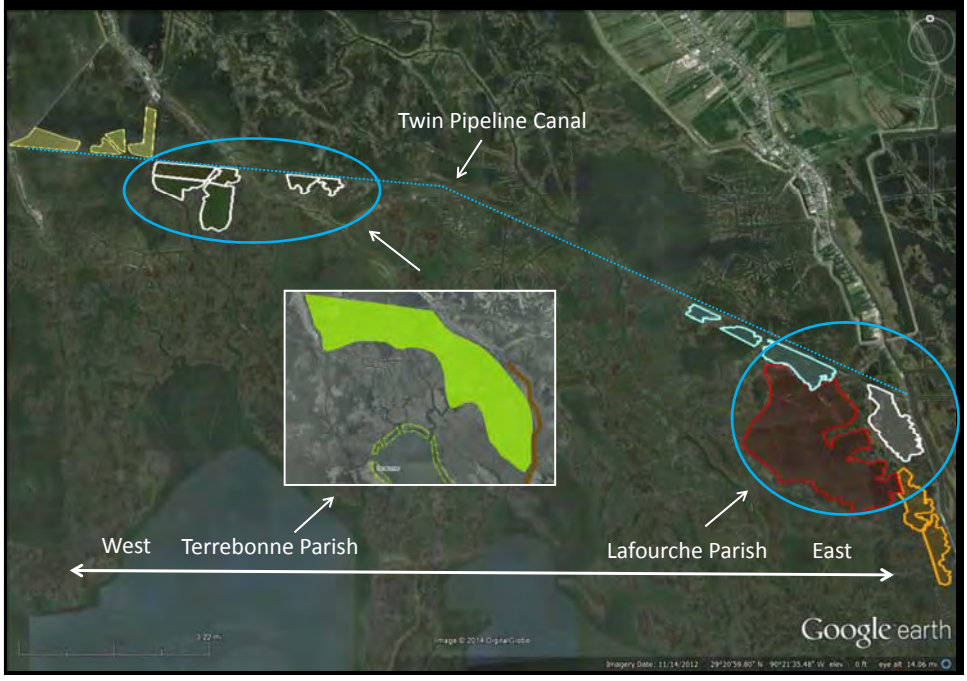
PPL24 Region 3 RPT, February 12, 2014
Kimberly Clements
National Marine Fisheries Service

Concepts along Twin Pipeline Corridor "T-9" developed from Agency/Parish/Landowner Coastal Restoration Workshop



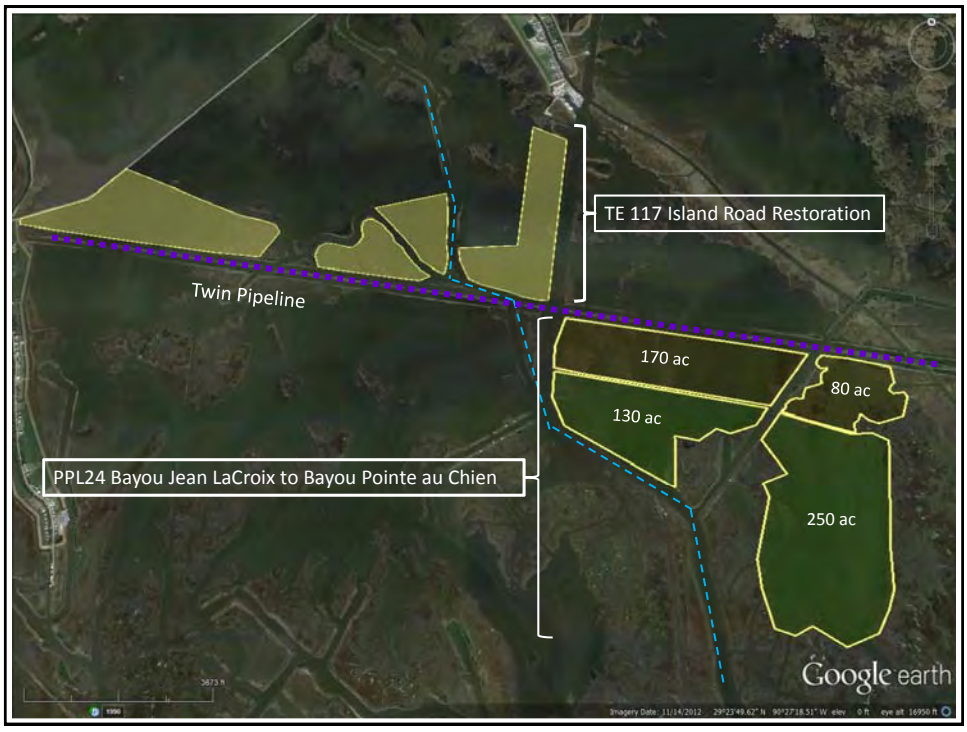
Potential Projects Along Twin Pipeline Consistent with 2012 Louisiana Coastal Master Plan

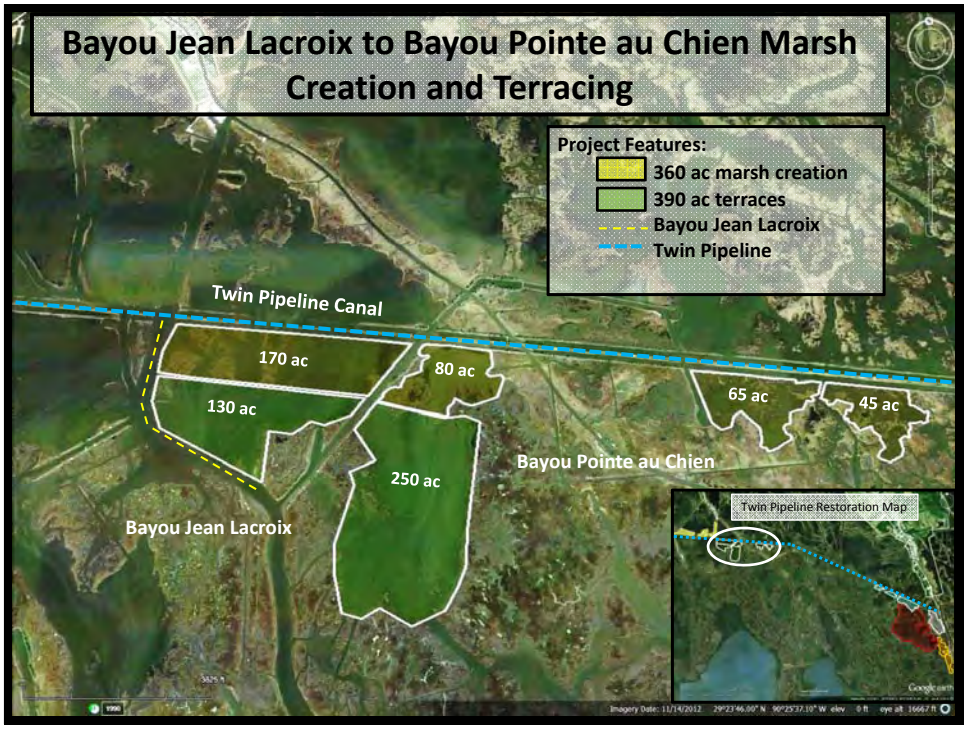
Restoration Concepts Along Twin Pipeline Between Bayou Terrebonne and Bayou Lafourche



Problems near Point au Chene Area

- High Land Loss rates in Terrebonne Basin, 20% since 1932 and currently 4,000-6,500 acres lost per year
- High Subsidence in the area, 2.1-3.5 ft/century, Coast 2050 Terrebonne Marshes
- Wetland Loss Rate for the Wonder Lake subunit is -0.87%/year
- Limited protection to surrounding communities as seen with PPL23 Island Road WVA trip





Project Features and Benefits

- Total Acres is 377 (360 acres of marsh and 17 acres of terraces)
- Re-establishes a portion of Bayou Jean Lacroix
- Borrow from outside immediate project area
- Allows for additional restoration activities in the area (i.e. Ducks Unlimited)
- Consistent with State Master Plan, Marsh Creation Unit – 03a.MC.09b, "create new wetland habitat, restore degraded marsh, and reduce wave erosion south of Montegut between Bayou St. Jean Charles and Bayou Pointe au Chien"
- Supports "T9" Concept for Terrebonne Parish, 4th Annual Coastal Restoration Workshop
- Synergistic to TE-117 Island Road Marsh Restoration Project
- Construction + 25 % Contingency is $20.5 M

R3-TE-14

West Bayou Lafourche Marsh Creation & Terracing

PPL24 West Bayou Lafourche Marsh Creation and Terracing
February 12, 2014

Louisiana's 2012 Coastal Master Plan:
Consistent with Marsh Creation Subunit – 03a.MC.07

Project Location:
Region 3, Terrebonne Basin, Lafourche Parish

Problem:
The Terrebonne Basin is an abandoned delta complex, characterized by a thick section of unconsolidated sediments that are undergoing dewatering and compaction, contributing to high subsidence, and a network of old distributary ridges extending southward from Houma. Historically, subsidence and numerous oil and gas canals and pipelines in the area have contributed significantly to wetland losses. Since 1932, the Terrebonne Basin has lost approximately 20% of its wetlands. Current loss rates range from approximately 4,500 to 6,500 acres/year. This loss amounts to up to 130,000 acres during the next 20 years. One-third of the Terrebonne Basin's remaining wetlands would be lost to open water by the year 2040. The wetland loss rate for the S. Pointe Aux Chenes State WMA subunit is -0.89%/year based on USGS data from 1995 to 2009.

Goals:
The project goals are to:
- Create and/or nourish up to 400 acres of emergent brackish marsh
- Construct up to 37 acres of terraces in a 1,000 acre open water terrace field adjacent to the marsh creation/nourishment

Proposed Solutions:
The proposed project's primary feature is to create and/or nourish approximately 400 acres of emergent brackish marsh. In order to achieve this, sediment will be hydraulically pumped from a borrow source near Little Lake. Containment dikes will be constructed around the marsh creation area to retain sediment during pumping. No later than three years post construction, the containment dikes will be degraded and/or gapped. Additionally, the half of the newly constructed marsh (150 acres) will be planted following construction to stabilize the platform and reduce time for full vegetation. The project will also construct 70,000 ft. (37 acres) of terraces in 1,000 acres of shallow open water just west of the marsh platform to help reduce wave fetch generated to the south by Terrebonne Bay. Terraces would be constructed to an elevation of +2.0 feet NAVD 88, with a 15-ft crown width, and would be planted.

Preliminary Project Benefits

1) *What is the total acreage benefited both directly and indirectly?*
   This total project area is approximately 1,400 acres (350 acres of marsh creation and 50 acres of marsh nourishment + 1,000 acre terrace field).

2) *How many acres of wetlands will be protected/created over the project life?*
   Assuming a 50% reduction in the background loss rate (S. Pointe Aux Chenes State WMA Subunit, -0.89%/year), the marsh creation, nourishment, and constructed terraces would result in 358 net acres after 20 years.

3) *What is the anticipated loss rate reduction throughout the area of direct benefits over the project life (e.g., 50% reduction in the background loss rate)?*
A 50% loss rate reduction is assumed for the marsh creation, marsh nourishment, and terraces. (S. Pointe Aux Chenes State WMA Subunit, from -0.89%/year to -0.44%/year)

4) *Do any project features maintain or restore structural components of the coastal ecosystem such as barrier islands, natural or artificial levee ridges, beach and lake rims, cheniers, etc.?*
The project will help restore the backside of the natural Bayou Lafourche bank.

5) *What is the net impact of the project on critical and non-critical infrastructure?*
The project will provide additional protection to LA 1 south of Golden Meadow. The project would also provide positive impacts to non-critical (i.e., minor oil and gas facilities) infrastructure. Minor oil and gas facilities and pipelines in the area would benefit from an increase in marsh acreage.

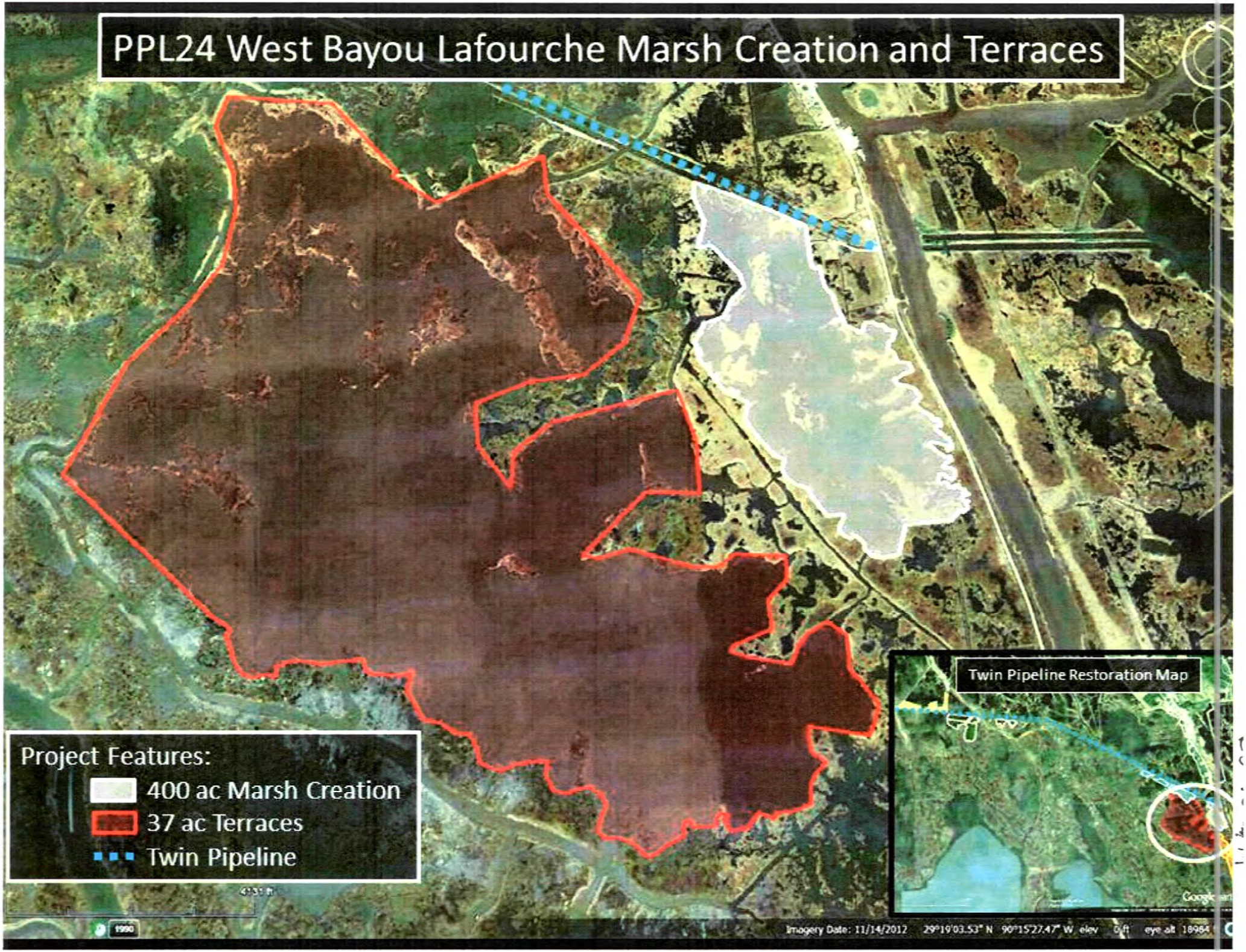
6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?*
This is an area of need due to the lack of previous restoration efforts.

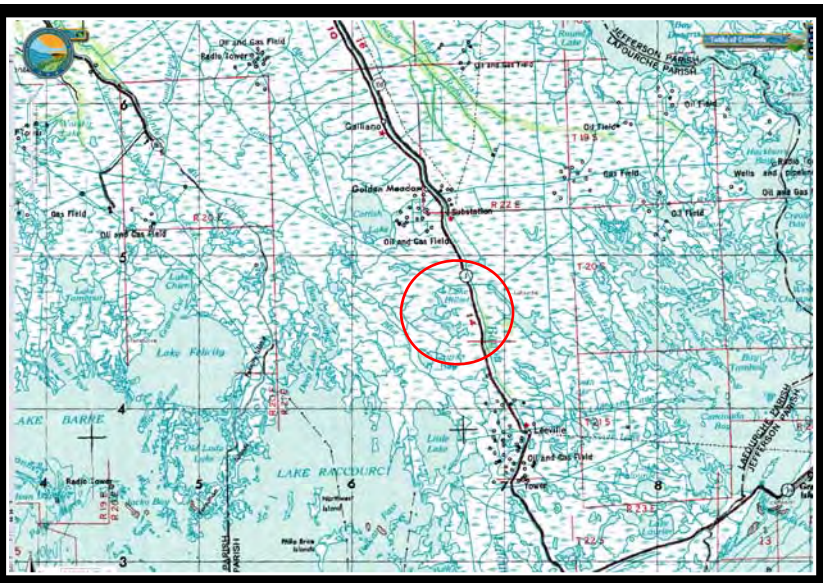
Identification of Potential Issues:
The proposed project has potential utility/pipeline issues along with oyster leases along the dredge pipeline path.

Preliminary Construction Costs
The estimated construction cost including 25% contingency is $25,063,476. The fully-funded cost range is $30M - $35M.

Preparer(s) of Fact Sheet:
Kimberly Clements, NOAA Fisheries, 225-389-0508 ext 204, kimberly.clements@noaa.gov
Patrick Williams, NOAA Fisheries, 225-389-0508, ext 208, patrick.williams@noaa.gov

PPL24 West Bayou Lafourche Marsh Creation and Terraces

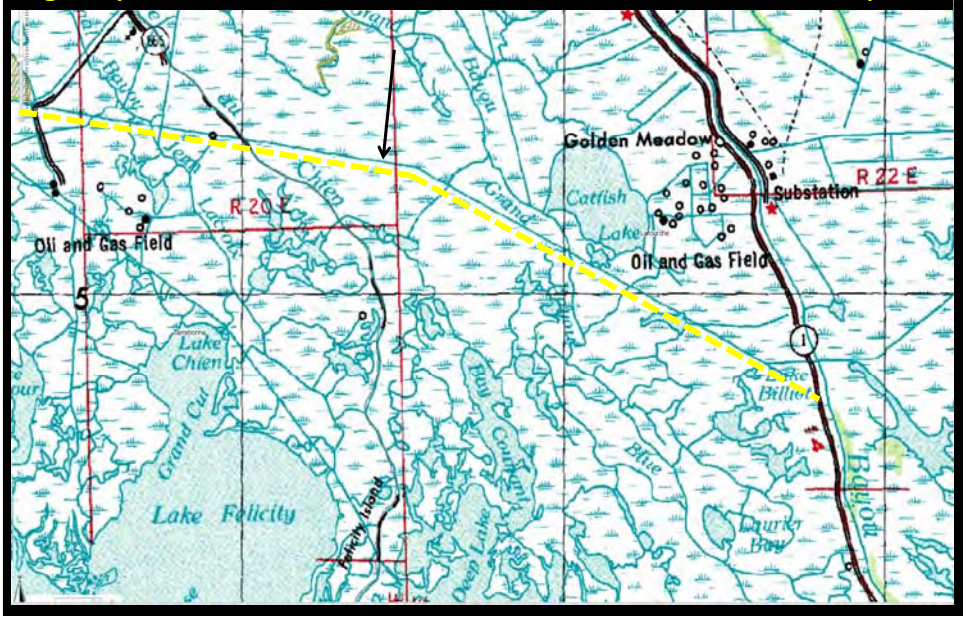




PPL24 WEST BAYOU LAFOURCE MARSH CREATION AND TERRACING

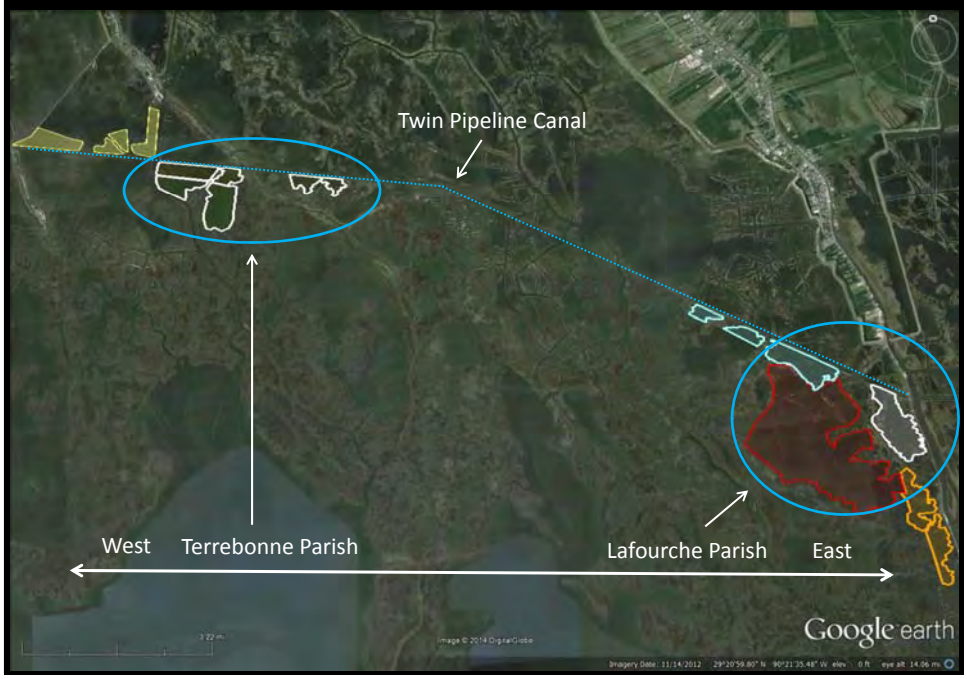
PPL24 Region 3 RPT, February 12, 2014
Kimberly Clements
National Marine Fisheries Service

Concepts along Twin Pipeline Corridor "T-9" developed from Agency/Parish/Landowner Coastal Restoration Workshop



Potential Projects Along Twin Pipeline Consistent with 2012 Louisiana Coastal Master Plan

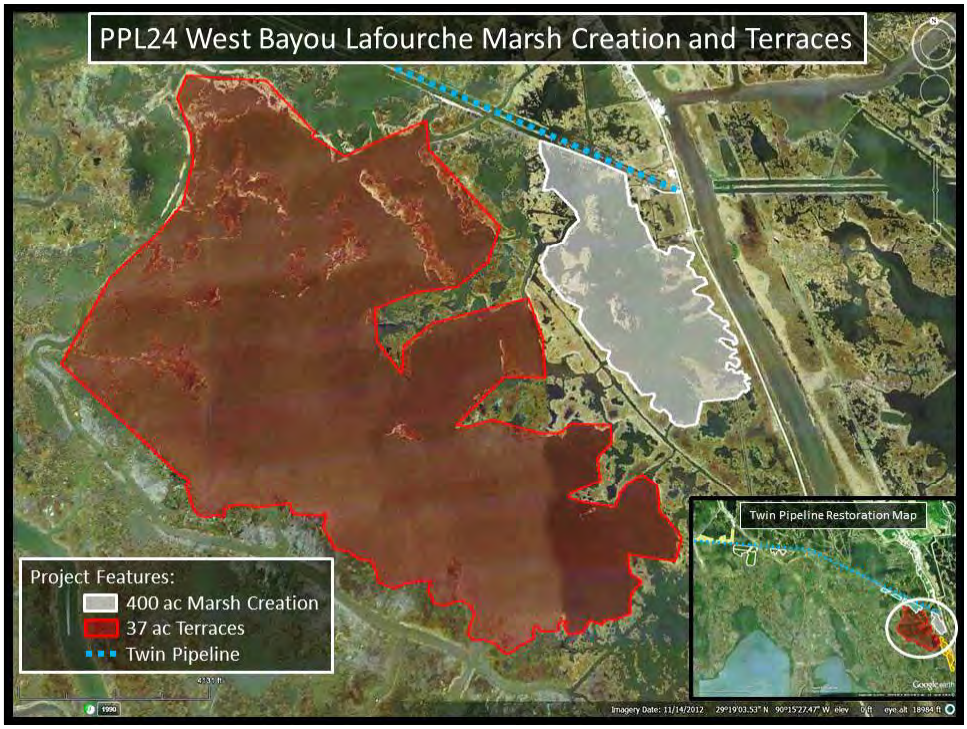
Restoration Concepts Along Twin Pipeline Between Bayou Terrebonne and Bayou Lafourche



Problems near Bayou Lafourche Area

- High Land Loss rates in Terrebonne Basin, 20% since 1932 and currently 4,000-6,500 acres lost per year
- High Subsidence in the area, 2.1-3.5 ft/century, Coast 2050 South Bully Camp Marsh
- Limited protection to the western side of LA 1
- Wetland Loss Rate for the S. Pointe Aux Chenes State WMA subunit is -0.89%/year

PPL24 Twin Pipeline to Highway 1 LandBridge – 3 Phases



Project Features and Benefits

- Total Acres 437 acres (400 acres of marsh creation and 37 acres of terraces)
- Borrow from outside immediate project area in Little Lake
- Consistent with State Master Plan, Marsh Creation Subunit – 03a.MC.07, “create new wetland habitat, restored degraded marsh, and reduce wave erosion from Belle Pass to Golden Meadow”
- Supports “T9” Concept for Lafourche Parish, 4th Annual Coastal Restoration Workshop
- Promotes protection to LA 1
- Construction + 25% Contingency is $25 M

R3-TE-15

Raccoon Island West Restoration

PPL24 PROJECT NOMINEE FACT SHEET
February 2014

Project Name:
Raccoon Island West Restoration Project

Project Location:
Region III, Terrebonne Basin, Terrebonne Parish, Isle Dernieres Barrier Islands Refuge

Master Plan:
Project No. 03a.BH.03

Problem:
The Isles Dernieres barrier island chain is experiencing some of the highest rates of erosion of any coastal region in the world. A simple analysis of aerial imagery from 1998 to 2008 revealed an average loss of 110 feet per year on the western portion of Raccoon Island (i.e., the spit), which is the western most island of the chain. Raccoon Island serves as breeding bird habitat for a variety of avian species including brown pelicans, terns, gulls, and wading birds. During peak years of nest success, well over 30,000 nests have been documented at Raccoon Island. As a result of erosional processes (particularly hurricane activity over the past 10 years), the western end of Raccoon Island has degraded to roughly 20 acres and is at risk of being a subaqueous sand shoal in the near future. This portion of the island no longer serves as breeding bird habitat due to lack of elevation and rapid shoreline loss. The subaqueous sand shoal that exists offshore on the southeast corner of the island that provides littoral material to the segmented breakwaters and areas west has also been substantially depleted over time.

Goals:
The goal of this project is to restore the western portion of Raccoon Island to pre-2005 & 2008 hurricane conditions and provide a sustaining mechanism to preserve newly created areas.

Proposed Solutions:
Project features include the restoration of approx. 100 acres of comparable barrier island habitat between the existing island and spit (breached area). This area of the island would be recreated/restored by depositing offshore dredge material within a contained area. Vegetative plantings, both herbaceous and woody, will follow the construction of the newly created platform to provide improved breeding bird habitat and to stabilize the island. Replenishment of the eastern subaqueous sand shoal would make long-shore/cross-shore littoral material available to further sustain a sediment source to western areas of the island.

Preliminary Project Benefits:
The western side of Raccoon Island will be restored to productive avian habitat and expand the storm buffering capabilities of the Isle Dernieres barrier island chain. Approximately 100 acres of subtidal, tidal, and emergent marsh habitat will be created and protected over the life of the project. The sustainability of accreted gulf shoreline areas will be greatly enhanced. The proposed project will have a significant synergistic effect on the existing Raccoon Island CWPPRA restoration projects (TE-48 and TE-29).

Identification of Potential Issues:
There are no potential issues anticipated with this proposed project.

Preliminary Construction Costs:
The anticipated construction cost, with 25% contingency, is $25 million.

Preparer(s) of Fact Sheet:
Cassidy Lejeune, (337) 373-0032, clejeune@wlf.la.gov
Loland Broussard, (337) 291-3069, loland.broussard@la.usda.gov
Ron Boustany, (337) 291-3067, ron.boustany@la.usda.gov


PPL-24 Raccoon Island Project
B
A
Project Features
A - Sand Shoal Replenishment
B – Breach Closure
Note: Sediment budget will be done in Phase 1
On cores taken from Coupe Colin to Raccoon Pt.

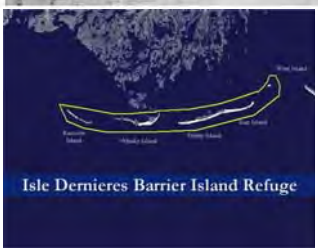
Raccoon Island West Restoration Project

PPL 24 – Houma, LA

Cassidy Lejeune
LDWF – CNR Division
New Iberia, LA

Loland Broussard and Ron Boustany
NRCS – USDA
Lafayette, LA

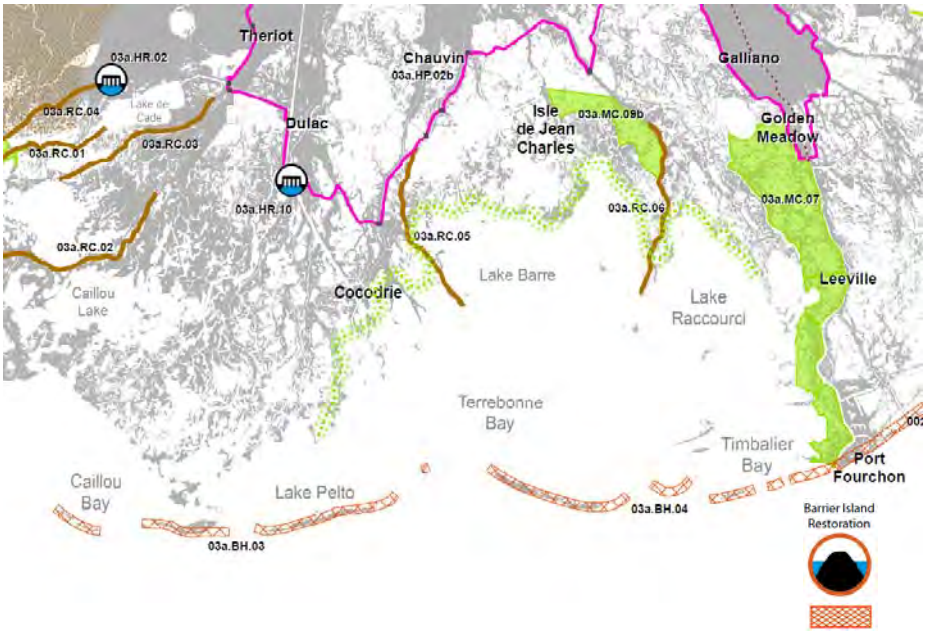
Historical Footprint of IDBIR



IDBIR refuge since 1992
Roughly 2,000 acres
Includes Raccoon, Whiskey, Trinity, East, and Wine Islands

Raccoon Island TE-48 and TE-29 Projects

2012 Master Plan

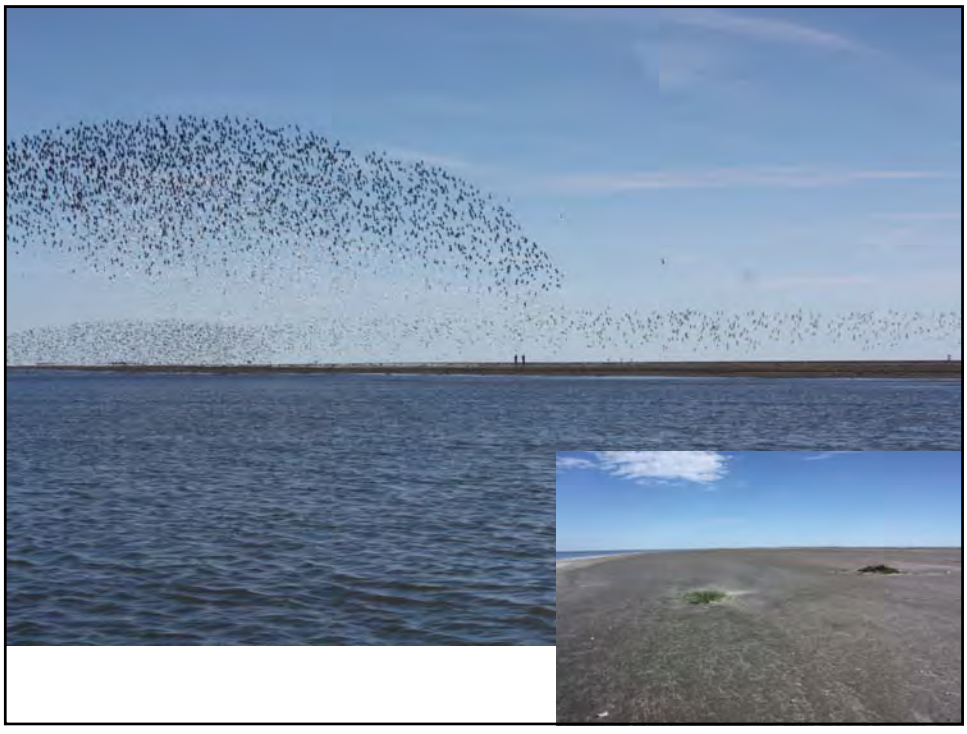


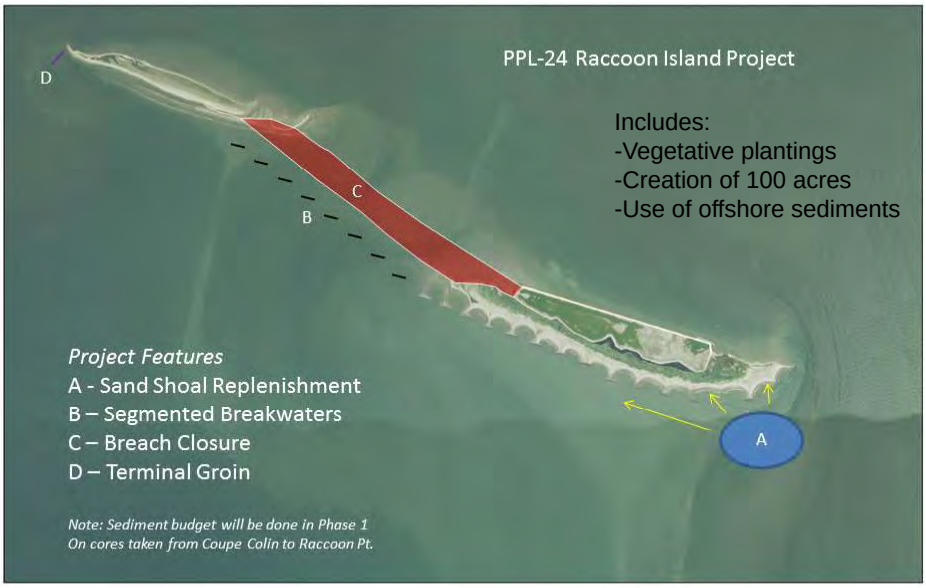
Benefits of Barrier Island Restoration

- Protects inland marshes – wave break
- Reduction of storm surges
- Regulate tidal exchange
- Fisheries and wildlife habitat
- Etc…

Raccoon

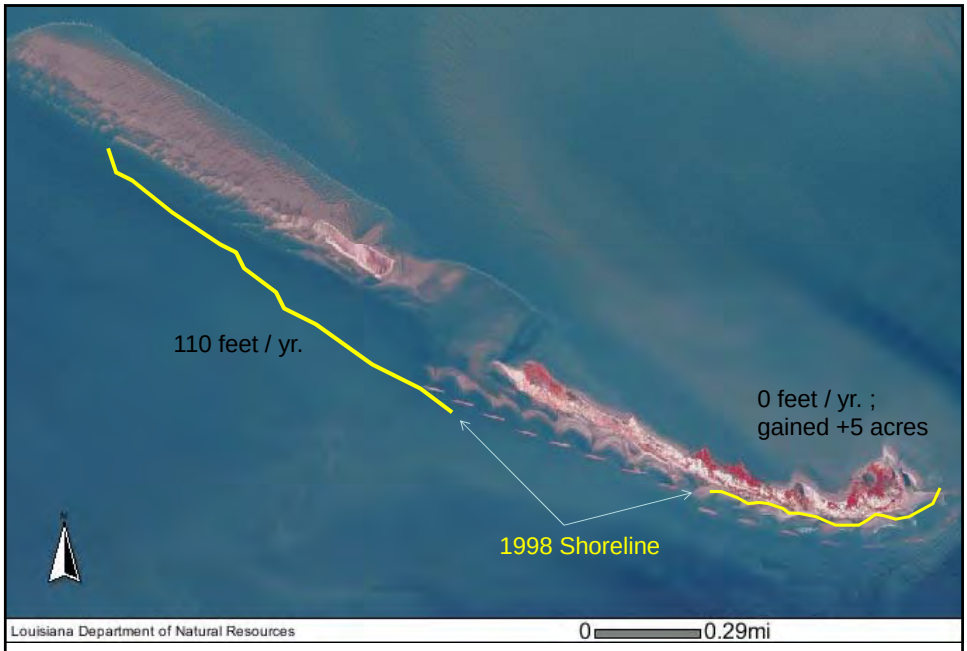
Year	BRPE	BLSK	CATE	GBTE	LAGU	LETE	AMOY	ROYT	SATE	REEG	ROSP	SNEG	TRHE	WHIB	YCNH	BCNH	GREG	LBHE	TOTALS
1990	250	450			15,000			7,000	5,000	11	29	375	3,750	375		1,500	750	750	35,240
1993		750						9,000	5,700	25	75	200	1,500			100	500		17,850
1994	840	480			3,318			9,000	7,070	17	75	300		17	33	200	630		21,980
1995	1,600	200			50,000			5,200	3,800	30	150	200	2,000	100	100	500	700	100	64,680
1996	600	250			5,500			1,500	500		110		50				300		8,810
1997		150	20		10,000			1,120	1,680										12,970
1997*	1,560	110			35,300			1,710	600	6	16	46	420	16		4	300		40,088
1998	3,000	70			5,000			2,000	500	3	75		450	225			750		12,073
1999		570			12,000			7,000	9,000	10	60	300	300	75			750		30,065
2000*								1,400	1,350										2,750
2001	3,270				780				4,925								30		9,005
2005	5,905	300			2,710			13,250	750	1	30		30				90		23,066
2006	3,300	350			3,050			600	1,150		40		25				550	10	9,075
2008	5,500	1,400			2,500	50	2	9,000			2						10		18,464
2011	870	1,480		10	2,700			2,500	4,000		20						100		11,680
2012	3,200	700			150			1,500	2,500								200		8,250
2013	3,000	1,070			1,500			3,000	6,600		8					1	200		15,379
Totals	32,895	8,330	20	10	149,508	50	2	74,780	55,125	103	690	1,421	8,525	808	133	2,305	5,860	860	341,425





Anticipated cost = 25 million dollars

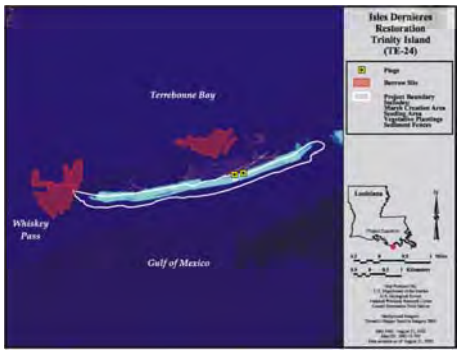
1998



2008

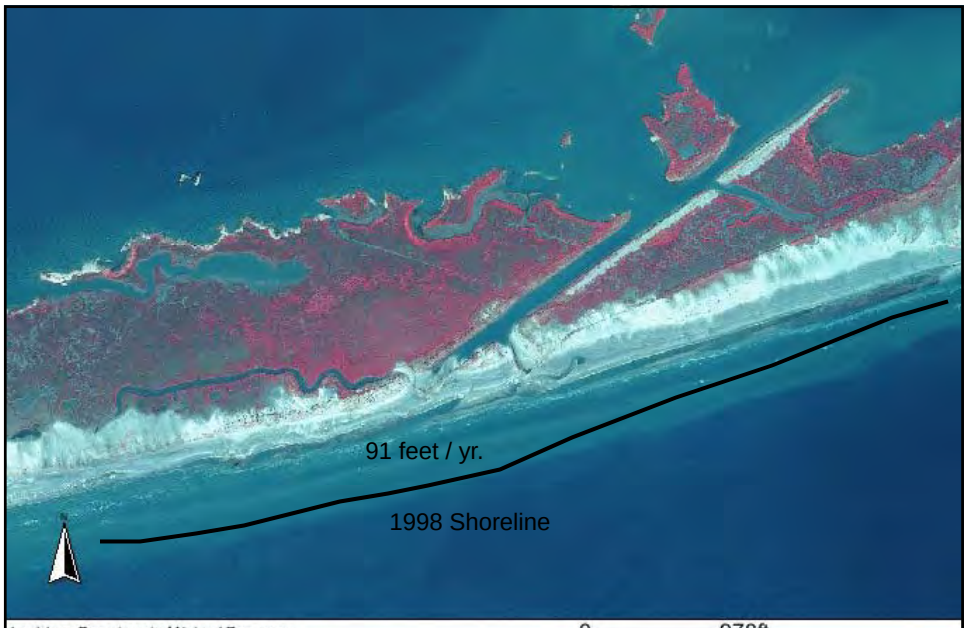
Trinity Island Restoration Project

- 10.8 million dollars
- Timeline:
  - Approved by CWPPRA Task Force in 1992
  - Initiated in January 1998
  - Completed in June 1999
- Creation of 300+ acres




Louisiana Department of Natural Resources
0
978ft

1998


91 feet / yr.
1998 Shoreline
Louisiana Department of Natural Resources
0
978ft

2008

Questions or Comments?

Cassidy Lejeune
LA Dept. of Wildlife and Fisheries
Coastal and Nongame Resources Division
Coastal Operations Section
New Iberia, LA
337-373-0032
clejeune@wlf.la.gov

R3-TE-16

Bayou Dularge Ridge Restoration & Marsh Creation

PPL24 PROJECT NOMINEE FACT SHEET
2/12/2014 - RPT

Project Name
Bayou Dularge Ridge Restoration and Marsh Creation Project

Master Plan Strategy
Central Coast, Ridge Restoration; Bayou Dularge Ridge Restoration-03a.RC.02.

Project Location
Region 3, Terrebonne Basin, Terrebonne Parish, Bayou Dularge at Grand Pass

Problem
The Bayou Dularge Ridge is a prominent feature in the south central Terrebonne Basin forming a diagonal ridge extending from northeast to southwest that historically restricted the Gulf marine influence into Central Terrebonne marshes. The Grand Pass, a 900 ft wide artificial cut through the Bayou Dularge Ridge south of Lake Mechant, is currently being addressed in the TE-66 CWPPRA project. However, the integrity of the ridge is also of concern due to erosion of the adjacent marshes. Loss of this important land bridge separating Lake Mechant from Sister Lake would undermine efforts to restore the fresh and intermediate marshes to the north and eliminate an important landscape feature to the basin hydrology. The State Master Plan has identified the ridge as a restoration priority.

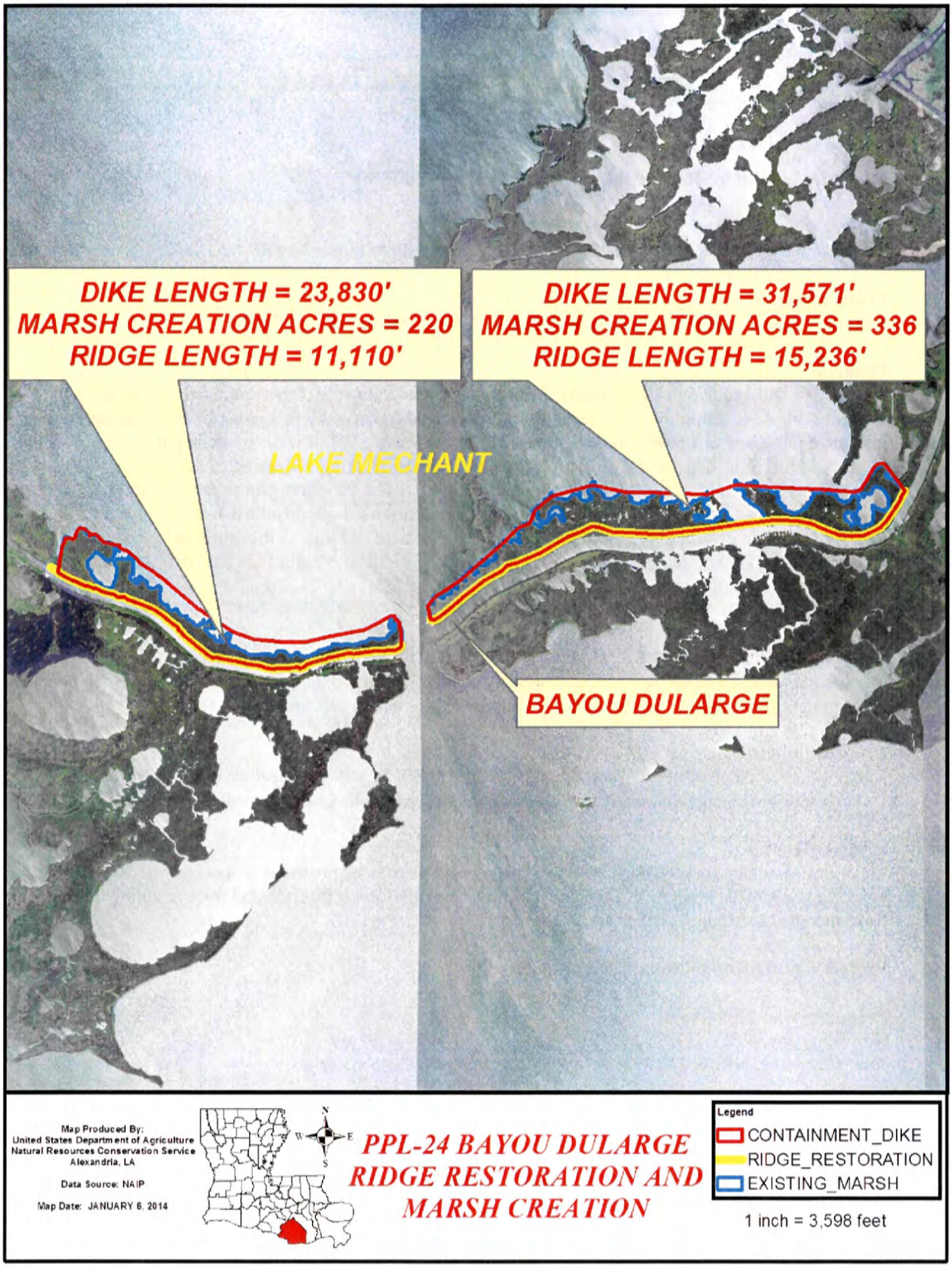
Goals
The project will create/restore a ridge feature and marsh in the landbridge that separates Lake Mechant from Sister Lake to insure the integrity of the ridge and the important function of sustaining optimal salinity gradients and promote healthy marsh recovery in the region.

Proposed Solutions
The project would creation of approximately 27,000 linear feet of ridge feature north of Bayou Dularge along with approximately 556 acres of marsh creation and nourishment.

Project Benefits:
The acres of wetlands created/protected over the project life is estimated at 514 acres with approximately 40% being marsh creation and ridge restoration (206 acres) and 60% resulting from marsh nourishment (308 acres).

Project Construction Costs: $20-25 million

Preparer(s) of Fact Sheet:
Ron Boustany, NRCS, (337) 291-3067, ron.boustany@la.usda.gov
John Jurgensen, NRCS, (337) 473-7694, john.jurgensen@la.usda.gov



Map Produced By:
United States Department of Agriculture
Natural Resources Conservation Service
Alexandria, LA

Data Source: NAIP

Map Date: JANUARY 6, 2014

PPL-24 BAYOU DULARGE RIDGE RESTORATION AND MARSH CREATION

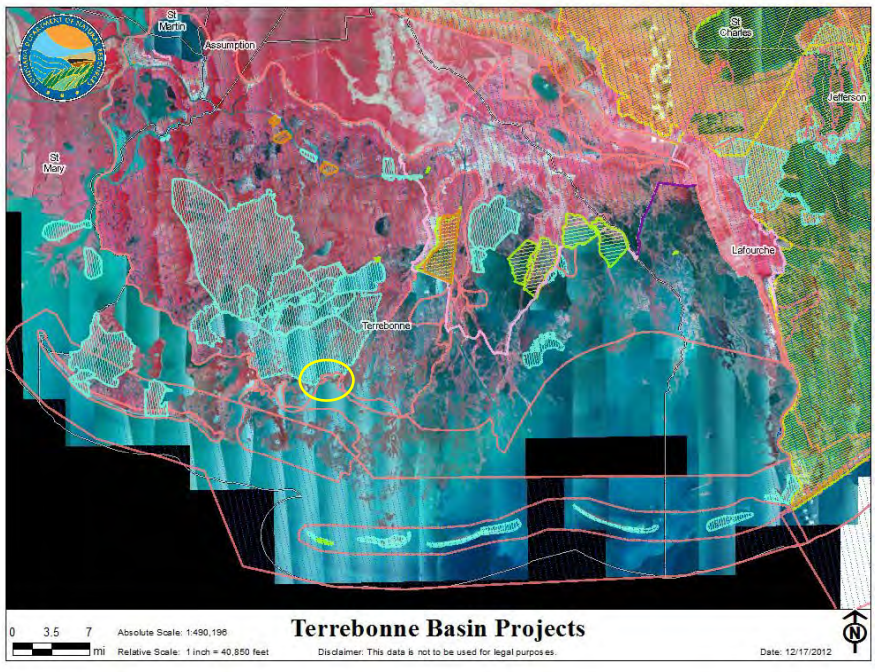
Legend
- CONTAINMENT_DIKE
- RIDGE_RESTORATION
- EXISTING_MARSH

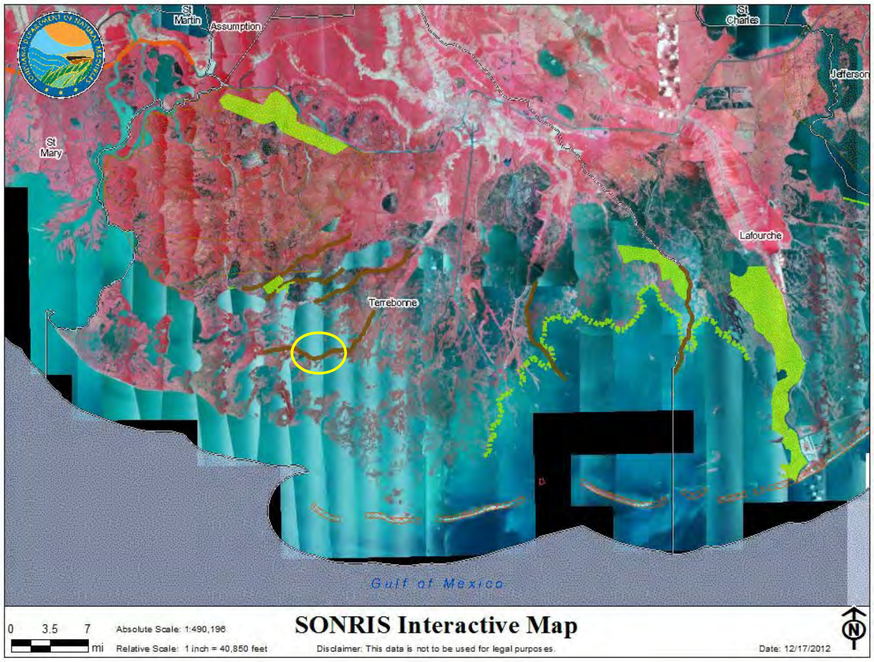
1 inch = 3,598 feet

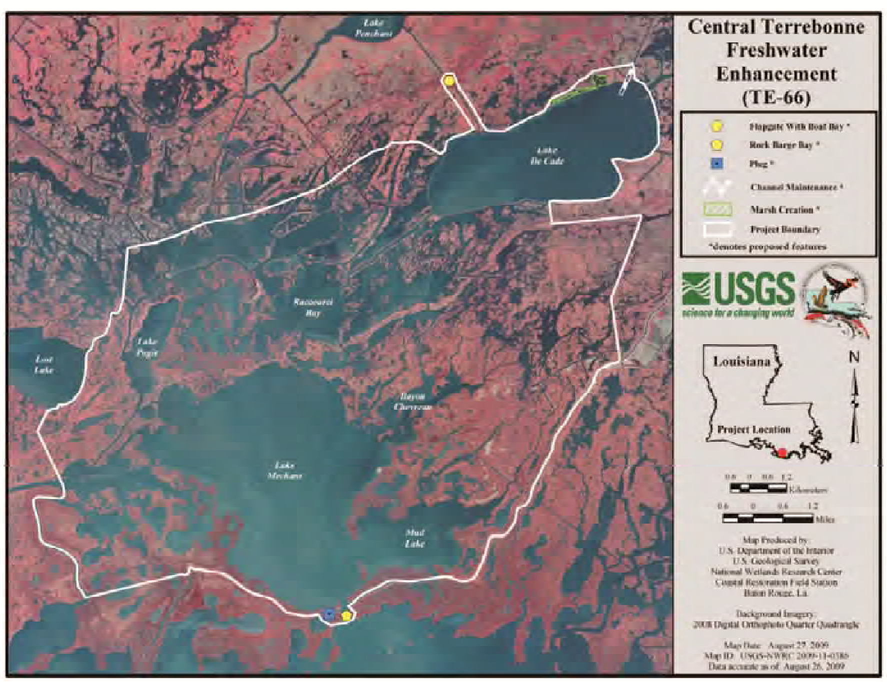
PPL 24
Regional Planning Team
February 12, 2014

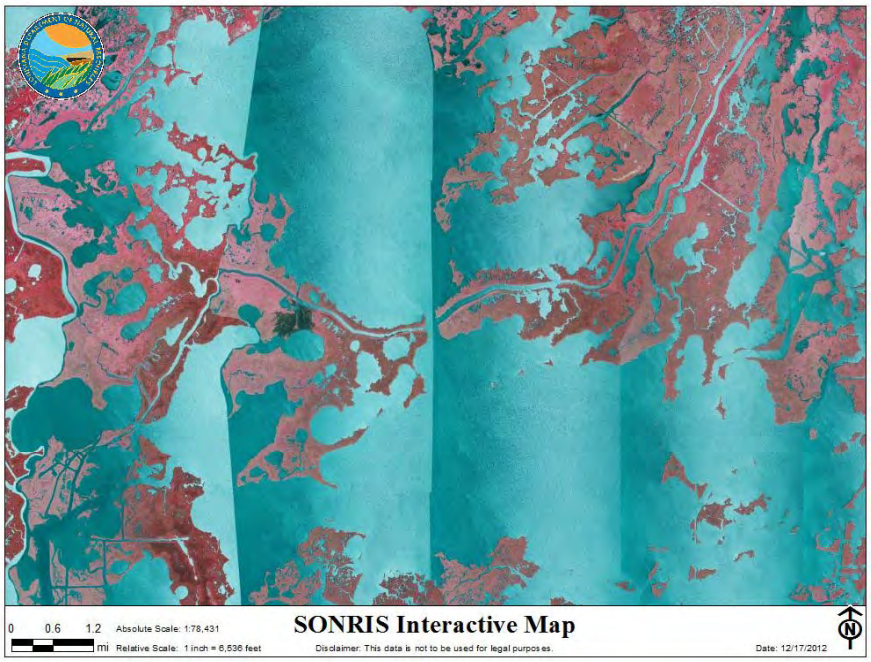
Region 3
Terrebonne Basin

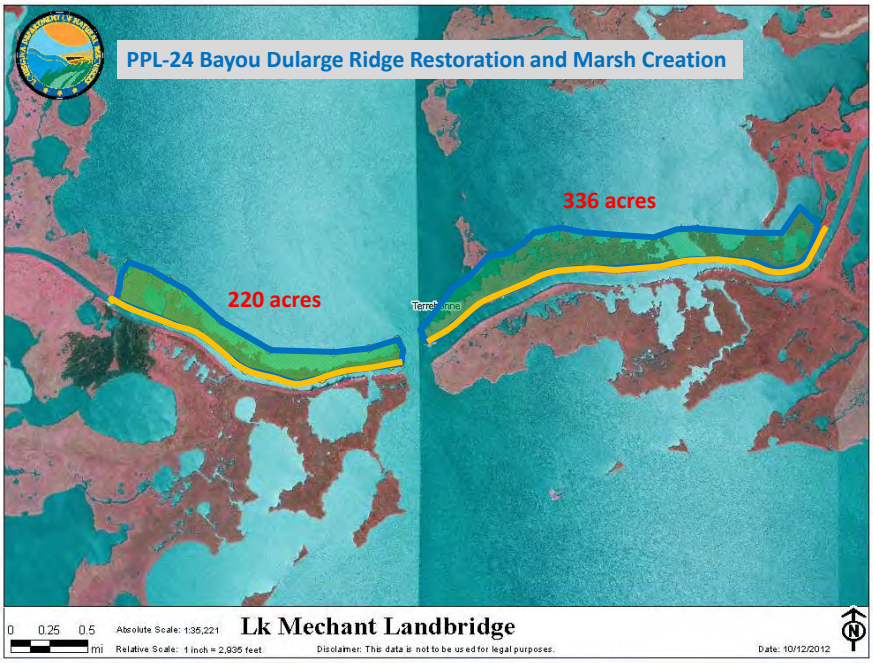
Bayou Dularge Ridge Restoration and Marsh Creation




St Martin
Assumption
St Charles
Jefferson
St Mary
Lafourche
Terrebonne
Gulf of Mexico
SONRIS Interactive Map
0 3.5 7
mi
Absolute Scale: 1:490,196
Relative Scale: 1 inch = 40,850 feet
Disclaimer: This data is not to be used for legal purposes.
Date: 12/17/2012
N


Central Terrebonne Freshwater Enhancement (TE-66)
Flapgate With Boat Bay *
Rock Barge Bay *
Plug *
Channel Maintenance *
Marsh Creation *
Project Boundary
*denotes proposed features
USGS
science for a changing world
Louisiana
Project Location
N
Kilometers
Miles
Map Produced by:
U.S. Department of the Interior
U.S. Geological Survey
National Wetlands Research Center
Coastal Restoration Field Station
Baton Rouge, La.
Background Imagery:
2008 Digital Orthophoto Quarter Quadrangle
Map Date: August 27, 2009
Map ID: USGS-NWRC 2009-11-0386
Data accurate as of: August 26, 2009
Lake Penchant
Lake De Cade
Lost Lake
Lake Pagie
Lake Mechant
Mud Lake


0 0.6 1.2
mi
Absolute Scale: 1:78,431
Relative Scale: 1 inch = 6,636 feet
SONRIS Interactive Map
Disclaimer: This data is not to be used for legal purposes.
Date: 12/17/2012


PPL-24 Bayou Dularge Ridge Restoration and Marsh Creation
336 acres
220 acres
0 0.25 0.5
mi
Absolute Scale: 1:35,221
Relative Scale: 1 inch = 2,935 feet
Lk Mechant Landbridge
Disclaimer: This data is not to be used for legal purposes.
Date: 10/12/2012

R3-TE-17

Marsh Creation at Houma Navigation Canal

PPL24 PROJECT NOMINEE FACT SHEET
2/12/2014 - RPT

Project Name
Marsh Creation at Houma Navigation Canal

Master Plan Strategy
Central Coast, Marsh Creation; Terrebonne Bay Rim Marsh Creation Study-03a.MC.03.

Project Location
Region 3, Terrebonne Basin, Terrebonne Parish, Mouth of HNC at Terrebonne Bay

Problem
The Terrebonne Bay rim has severely eroded throughout its entire length from both subsidence and erosion. Where the Houma Navigation Canal (HNC) meets Terrebonne Bay, the beneficial use of maintenance dredge material to create marsh has been very limited even though the quantities of material have been fairly substantial and the Corps maintenance dredge schedule is fairly routine. Most of the maintenance dredge material over the past ten years has deposited into designated open water disposal locations with exception to only a few small beneficial use locations (Bay Chaland, 2003 and 2005, Wine Island 2007). Coordination and additional funding would potentially allow for much more efficient beneficial use of resources.

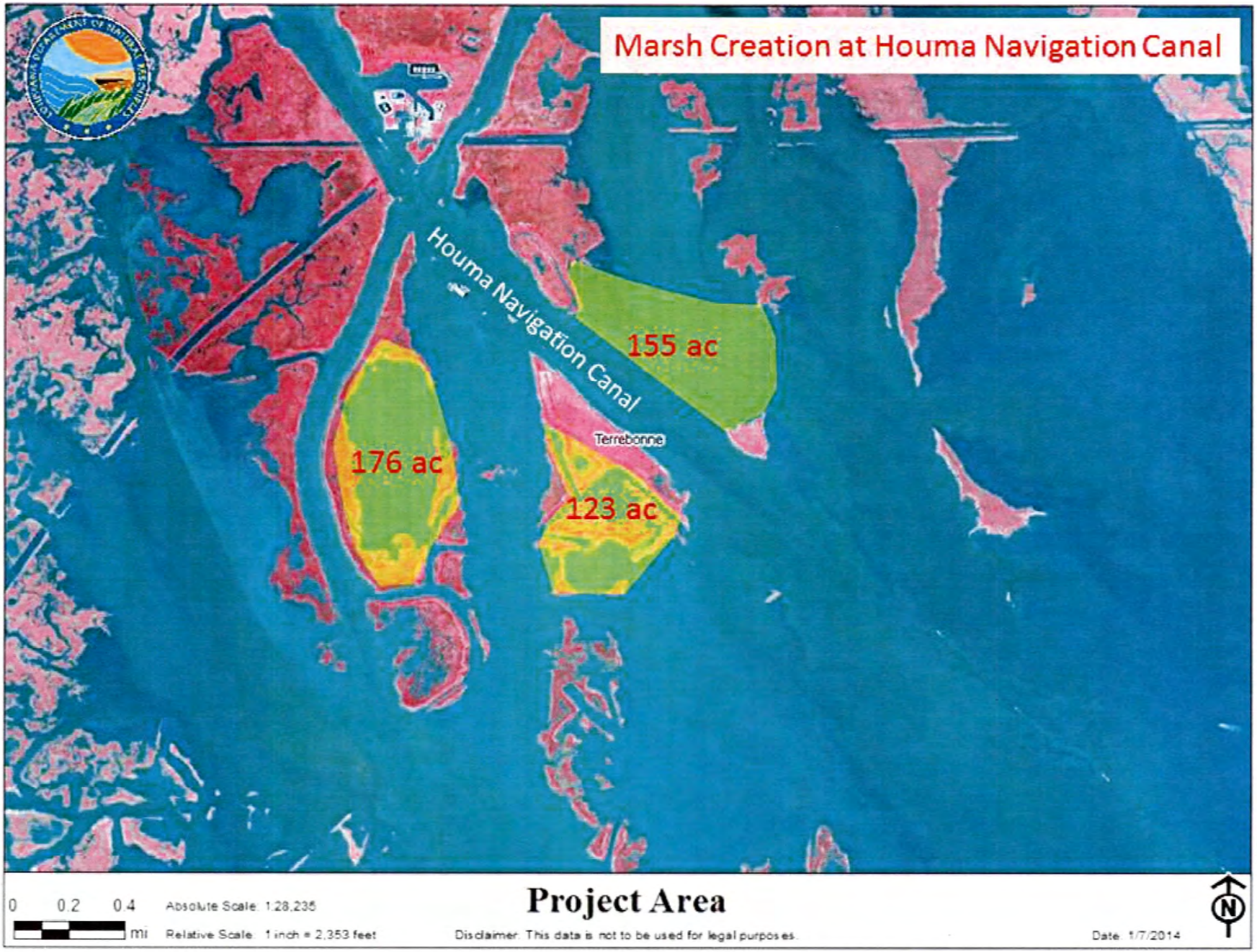
Goals
The project will create and nourish approximately 454 acres of marsh along the Terrebonne Bay Rim at the Houma Navigation Canal.

Proposed Solutions:
The project will coordinate the with US Army Corps maintenance dredge program of the Houma Navigation Canal to beneficially use navigation maintenance dredge material to creation marsh along the Terrebonne Bay Rim. Sediments will be hydraulically dredged from the HNC and Terrebonne Bay and pumped via pipeline to create/nourish approximately 454 acres of marsh habitat.

Project Benefits:
The project should net at least 375 acres of marsh over the 20 year life of the project.

Project Construction Costs: $18-20 million

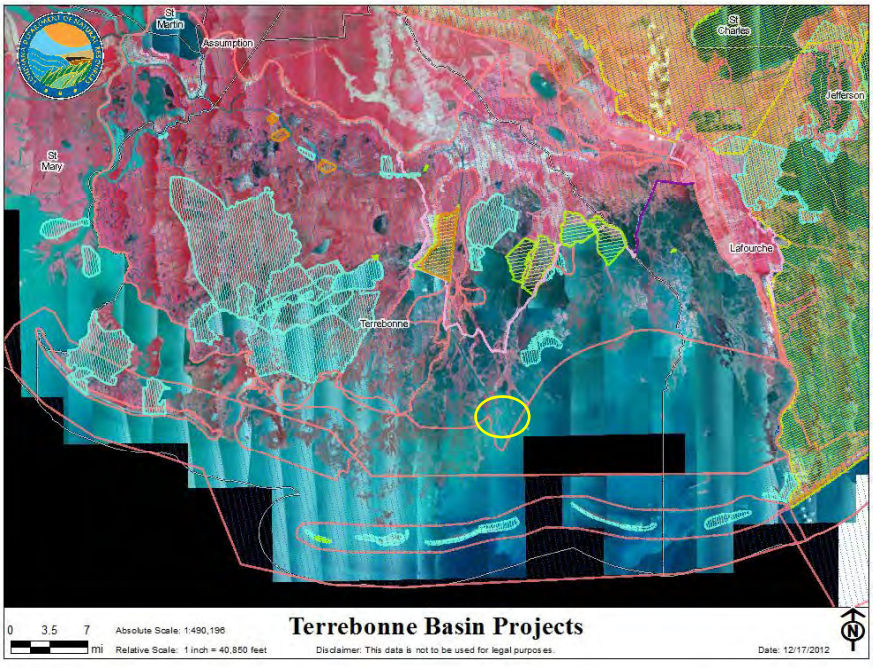
Preparer(s) of Fact Sheet:
Ron Boustany, NRCS, (337) 291-3067, ron.boustany@la.usda.gov
John Jurgensen, NRCS, (337) 473-7694, john.jurgensen@la.usda.gov

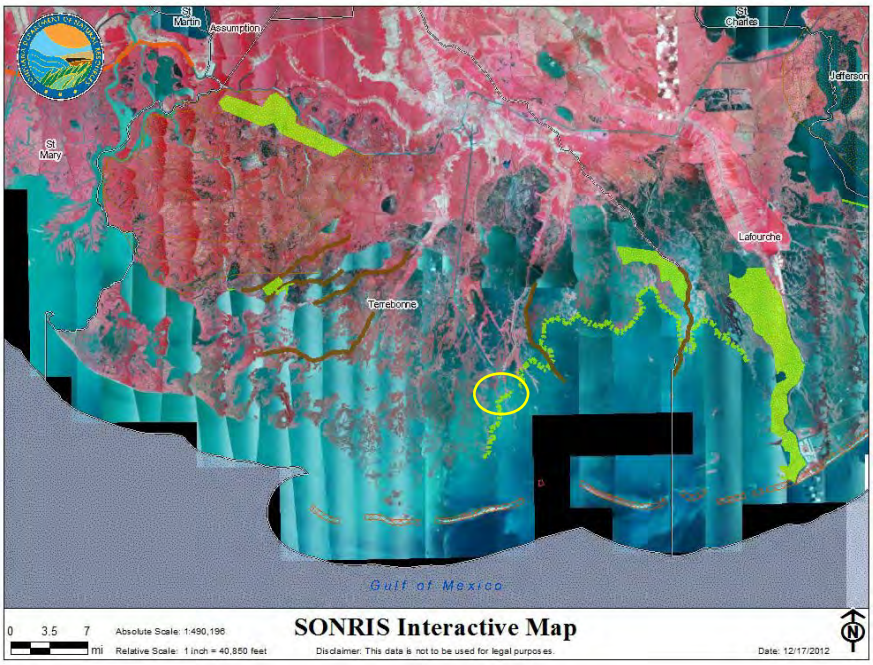

Marsh Creation at Houma Navigation Canal
Houma Navigation Canal
155 ac
176 ac
123 ac
Terrebonne
0 0.2 0.4
mi
Absolute Scale: 1:28,235
Relative Scale: 1 inch = 2,353 feet
Project Area
Disclaimer: This data is not to be used for legal purposes.
Date: 1/7/2014
N

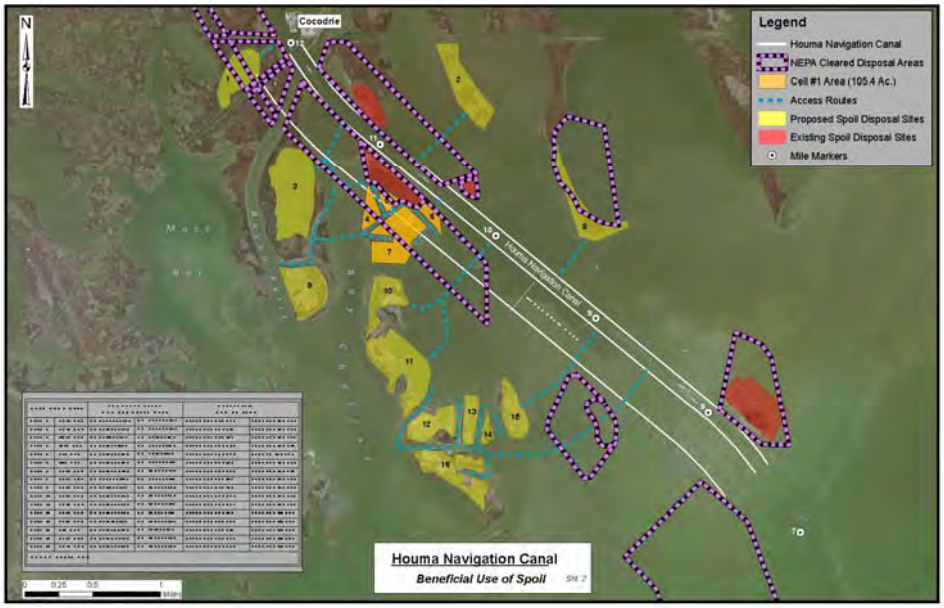
PPL 24
Regional Planning Team
February 12, 2014

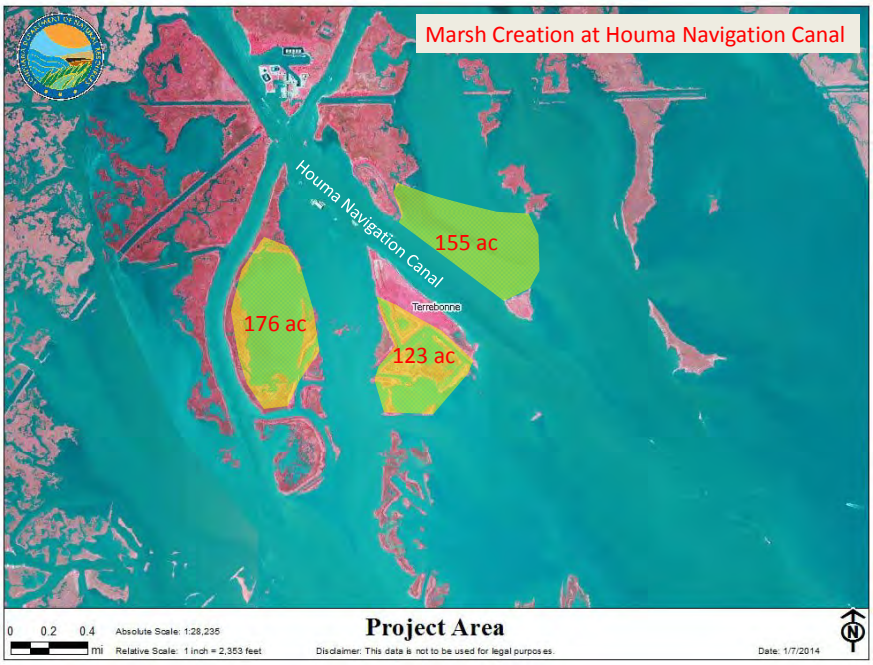
Region 3
Terrebonne Basin

Marsh Creation at Houma Navigation Canal




St Martin
Assumption
St Charles
Jefferson
St Mary
Lafourche
Terrebonne
Gulf of Mexico
0 3.5 7
mi
Absolute Scale: 1:490,196
Relative Scale: 1 inch = 40,850 feet
SONRIS Interactive Map
Disclaimer: This data is not to be used for legal purposes.
Date: 12/17/2012


Cocodrie
Legend
Houma Navigation Canal
NEPA Cleared Disposal Areas
Cell #1 Area (105.4 Ac.)
Access Routes
Proposed Spoil Disposal Sites
Existing Spoil Disposal Sites
Mile Markers
Houma Navigation Canal
Beneficial Use of Spoil


Marsh Creation at Houma Navigation Canal
Houma Navigation Canal
155 ac
176 ac
123 ac
Terrebonne
0 0.2 0.4 mi
Absolute Scale: 1:28,235
Relative Scale: 1 inch = 2,353 feet
Project Area
Disclaimer: This data is not to be used for legal purposes.
Date: 1/7/2014
N

R3-TE-18

Leeville West Marsh Creation & Nourishment

R3-TE-18

PPL24 PROJECT NOMINEE FACT SHEET
2/12/2014 - RPT

Project Name
Leeville West Marsh Creation and Nourishment

Master Plan Strategy
Central Coast, Marsh Creation; Belle Passe-Golden Meadow Marsh Creation-03a.MC.07.

Project Location
Region 3, Terrebonne Basin, Lafourche Parish, West of Leeville

Problem
The coastal marshes west of Leeville are notoriously recognized as a prominent area of wetland loss particularly by those who have frequently travel Highway 1 and witnessed the area's rapid conversion to open water. Long abandoned by the influence of the Mississippi River, these marshes have slowly succumbed to the forces of subsidence and erosion exacerbated by construction of numerous oil and gas canals and a major navigation channel (SW Louisiana Canal). Very few options for restoration are currently available in this area other than protecting the existing marsh and strategically creating new marsh through beneficial use of dredge material. The location of the project area is of particular importance in that it provides the only remaining band of contiguous marsh that separates the bay system from Bayou Lafourche ridge.

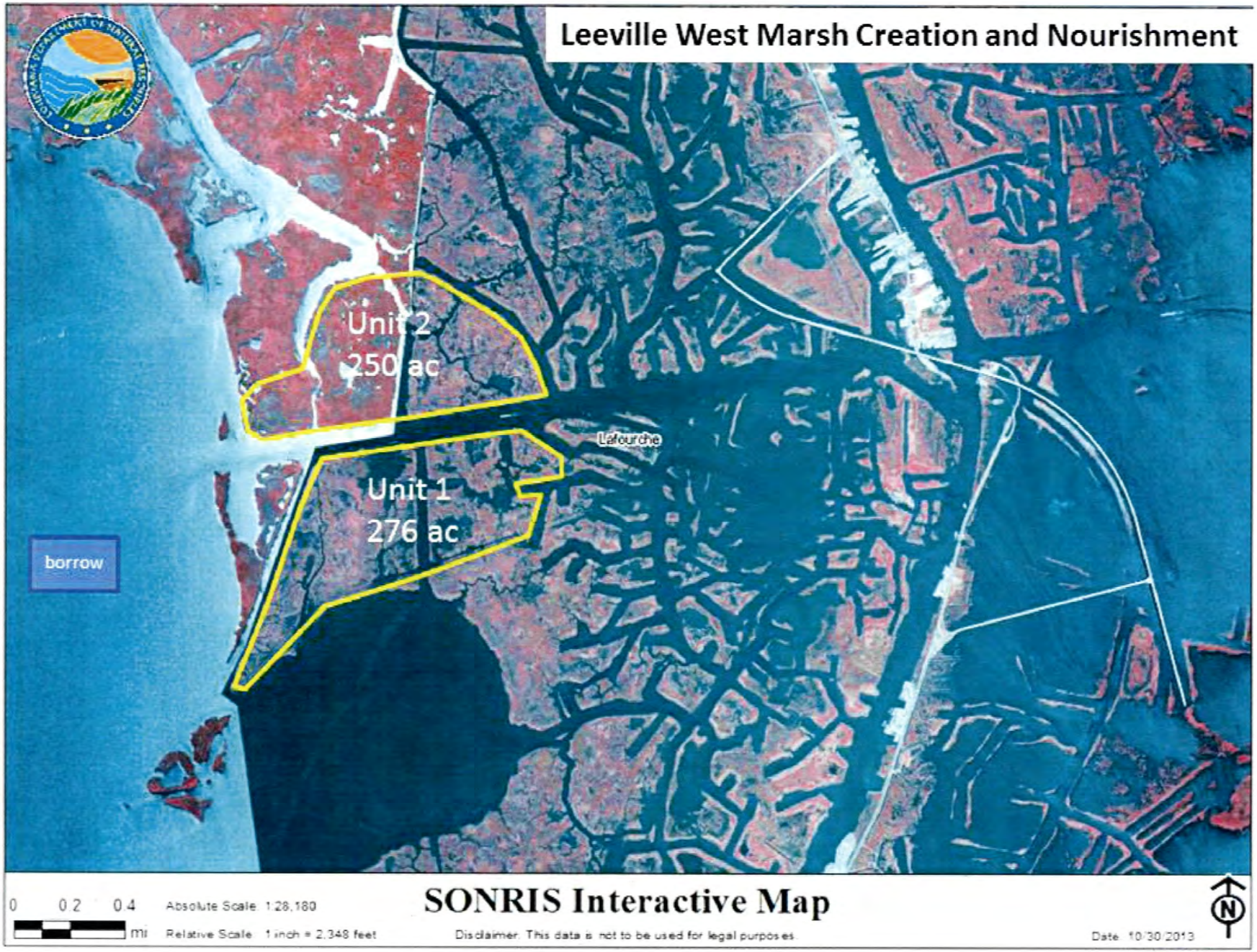
Goals
The project will create and nourish approximately 526 acres of marsh located adjacent to the Southwest Louisiana Canal at the intersection of Little Lake to strengthen and stabilize the existing marsh.

Proposed Solutions:
The project will create and nourish marsh along the lake rims of the Little Lake and Hackberry Bay west of Bayou Lafourche and along the Southwestern Louisiana Navigation Canal to reestablish a healthy and stable marsh community. Sediments will be hydraulically dredged from Little Lake and pumped via pipeline to create/nourish approximately 526 acres of marsh habitat.

Project Benefits:
The project should net at least 450 acres of marsh over the 20 year life of the project.

Project Construction Costs: $20-25 million

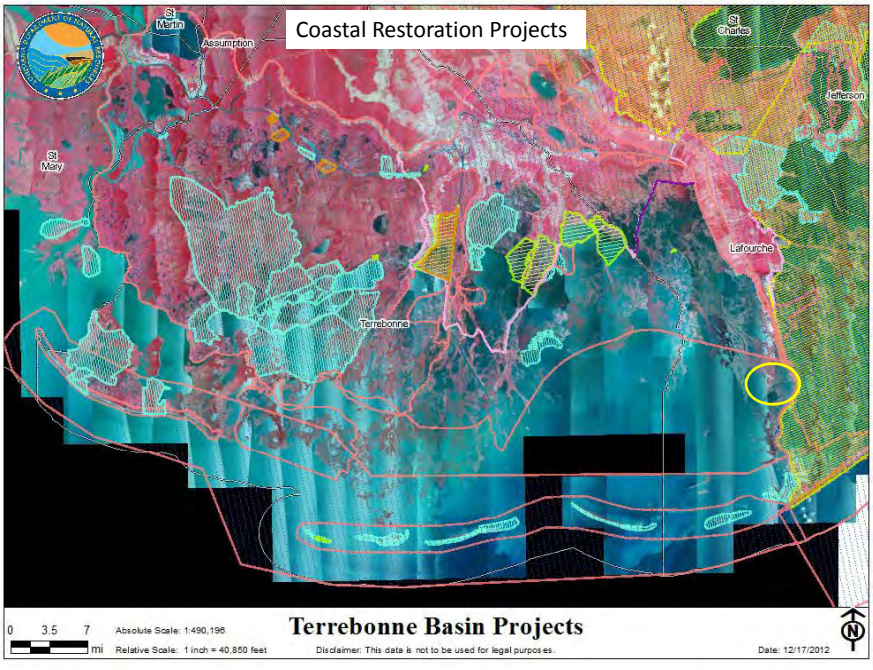
Preparer(s) of Fact Sheet:
Archie Chaisson, Lafourche Parish, (985) 632-4666, chaissonap@lafourchegov.org
Ron Boustany, NRCS, (337) 291-3067, ron.boustany@la.usda.gov
John Jurgensen, NRCS, (337) 473-7694, john.jurgensen@la.usda.gov

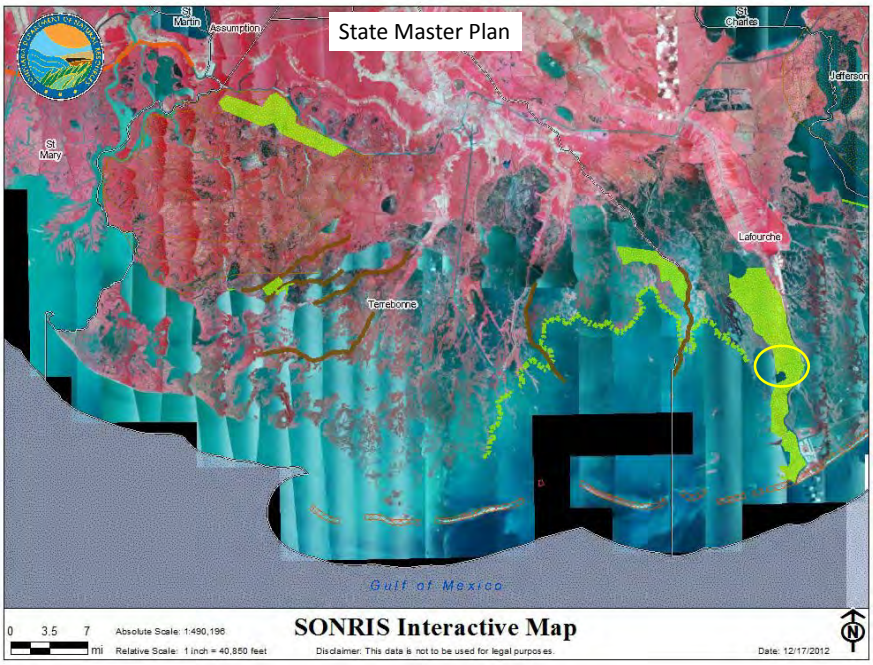

Leeville West Marsh Creation and Nourishment
Unit 2
250 ac
Unit 1
276 ac
borrow
Lafourche
0 0.2 0.4
mi
Absolute Scale 1:28,180
Relative Scale 1 inch = 2,348 feet
SONRIS Interactive Map
Disclaimer: This data is not to be used for legal purposes.
Date: 10/30/2013
N

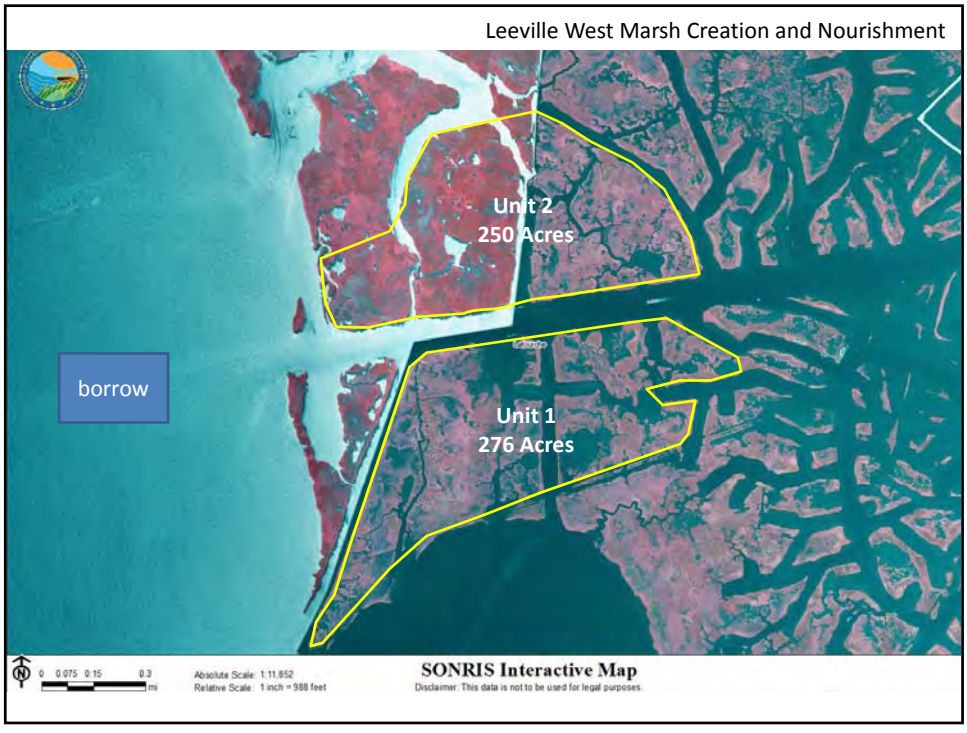
PPL 24
Regional Planning Team
February 12, 2014

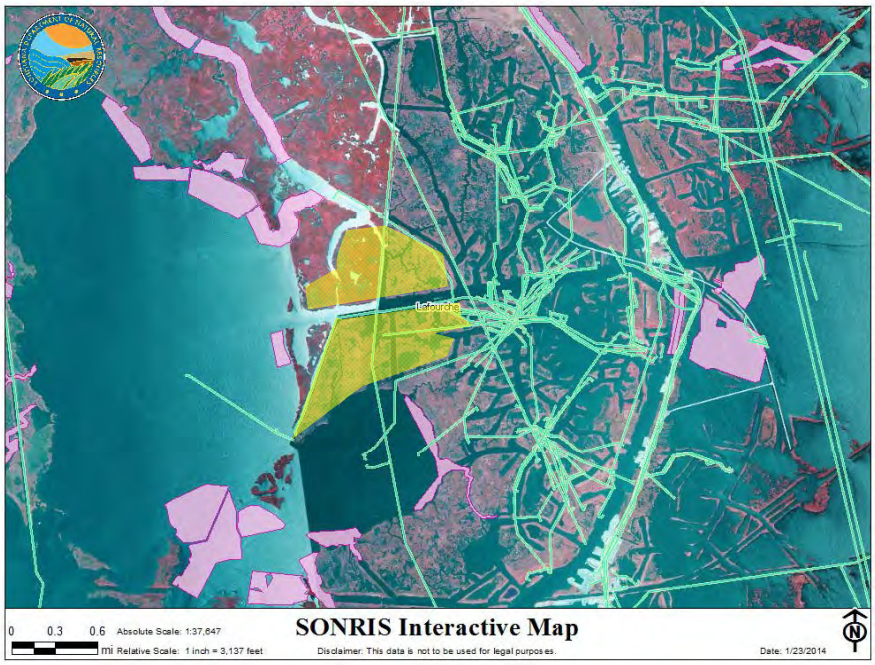
Region 3
Terrebonne Basin

Leeville West Marsh Creation and Nourishment




State Master Plan
St Martin
Assumption
St Charles
Jefferson
St Mary
Lafourche
Terrebonne
Gulf of Mexico
0 3.5 7
mi
Absolute Scale: 1:490,196
Relative Scale: 1 inch = 40,850 feet
SONRIS Interactive Map
Disclaimer: This data is not to be used for legal purposes.
Date: 12/17/2012


Leeville West Marsh Creation and Nourishment
Unit 2
250 Acres
borrow
Unit 1
276 Acres
0 0.075 0.15 0.3
mi
Absolute Scale: 1:11,852
Relative Scale: 1 inch = 988 feet
SONRIS Interactive Map
Disclaimer: This data is not to be used for legal purposes.


Lafourche
0 0.3 0.6 mi
Absolute Scale: 1:37,647
Relative Scale: 1 inch = 3,137 feet
SONRIS Interactive Map
Disclaimer: This data is not to be used for legal purposes.
Date: 1/23/2014
N