REGION 3

Coastal Wetlands Planning Protection & Restoration Act

26th Priority Project List

Region 3

Regional Planning Team Meeting

January 27, 2016
Gray, LA

CWPPRA

1. Welcome and Introductions

- RPT Region 3 Leader: Ron Boustany - NRCS

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Announcements

- Copies of the PPL 26 Selection Process & Schedule available at the sign-in table.
- PPL 26 RPT meetings to accept project nominees:
  - Region IV, Estuarine Fisheries & Habitat Center, Jan. 26, 2016, 11:00 am
  - **Region III, Terrebonne Parish North Branch Library, Jan. 27, 2016, 10:00 am**
  - Region I, USFWS SE LA Refuges Complex (Big Branch), Jan. 28, 2016, 8:00 am
  - Region II, USFWS SE LA Refuges Complex, Jan. 28, 2016, immediately following Region I.
- 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.

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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**
- Teche-Vermilion Basin
  - **St. Mary Parish**
  - **Iberia Parish**
  - **Vermilion Parish**

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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
- 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.



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RPT Meetings

- Presenters without factsheets **MUST** complete a PPL 26 Nomination Sign-Up Sheet for each project nominee (demo projects too).
- Presenters with factsheets, please give a factsheet each to Kaitlyn, Michelle, & Kylie or Anne before your presentation.
- 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 17, 2016.
- Limit comments/questions during meeting to PPL 26 subject proposals and processes.



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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 23, 2016.
- The Technical Committee may or may not select a coastwide project in April 2016.



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Demonstration Projects

- Demonstrates a technology which can be transferred to other areas in coastal Louisiana
- Engineering/Environmental Workgroups will validate that demos fit CWPPRA Standard Operating Procedures criteria
- The RPTs select up to 6 demos during the Feb. 23 Coastwide Electronic Vote.
- The Technical Committee selects up to 3 demos in April 2016.
- Workgroups may recommend that no demos move forward to candidate stage
- Previous demo candidates must be ***re-nominated*** for PPL 26.



Coastwide Electronic Vote (Feb 23) to select:

Projects per Basin
(Determined by loss rates, the highest loss rates have the most projects)

4 Barataria
4 Terrebonne
3 Breton Sound
3 Pontchartrain
2 Mermentau
2 Calcasieu/Sabine
2 Teche/Vermilion
1 Atchafalaya
1 Coastwide
22 Total

& up to 6 demos

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Coastwide Electronic Vote

- 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 2/17/2016.

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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 must email their voting sheets to kaitlyn.m.carriere@usace.army.mil

All votes must be received by 10:30 am on February 23, 2016.



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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 26 criteria.



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PPL 26 Candidate Project Selection

- CWPPRA Technical Committee meeting, April 5, 2016 at 9:30 am, US Army Corps of Engineers, 7400 Leake Avenue, New Orleans, LA.
- 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 March 22, 2016.
- Public comments also accepted orally during meeting.



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PPL 26 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. 7, 2016, Baton Rouge, 9:30 am
- Task Force final decision to select PPL 26 in January 2017.



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PPL 26 Timeline

- **Coastwide Electronic Vote, Feb. 23, 2016**
  - 21 basin-project nominees, 1 coastwide nominee, and 6 demos selected
- **Technical Committee Mtg, Apr. 5, 2016, New Orleans**
  - Selection of 10 candidates and up to 3 demos
- **Technical Committee Mtg, Dec. 7, 2016, Baton Rouge**
  - Recommend up to 4 projects for Phase 1 funding
- **Task Force Mtg, Jan. 2017, New Orleans**
  - Final Selection of projects for Phase 1 funding



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Written Comments

- Send written comments on projects & demos proposed today to the CWPPRA program manager
- **Deadline: February 17, 2016**

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

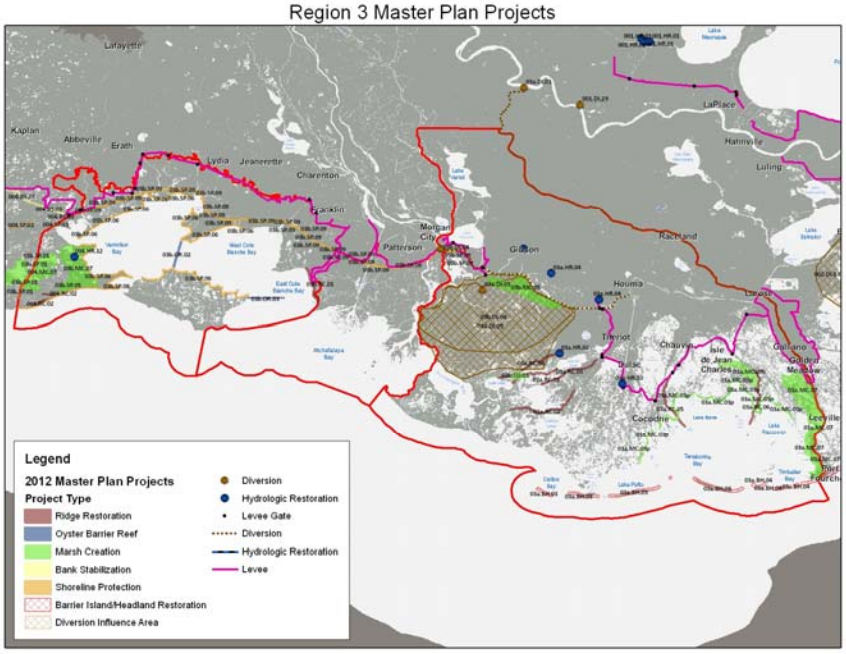
Email: Brad.L.Inman@usace.army.mil

(this information is on the back of the agenda)



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

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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

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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

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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

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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
January 27, 2016 10:00 A.M.	COASTAL WETLANDS PLANNING, PROTECTION AND RESTORATION ACT	Terrebonne Parish North Branch Library 4130 West Park Avenue Gray, LA 70359

PURPOSE

MEETING OF THE REGIONAL PLANNING TEAM REGION III

PARTICIPANT REGISTER

NAME	JOB TITLE AND ORGANIZATION	PHONE NUMBER
Brad Crawford	USEPA	214 665 7255
Chad Courville	Miami Corporation	337.264.1695
Randy Moertle	McIlhenny / Rainey Conservation	985/856-3630
Blaise Pezold	LDAF Coastal Revegetation	504-264-8125
Mac Parker	NRCS - District Conservationist	337-369-3234 ext.3
Ashton Strickland	Lafourche Terrebonne SWCD	504-[illegible]
Taylor Sloey	CEI - Restoration Ecologist	402 580 9062
Ted Rothstein	Martin Engineering CEI	225-292-[illegible]
John Bartman	NRCS - District Conservationist	985 331 9084
ALTON James Jr	USDA NRCS	985 331 9084
Ron Boustany	NRCS	337 291-3067
Jerry Ledet	PSM - Terr	985-879-1360
Gerald Schouest	Terrebonne CIM	985 790-3662
KAREN McCORMICK	USEPA	214-789-2814
Vidi Summers	TPCG coastal Restoration	985-873-6899
Kevin Roy	USFWS	337-291-3120
DARIN LEE	CPRA	985 447 0990
Robert Dubois	FWS	337-291-3127
LOLAND BROUSSARD	NRCS	337-291-3069
Ray Fremin Jr.	Iberia Parish Levee Dist	337-380-8439
Shane Grenier	LDWF	5042845264
Sharon Osowski	US EPA	214-665-7506

LMV FORM 583-R
JAN 88

ATTENDANCE RECORD

DATE	SPONSORING ORGANIZATION	LOCATION
January 27, 2016 10:00 A.M.	COASTAL WETLANDS PLANNING, PROTECTION AND RESTORATION ACT	Terrebonne Parish North Branch Library 4130 West Park Avenue Gray, LA 70359

PURPOSE

MEETING OF THE REGIONAL PLANNING TEAM REGION III

PARTICIPANT REGISTER

NAME	JOB TITLE AND ORGANIZATION	PHONE NUMBER
MARK BLACK	DIRECTOR, COASTAL RESTORATION Terrebonne Parish Consol. Govt	985-873-6889
Kim Gajjour	Landowner	337-654-5430
Kent Ballfrass	CPRA	225.342.4733
Quin Kinler	NRCS	
JOHN FORET	NOAA	337.291.2107
Charles Sasser	LSU	225-578-6375
Cindy Stiger	NRCS	225-665-4253 x 111
Amanda Vosin	Lafourche Parish Govt	985-493-6610
Lance Campbell	LDWF	337-373-0032
RALPH Libersat	Vermilion	337-652-6557
FRANCIS FIELDS	APACHE LA. MINERALS LLC	985-879-3528
Jennifer Gelbas	TPCG - Recovy Planner.	985-873-6516
Jason Knoll	NOAA	225 757 5411
Donna Rogers	NOAA	225-316-8958
Mark Hester	GL Lafayette	504-237-1151
Cody Colvin	Civil Engineer / NRCS	225-278-2732
BARRY HEBERT	BIOLOGIST - LDWF	225 765 0233
Tyler Otte	ORA ESTUARIES	225-772-5570
Scott Porter	Eco Rigs. org	985-226-4856
Leslie Suaff	Ducks Unlimited	986-209-3200
Patrick Williams	NOAA	225-389-0508
DAWN DAVIS	NOAA	[illegible]

LMV FORM 583-R
JAN 88

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PURPOSE

MEETING OF THE REGIONAL PLANNING TEAM REGION III

PARTICIPANT REGISTER

NAME	JOB TITLE AND ORGANIZATION	PHONE NUMBER
Troy Heatwood	NOAA Fisheries	225 389 0508
Kim Clements	NOAA	225 389 0508
Burt Blumfield	Delta Land Services	225-614-4110

LMV FORM 583-R
JAN 88

Region 3 – TECHE-VERMILION BASIN

Project Number	Project Proposals
R3-TV-01	West Vermilion Marsh Creation and Shoreline Protection
R3-TV-02	West Rainey Marsh Creation: Increment A
R3- TV-03	Cheniere Au Tigre Ridge Restoration and Marsh Creation
R3-TV-04	Belle Island Marsh Creation and Nourishment
R3-TV-05	Deadman's Island Marsh Creation and Nourishment
R3-TV-06	South Humble Canal Shore Protection and Marsh Creation
R3-TV-07	Lake Sand Shoreline Protection
R3-TV-08	Freshwater Bayou East Marsh Creation and Hydrologic Restoration

Region 3 – TERREBONNE BASIN

R3-TE-01	Cocodrie East Marsh Creation Option A
R3-TE-02	Point au Chien Ridge Restoration and Marsh Creation Option A
R3-TE-03	Belle Pass-Golden Meadow Marsh Creation: West Leeville Increment
R3-TE-04	North Terrebonne Marsh Creation
R3-TE-05	East Catfish Lake Marsh Creation and Terracing
R3-TE-06	Bayou Terrebonne Ridge Restoration and Marsh Creation
R3-TE-07	Small Bayou LaPointe Marsh Creation and Ridge Restoration
~~R3-TE-08~~	~~Bayou Jean Lacroix Marsh Creation and Terracing~~ *(Dropped from voting list)*
R3-TE-09	West Louisiana Highway 1 Marsh Creation and Terracing
R3-TE-10	Bayou De Cade Bankline and Marsh Restoration
R3-TE-11	Terrebonne Floating Marsh Restoration
R3-TE-12	Bayou Terrebonne Freshwater Diversion
R3-TE-13	South Bayou Pointe aux Chenes Marsh Creation and Terraces

R3-TE-14	North Bayou DeCade Ridge Restoration
R3-TE-15	South Catfish Lake Marsh Creation
R3-TE-16	Grand Bayou Freshwater Enhancement

Region 3 – TECHE-VERMILION BASIN

R3-TV-01

West Vermilion Marsh Creation and Shoreline Protection

PPL26 PROJECT FACT SHEET
January 27, 2016

Project Name
West Vermilion Marsh Creation and Shoreline Protection

Master Plan Strategy
East Rainey Marsh Creation 03b.MC.07. Creation of approximately 3,080 acres of marsh in the eastern portion of Rainey Marsh to create new wetland habitat, restore degraded marsh, and reduce wave erosion. Vermilion Bay and West Cote Blanche Bay Shoreline Protection 03b.SP.06a. 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.

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

Problem
Over the past decades, the project area has experienced wetland loss, primarily due to geomorphologic and hydrologic conditions being altered due to dredging of navigation and petroleum access canals and the construction of spoil banks and levees, and shoreline erosion along Vermilion Bay caused primarily by natural wave energy. Wave energy in the bay has gradually increased over the centuries because the bay is naturally getting deeper due to a slight yet constant subsidence and global sea-level rise. Recent loss rates (2003-2013) were calculated from aerial photography at 6.0 ft/yr.

Goals
The goals of this project are to: 1) Create and/or nourish 769 acres of marsh, by pumping sediment from Vermilion Bay; 2) Protect/armor the western shoreline of Vermilion Bay between Bayou Prien and Hog Bayou and the Vermilion Bay shoreline adjacent to the proposed marsh creation cell near North Lake.

Proposed Solution
The project proposes to create a total of 303 acres and nourish a total of 374 acres of emergent marsh by dredging sediment from Vermilion Bay. Approximately 23 acres would be confined marsh creation, and 280 acres would be unconfined marsh creation. Three acres would be confined marsh nourishment on North Lake and approximately 371 acres would be unconfined marsh nourishment in the southern project cell. The project also includes armoring approximately 18,352 linear feet of shoreline (2,474 LF of shoreline protection plus 15,878 LF of gabion mats) along Vermilion Bay between Bayou Prien and Hog Bayou and adjacent to the proposed marsh creation cell located near North Lake. Assuming some natural vegetative recruitment, vegetative plantings are planned at a 50% density at project year one. Containment dikes will be degraded or gapped by year three to allow access for estuarine organisms.

Project Benefits
The project would result in approximately 317 net acres over the 20-year project life.

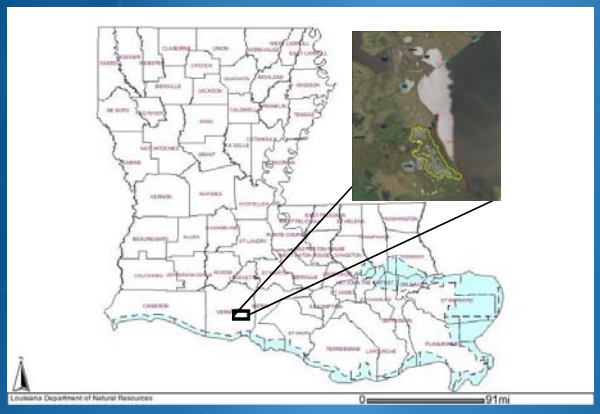
Project Costs
The total fully-funded cost is $24,975,860.

Preparers of Fact Sheet
Brad Crawford, (EPA); (214) 665-7255, crawford.brad@epa.gov
Sharon Osowski, Ph.D., EPA; (214) 665-7506, osowski.sharon@epa.gov
Cindy Steyer, NRCS; (225) 665-4253, cindy.steyer@la.usda.gov
Cassidy Lejeune, LDWF; (337) 373-0032, clejeune@wlf.la.gov



West Vermilion Bay Marsh Creation and Shoreline Protection (PPL26)

West Vermilion Bay Marsh Creation & Shoreline Protection

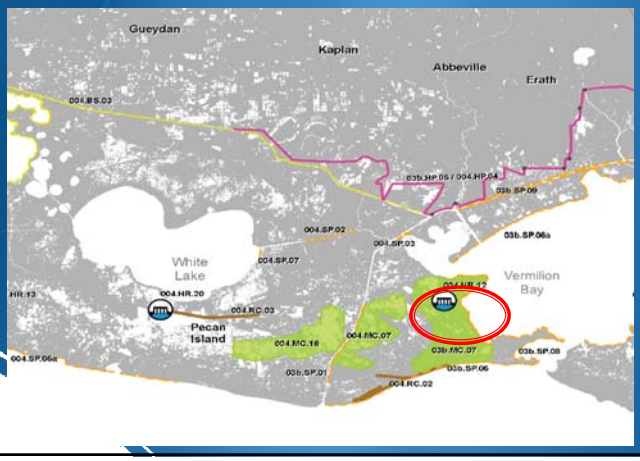


Coastal Wetlands Planning, Protection and Restoration Act

Master Plan Solution

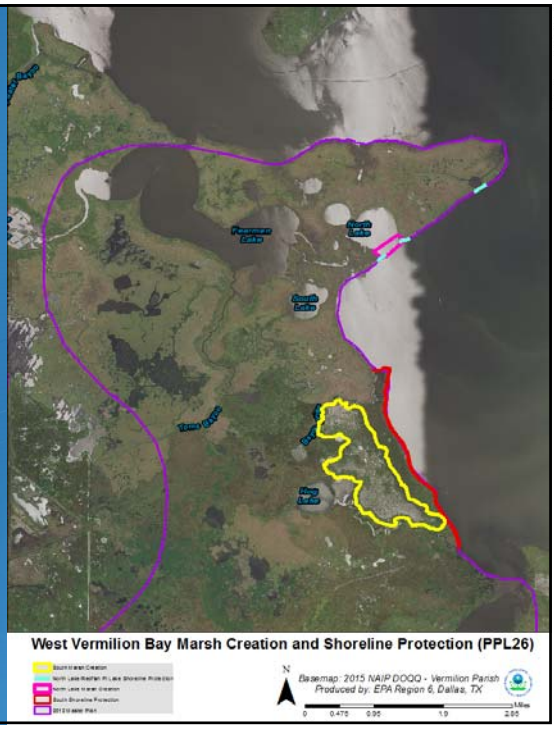
03b.MC.07: East Rainey Marsh Creation: Creation of approximately 3,080 acres of marsh in the eastern portion of Rainey Marsh to create new wetland habitat, restore degraded marsh, and reduce wave erosion.

03b.SP.06a: Vermilion Bay and West Cote Blanche Bay Shoreline Protection: 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.



Master Plan Consistency

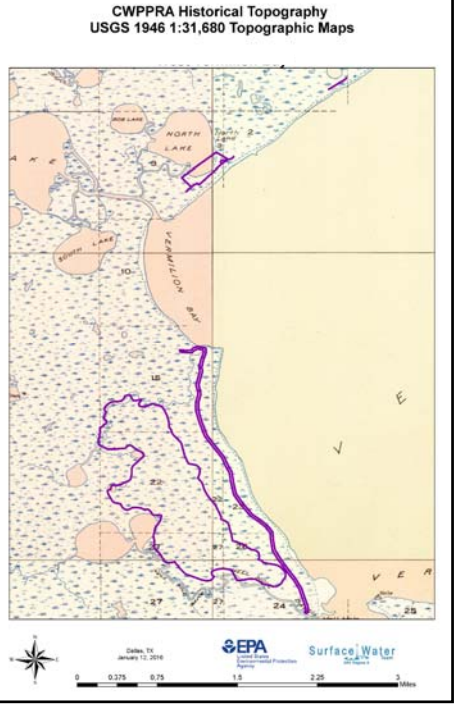
- 03b.MC.07: East Rainey Marsh Creation
- 03b.SP.06a: Vermilion Bay and West Cote Blanche Bay Shoreline Protection
- Joint sponsored project between NRCS and EPA



Problem

- Project area has experienced both wetland loss and shoreline erosion
- Compound effects driving marsh loss
  - Subsidence, storm losses, sea level rise, and human intervention
  - Numerous oil & gas canals in project area have altered hydrology
  - Shoreline erosion along Vermilion Bay due to increased wave energy

Historical Reference



Project Features



Project Features



West Vermilion Bay Marsh Creation and Shoreline Protection (PPL26)

North Lake Marsh Creation
North Lake/Redfish Pt Lake Shoreline Protection
South Marsh Creation
South Shoreline Protection

N

Basemap: 2015 NAIP DOQQ - Vermilion Parish
Produced by: EPA Region 6, Dallas, TX

0 0.325 0.65 1.3 1.95 Miles

Project Goals

- Create/nourish 474 acres of marsh with sediment from Vermilion Bay
- Nourish an estimated 203 additional acres in a 300' buffer zone surrounding the southern cell
- Armor approximately 18,378 linear feet of shoreline along Vermilion Bay in 2 areas:
  - Between Bayou Prien and Hog Bayou
  - Along the shoreline between North Lake and Vermilion Bay.
- Estimated cost + 25% contingency = $17.3M
- Fully funded range = $20M-$25M


Questions?
EPA Region 6

R3-TV-02

West Rainey Marsh Creation: Increment A

R3 - TV-02

PPL26 PROJECT FACT SHEET
January 27, 2016

Project Name:
West Rainey Marsh Creation: Increment A

Master Plan Strategy
West Rainey Marsh Creation 004.MC.07. Creation of approximately 3,550 acres of marsh at Rainey Marsh near the southeast bank of the Freshwater Bayou Canal to create new wetland habitat, restore degraded marsh, and reduce wave erosion.

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

Problem
What was once a productive freshwater marsh has been converted to largely open water. Historic wetland loss in the area occurs in the form of interior marsh loss and shoreline erosion along Freshwater Bayou. The interior loss is caused by subsidence, sediment deprivation, and construction of access and pipeline canals.

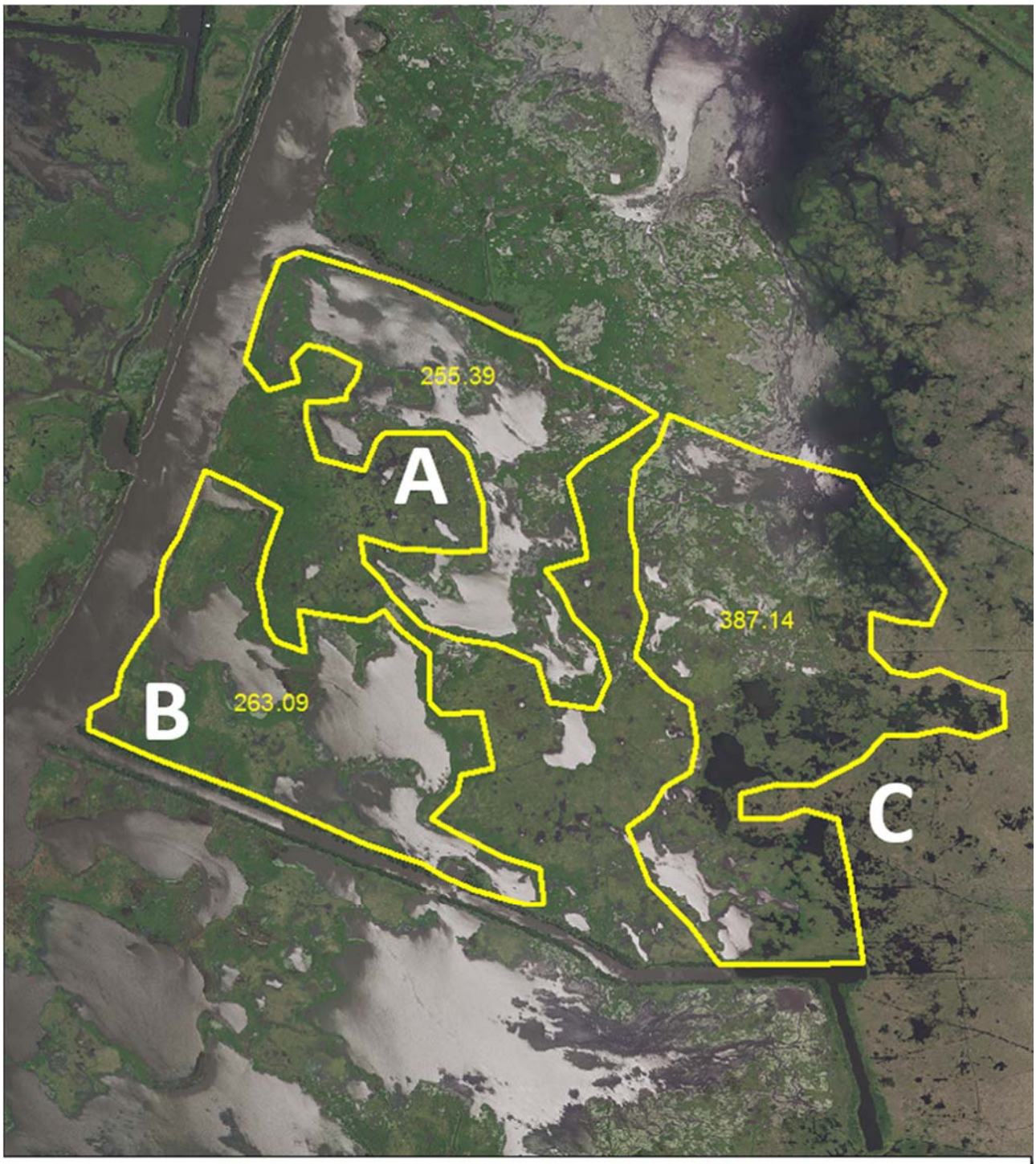
Goals
The goal of this project is to create marsh in the open water areas to create new habitat and to nourish the surrounding areas to restore degraded marsh using sediment from Freshwater Canal and/or Little Vermilion Bay.

Proposed Solution
The project would place dredged material to create/nourish approximately 400 acres from increments A through C.

Preliminary Project Benefits
- The project will create/nourish approximately 400 acres from increments A through C.

Preliminary Construction Costs
The preliminary project cost estimate with 25% contingency is $26 million. The fully funded range is $30M - $35M.

Preparer(s) of Fact Sheet:
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Sharon Osowski, Ph.D., EPA; (214) 665-7506; osowski.sharon@epa.gov
Brad Crawford, EPA; (214) 665-7255; crawford.brad@epa.gov



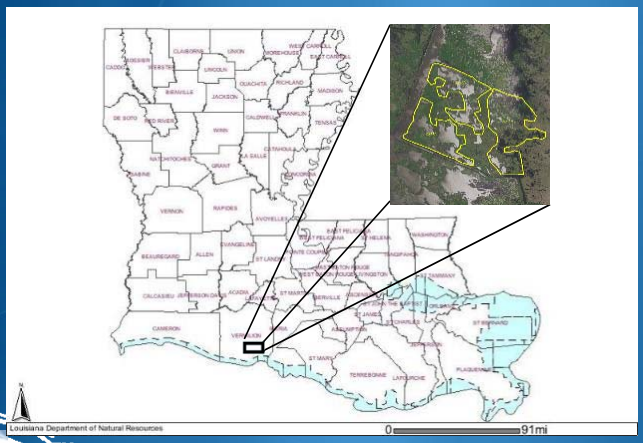
West Rainey Marsh Creation Project (PPL26)

N

Basemap: 2015 NAIP DOQQ - Vermilion Parish
Produced by: EPA Region 6, Dallas, TX

0 0.15 0.3 0.6 0.9 Miles

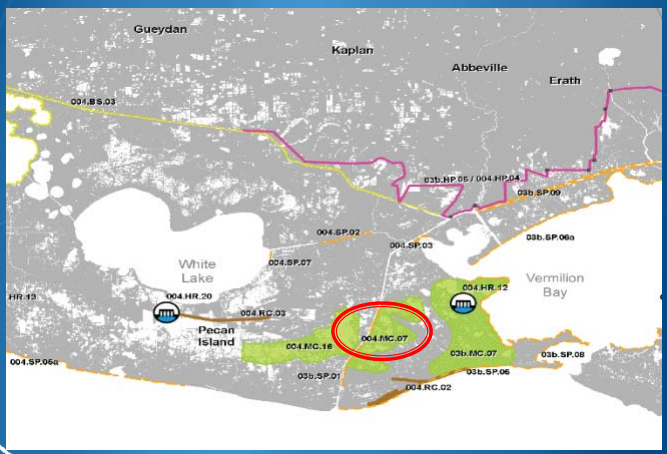
West Rainey Marsh Creation: Increments A-C



Coastal Wetlands Planning, Protection and Restoration Act

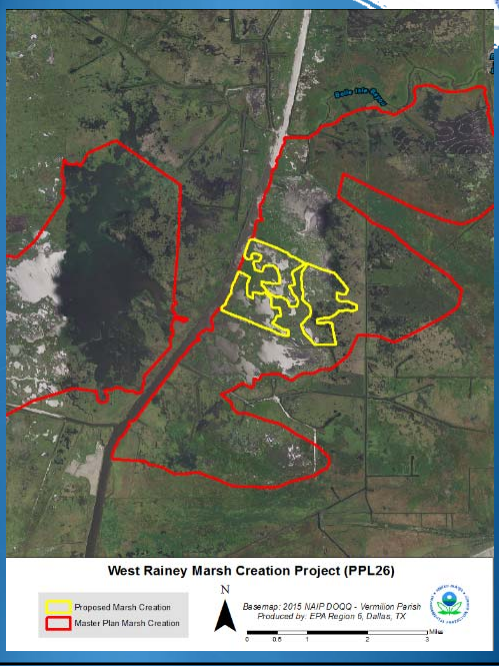
Mater Plan Solution

004.MC.07 West Rainey Marsh Creation: Creation of approximately 3,550 acres of marsh at Rainey Marsh near the southeast bank of the Freshwater Bayou Canal to create new wetland habitat, restore degraded marsh, and reduce wave erosion.



Master Plan Consistency

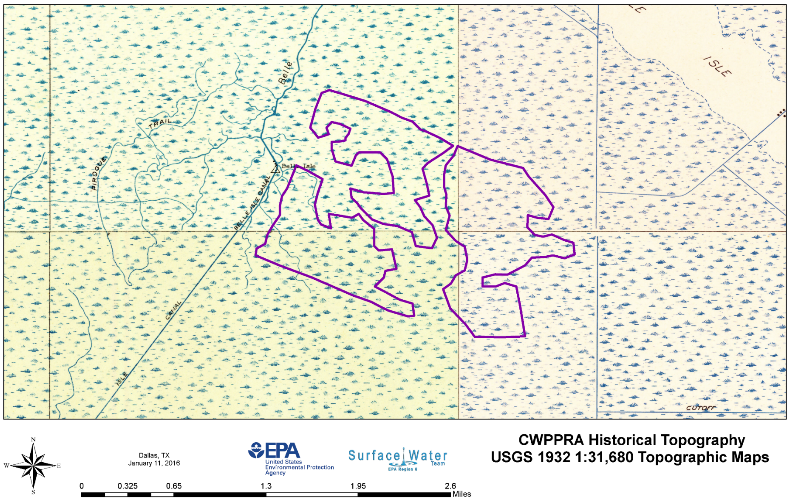
004.MC.07 West Rainey Marsh Creation



Problem

- What was once a productive freshwater marsh has been converted to largely open water.
- Wetland loss occurs as interior marsh loss & shoreline erosion along Freshwater Bayou.
- Enlargement of Freshwater Bayou resulted in:
  - Erosion of perimeter embankments and
  - Increased tidal exchange.
- The interior marsh loss attributed to:
  - Subsidence
  - Sediment deprivation
  - Construction of access/pipeline canals.

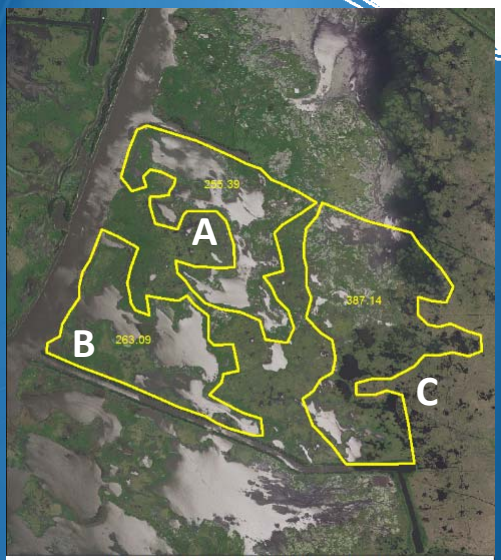
Historical Reference



CWPPRA Historical Topography
USGS 1932 1:31,680 Topographic Maps

Project Features

Create/nourish ~400 acres emergent marsh with sediment from Freshwater Canal and Little Vermilion Bay



West Rainey Marsh Creation Project (PPL26)

Project Goals

- Create/nourish approximately 400 acres emergent marsh with sediment from Gulf of Mexico.
- Creation of tidal ponds and creeks
- Estimated preliminary cost w/25% contingency is $26 million
- Fully funded cost range $30M-$35M.



R3-TV-03

Cheniere Au Tigre Ridge Restoration and Marsh Creation

R3 -TV-03

PPL26 PROJECT FACT SHEET
January 27, 2016

Project Name
Cheniere Au Tigre Ridge Restoration and Marsh Creation

Master Plan Strategy
Cheniere au Tigre Ridge Restoration 004.RC.02. Restoration of approximately 60,000 ft (140 ac) of historic ridge along Pecan Island Ridge to provide coastal upland habitat, restore natural hydrology, and provide wave and storm surge attenuation.

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

Problem
Ridges only aggrade or build up when they are being formed along the banks of active distributaries or as active gulf beaches. Surface elevations of all relict natural levee ridges, chenier ridges, artificial ridges, embankments, levees, and uplands become lower through time in response to subsidence. As a result, both the Deltaic and Chenier Plain systems are badly degraded. The salinity gradients within the estuarine basins support the diversity of habitats essential to the function of these systems. These gradients are maintained by the skeletal distributary ridges and cheniers and barrier shorelines at the gulf. If these vital components of the systems are allowed to disappear, the essential character of the estuarine basins will change drastically. If breaches occur in the skeletal framework of natural levee ridges and lake rims which hold the fresh and intermediate marshes together, a tidal pumping process quickly removes the fluid and semi-fluid soils and the barren mud flats are converted to ponds, lakes, and bays. (Coast 2050: Toward a Sustainable Coastal Louisiana).

Goals
- Create/nourish 934 acres emergent marsh with sediment from the Gulf of Mexico.
- Create 28,506 linear feet of ridge.

Proposed Solution
The project would place dredged material to create/nourish approximately 934 acres of emergent marsh.

Preliminary Project Benefits
- The project will create/nourish 934 acres of emergent marsh.
- Create 28,506 linear feet of ridge.

Preliminary Construction Costs
The preliminary project cost estimate with 25% contingency is $28 million. The fully funded range is $35M - $40M.

Preparer(s) of Fact Sheet
Sharon Osowski, Ph.D., EPA; (214) 665-7506; osowski.sharon@epa.gov
Brad Crawford, EPA; (214) 665-7255; crawford.brad@epa.gov



Cheniere au Tigre Ridge Restoration and Marsh Creation Project (PPL26)

Ridge features

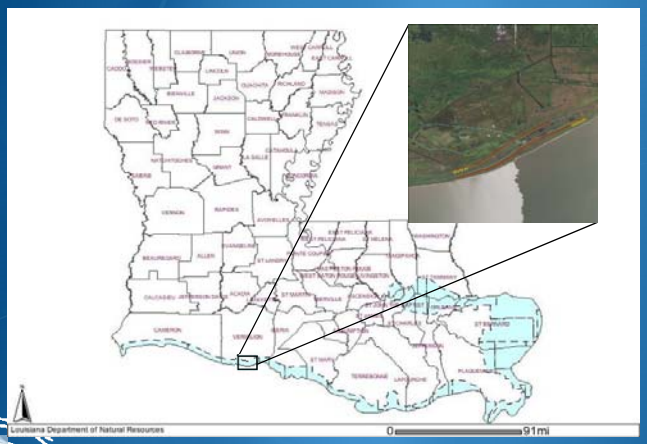
Marsh Creation features

N

Basemap: 2015 NAIP DOQQ - Vermilion Parish
Produced by: EPA Region 6, Dallas, TX

0 0.275 0.55 1.1 1.65 Miles

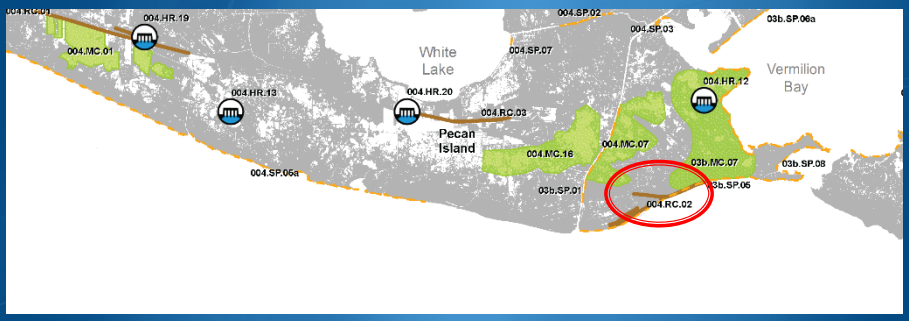
Cheniere au Tigre Ridge Restoration and Marsh Creation



Coastal Wetlands Planning, Protection and Restoration Act

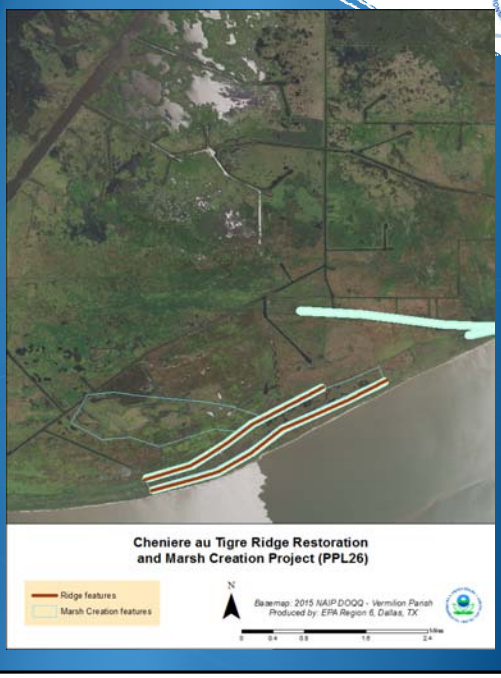
Master Plan Consistency

004.RC.02 Cheniere au Tigre Ridge Restoration: Restoration of approximately 60,000 ft (140 ac) of historic ridge along Pecan Island Ridge to provide coastal upland habitat, restore natural hydrology, and provide wave and storm surge attenuation.



Master Plan Consistency

004.RC.02 Cheniere au Tigre Ridge Restoration

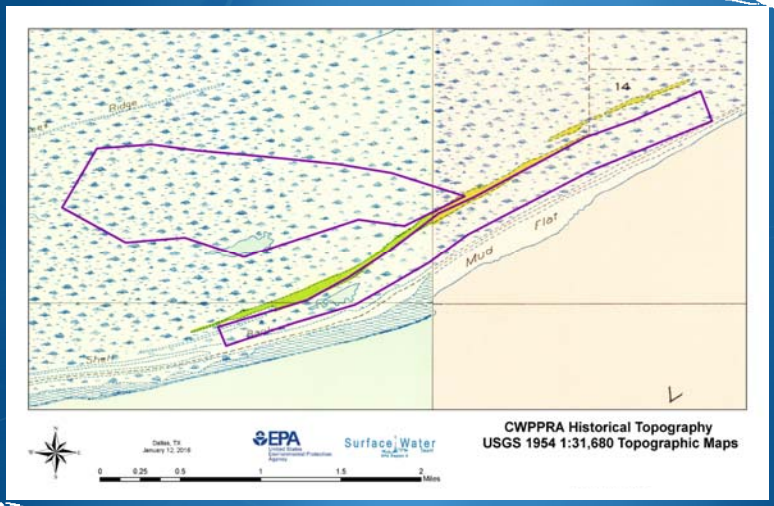


Problem

- Ridges only aggrade or build up when they are being formed
- Surface elevations become lower through time in response to subsidence
- Deltaic and Chenier Plain systems are badly degraded
- The salinity gradients are maintained by the skeletal distributary ridges and cheniers and barrier shorelines at the gulf
- If breaches occur in the skeletal framework a tidal pumping process quickly removes the fluid and semi-fluid soils and the barren mud flats are converted to ponds, lakes, and bays.

(Coast 2050: Toward a Sustainable Coastal Louisiana)

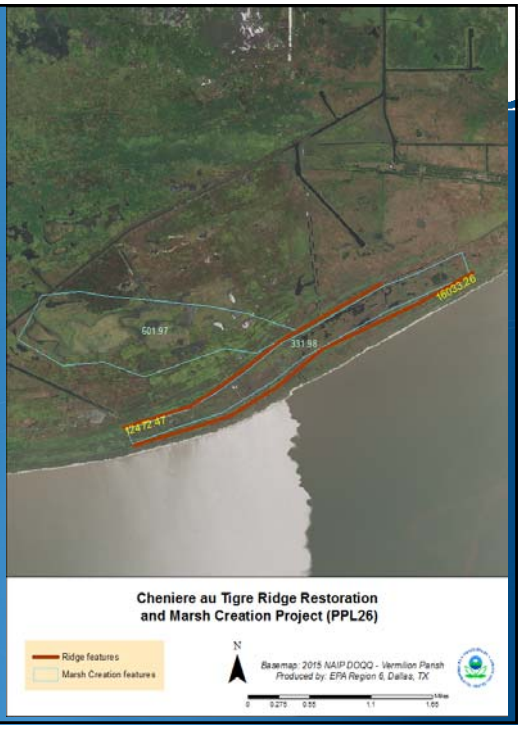
Historical Reference



CWPPRA Historical Topography
USGS 1954 1:31,680 Topographic Maps

Project Features

Restoration of approximately 60,000 feet (140 acres) of historic ridge along Bill Ridge
and Cheniere au Tigre near the Gulf shoreline (through placement of in-situ material
at an elevation of 5 feet NAVD88 and vegetative plantings) to provide coastal upland
habitat, restore natural hydrology, and provide wave and storm surge attenuation.



Project Goals

- Create 28,506 linear feet of ridge
- Create/nourish 934 acres emergent marsh with sediment from the Gulf of Mexico
- Estimated preliminary cost w/25% contingency is $28 million
- Fully funded cost range $35M-$40M.



R3-TV-04

Belle Island Marsh Creation and Nourishment

R3 FV-04

PPL26 PROJECT NOMINEE FACT SHEET
January 27, 2016

Project Name
Belle Isle 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 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 salt water intrusion and hydrologic changes associated increasing tidal influence. 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. Disturbances to the landscape from hurricanes and herbivory have resulted in the breakup and export of large sections of interior marsh. 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.

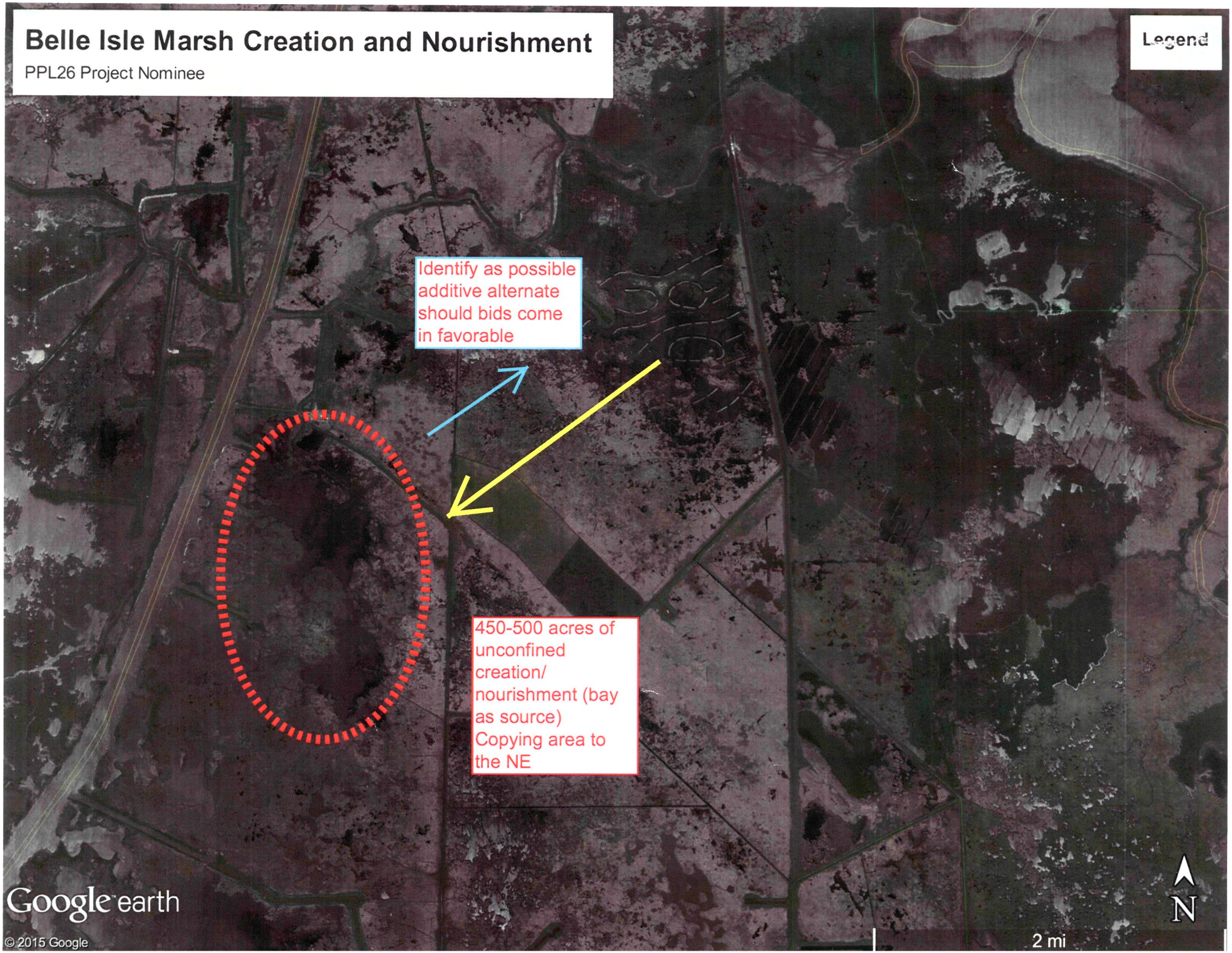
As evidenced from aerial photography the project area is part of a larger feature of weakened interior marsh from the project area south and west to include those marshes south of Pecan Island. If left to deteriorate, the project area would eventually open Vermilion Bay into Freshwater Bayou. This would then threaten the integrity of Freshwater Bayou, exposing a larger interior marsh area to conversion to open water.

Proposed Solution
The proposed project's primary feature is to create and/or nourish approximately 450-500 acres of marsh on the east side of Freshwater Bayou and just south of the Belle Isle Canal. In order to achieve this, sediment will be hydraulically pumped from Vermilion Bay 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 10,000 LF of tidal channels are planned for the newly created marsh. Additionally, 220 acres of vegetative plantings will occur within the newly created areas.

Goals
The project goal is to create and/or nourish approximately 450 ac of marsh of emergent brackish marsh using sediment from the Vermilion Bay.

Preliminary Construction Costs:
The estimated construction cost including 25% contingency is $24.6 M. The fully funded cost range is $30M-$35M.

Preparer(s) of Fact Sheet:
John D. Foret, Ph.D.; NOAA Fisheries Service 337.291.2107 John.Foret@noaa.gov


Belle Isle Marsh Creation and Nourishment
PPL26 Project Nominee
Legend
Identify as possible additive alternate should bids come in favorable
450-500 acres of unconfined creation/ nourishment (bay as source) Copying area to the NE
Google earth
© 2015 Google
N
2 mi

Science, Service, Stewardship

Belle Isle Bayou Marsh Creation and Nourishment (Vermilion Parish)

Region III – Tech/Vermilion Basin

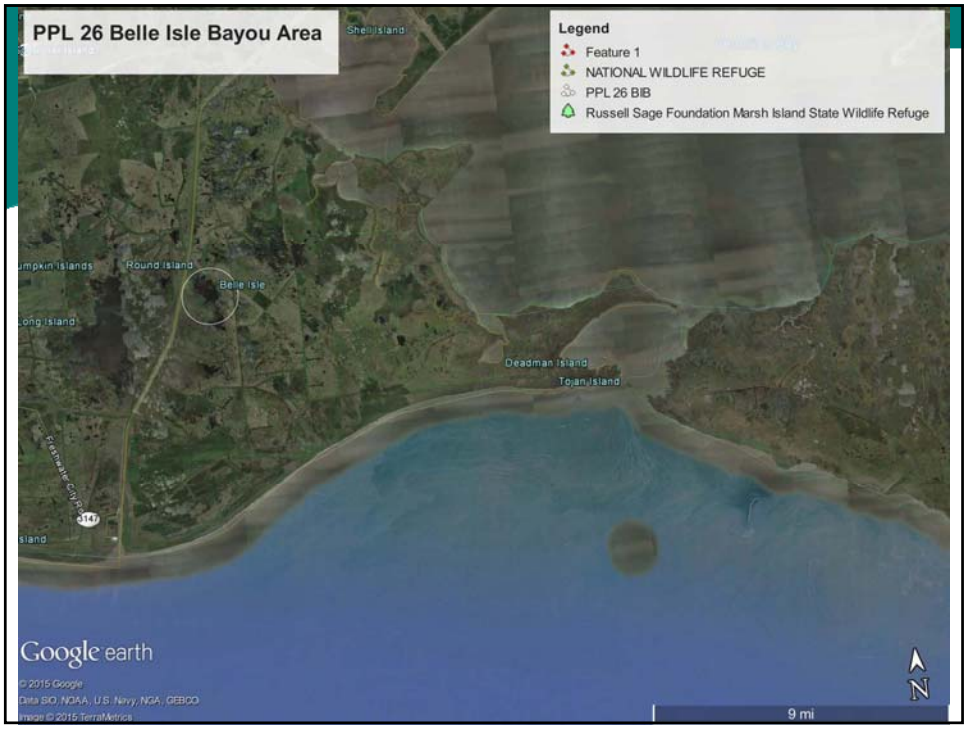


NOAA FISHERIES SERVICE

January 27, 2016

NOAA FISHERIES SERVICE




PPL 26 Belle Isle Bayou Area
Legend
Feature 1
NATIONAL WILDLIFE REFUGE
PPL 26 BIB
Russell Sage Foundation Marsh Island State Wildlife Refuge
Shell Island
Round Island
Belle Isle
Deadman Island
Tojan Island
Google earth
9 mi
N


NOAA
FISHERIES
SERVICE
1998
Vermilion
2008
Vermilion



NOAA FISHERIES SERVICE

Project Features

- Total Acres = 450 acres, with 8,000 LF of tidal channels
- Utilizes material from Vermilion Bay
- Project is ***expandable***
- Re-establishes historic land bridge feature between Vermilion Bay and Freshwater Bayou Navigation Channel
- Re-establishes marsh platform with ponds/tidal channels
- Consistent with State Master Plan
- Construction Cost with 25% contingency = $24.6 million

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R3-TV-05

Deadman’s Island Marsh Creation and Nourishment

R3 # IV-05

PPL26 PROJECT NOMINEE FACT SHEET
January 27, 2016

Project Name
Deadman's Island 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
Marshes in this area are subject to losses from altered hydrology that has led to interior ponding coalescence, shoreline erosion, subsidence/sediment deficit. The south shoreline of Vermilion Bay is eroding at a rate of approximately 6` per year. In addition to these direct losses, significant interior marsh loss has resulted from salt water intrusion and hydrologic changes associated increasing tidal influence. As hydrology within this area has been modified, habitats have not been able to shift, 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 these wetlands. Disturbances to the landscape from hurricanes and herbivory have resulted in the breakup and export of large sections of interior marsh. The ensuing erosion creates water turbidity within the interior ponds, this coupled with increased pond depth, decreases the coverage of submerged aquatic vegetation. It is unlikely that many of these areas will recover unaided.

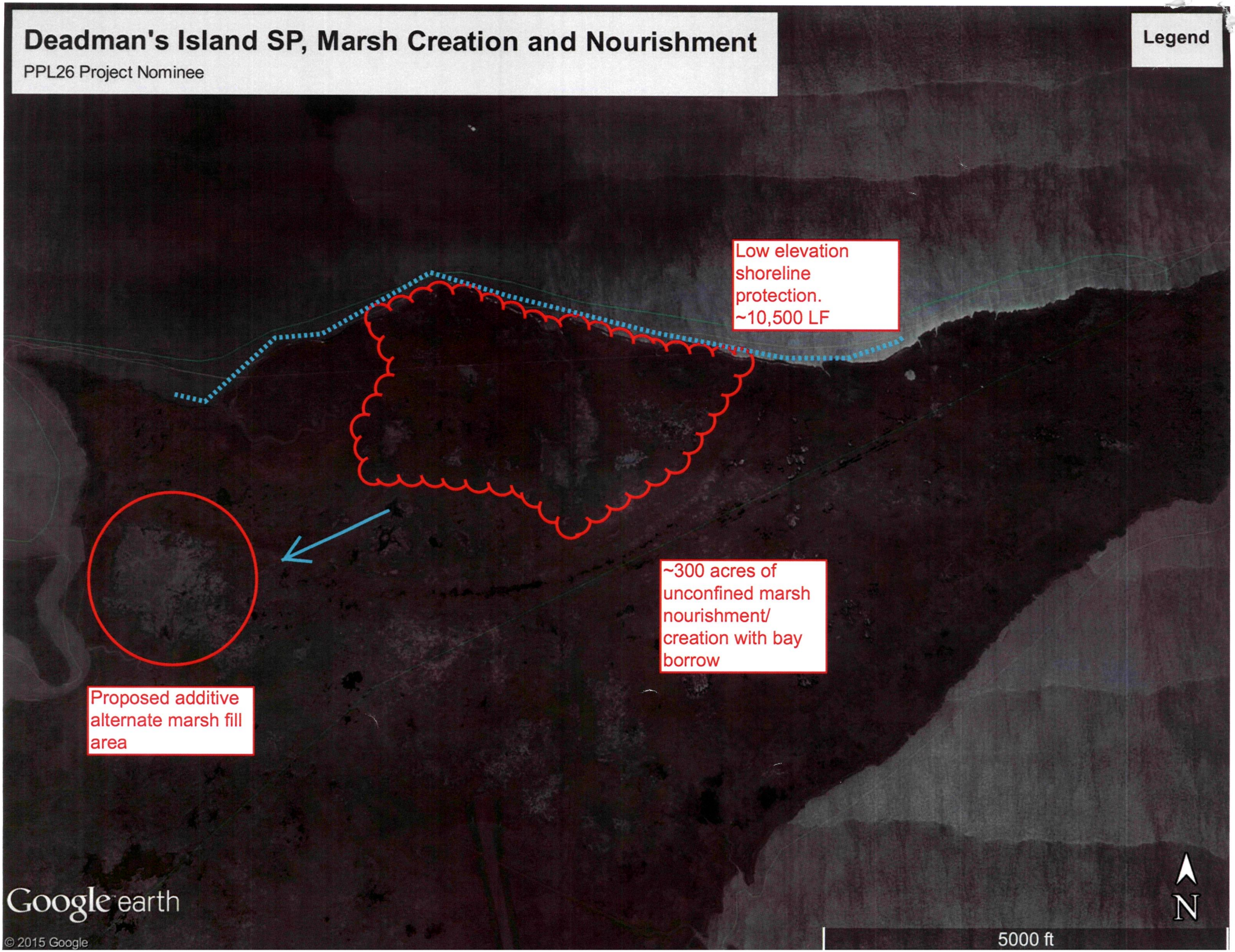
As evidenced from aerial photography the project area is part of a larger feature of weakened interior marsh from the project area south and east to include those marshes separating the Gulf of Mexico and Vermilion Bay at Southwest Pass. If left to deteriorate, the project area could eventually open Vermilion Bay into the Gulf. This would then threaten the sustainability of those wetlands surrounding Vermilion Bay.

Proposed Solution
The proposed project's primary feature is to create and/or nourish approximately 300-350 acres of marsh in the vicinity of Deadman's Island. In order to achieve this, sediment will be hydraulically pumped from Vermilion Bay into the shallow water marsh creation area. Minimal-to-no containment dikes will be constructed around the marsh creation area site during pumping, resulting in an additional 100 acres of marsh nourishment. The second main feature is the construction of an approximate 10,500 LF of low elevation shoreline protection; i.e. a living shoreline, that will reduce the tidal exchange energy into and out of the newly created areas. Additionally, 200 acres of vegetative plantings will occur within the newly created areas.

Goals
The project goal is to create and/or nourish approximately 450 ac of marsh of emergent brackish marsh using sediment from the Vermilion Bay.

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

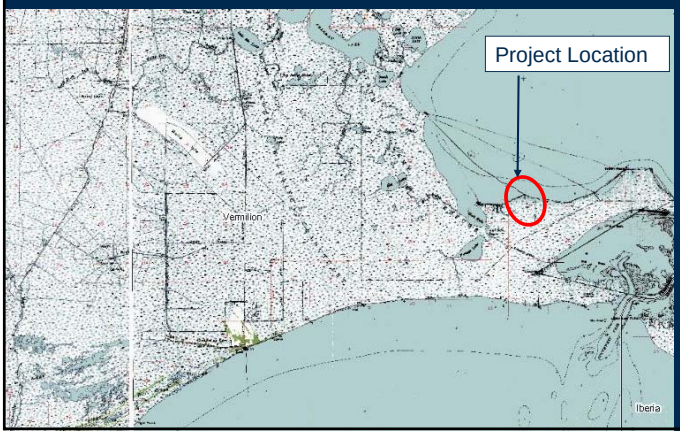
Preparer(s) of Fact Sheet:
John D. Foret, Ph.D.; NOAA Fisheries Service 337.291.2107 John.Foret@noaa.gov


Deadman's Island SP, Marsh Creation and Nourishment
PPL26 Project Nominee
Legend
Low elevation shoreline protection. ~10,500 LF
~300 acres of unconfined marsh nourishment/ creation with bay borrow
Proposed additive alternate marsh fill area
Google earth
© 2015 Google
N
5000 ft

Science, Service, Stewardship

Deadman's Island Marsh Creation and Nourishment (Vermilion Parish)

Region III – Tech/Vermilion Basin



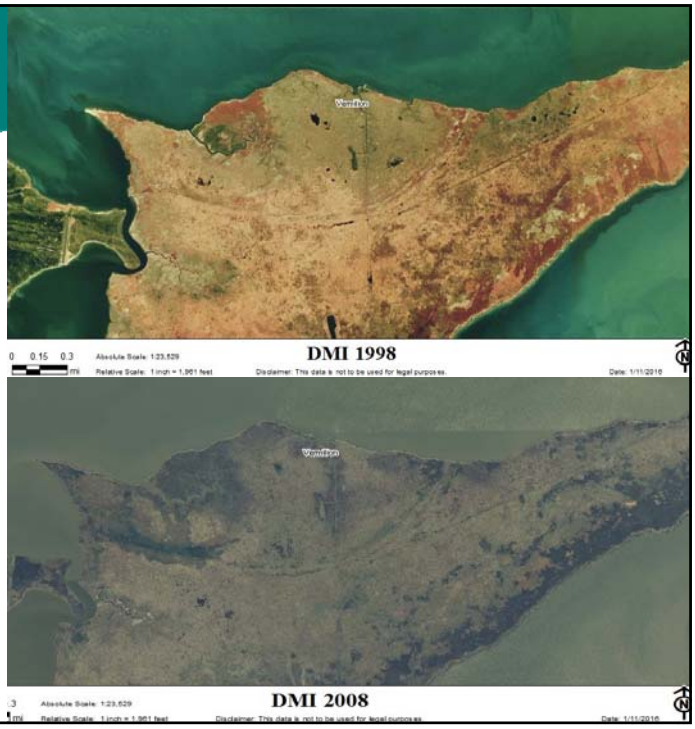
NOAA FISHERIES SERVICE

January 27, 2016

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FISHERIES
SERVICE

Project Features

- Total Acres = 350 acres unconfined fill
- Utilizes material from Vermilion Bay
- Project is ***expandable***
- 10,500 LF of low elevation living shoreline
- Re-establishes historic land bridge feature between Vermilion Bay and Hell Hole Bayou
- Re-establishes marsh platform with ponds/tidal channels
- Consistent with State Master Plan
- Construction Cost with 25% contingency = $25 million

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R3-TV-06

South Humble Canal Shore Protection and Marsh Creation

R3-TV-05

PPL26 PROJECT NOMINEE FACT SHEET
January 2016

South Humble Canal Shore Protection and Marsh Creation

Louisiana's 2012 Coastal Master Plan
Shore Protection – 03b.SP.01
Marsh Creation – 004.MC.07

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

Problem
Project area wetlands are being lost at a rate of -0.78 % per year based on USGS analysis (1985-2010). Marshes in this area are subject to losses from shoreline erosion, subsidence/sediment deficit, hurricane impacts, 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, storm surge impacts, and herbivory. The ensuing erosion creates water turbidity within the interior ponds, this coupled with increased pond depth, decreases the coverage of submerged aquatic vegetation. Recent hurricane scour sites are not likely to recover unaided. Erosion of the eastern bank line of Freshwater Bayou has resulted in formation of three breaches, allowing vessel induced water displacement surges to adversely affect the interior project area marshes. These wakes and water surges from passing vessels are also causing the export of organic material from the project area.

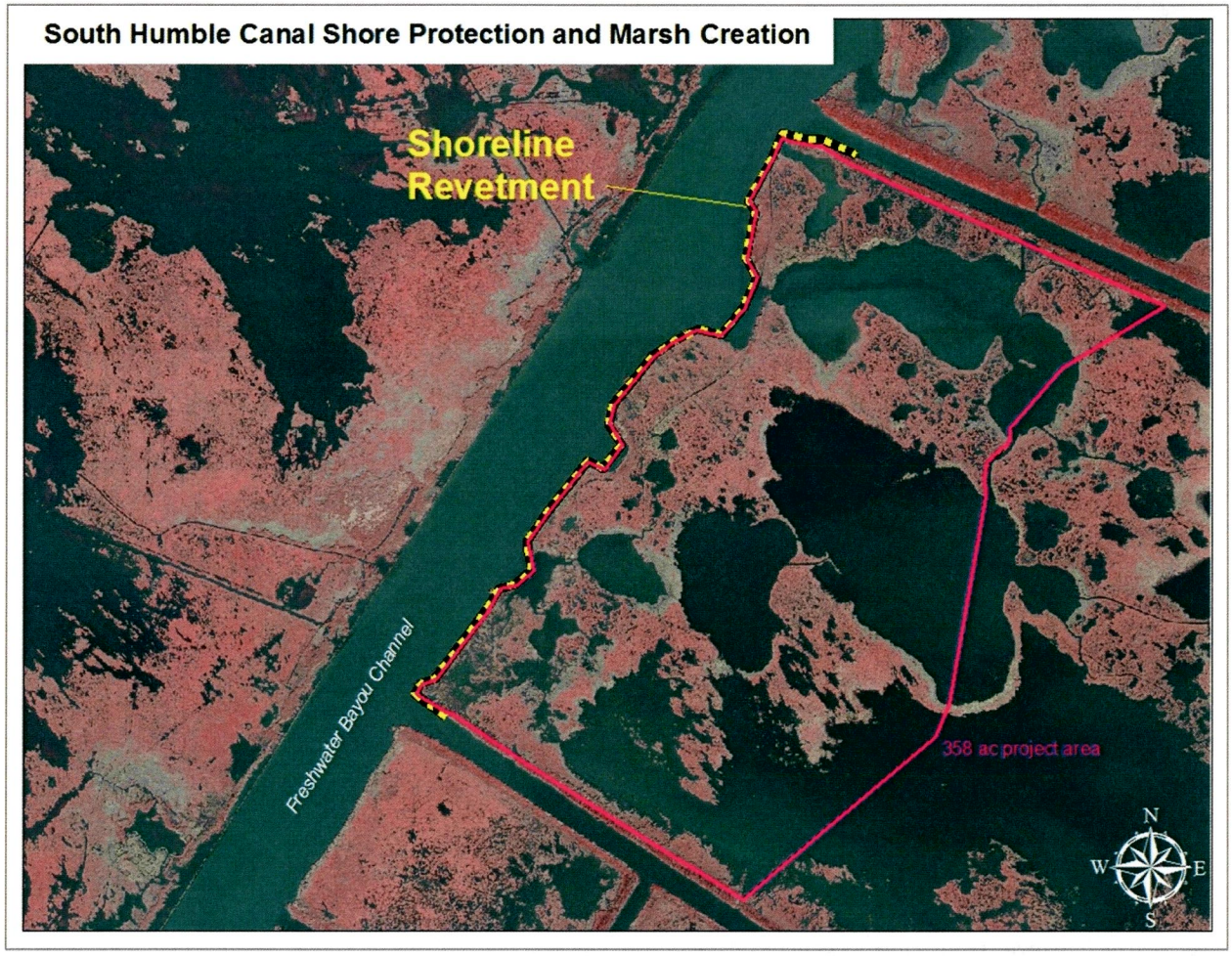
Proposed Solution
The proposed project's primary feature is to construct a revetment along the east bank of Freshwater Bayou and to create and/or nourish approximately 358 acres of marsh (201 acres created, 157 acres nourished). Sediment will be hydraulically pumped from the Gulf of Mexico into the shallow water marsh creation area. Containment dikes will be constructed around the marsh creation area to keep material on site during pumping. The saline effluent will be direct toward Freshwater Bayou and will not be discharged eastward into existing marshes. Once pumping has been completed, the eastern interior dikes will be gapped. Dikes along Freshwater Bayou and the oil field access canals will be left intact to protect against canal-induced hydrologic alternations and vessel related water surges.

Goals
The project goal is to armor the channel bank to halt erosion of bank-edge marshes and to create and/or nourish approximately 358 ac of marsh (201 ac created, 157 ac nourished) of emergent brackish marsh using sediment from the Gulf.

Preliminary Project Benefits:
Shoreline armoring would save 27 acres over the 20-year project life. Based on a 50% reduction of the -0.78%/yr land loss rate, marsh creation and nourishment in the project area would yield 199 net acres, 20 years after initial construction.

Preliminary Construction Costs:
The estimated construction cost including 25% contingency is $22.7M.

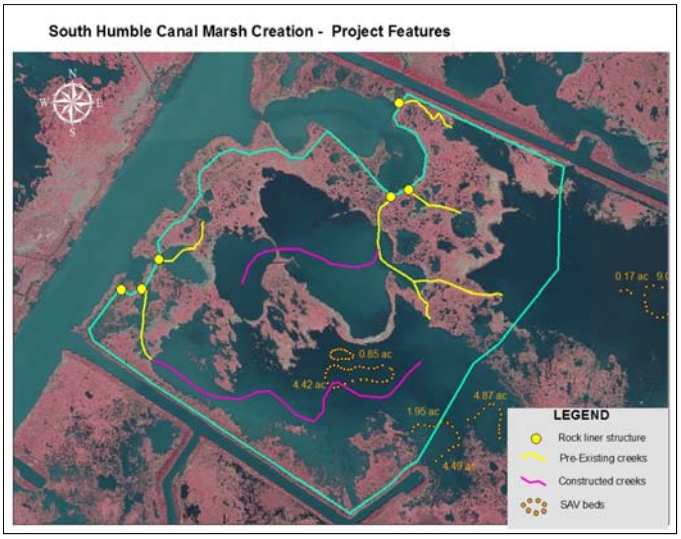
Preparer(s) of Fact Sheet:
Ronald Paille: U.S. Fish and Wildlife Service; 337-291-3117



Vicinity Map
South Humble Canal Project



PPL 24 South Humble Canal Candidate



301 marsh acres created, 215 marsh acres nourished
$34.5M fully funded

PPL26 Nominee – South Humble Canal Shore Protection and Marsh Creation



R3-TV-07

Lake Sand Shoreline Protection

PPL26 PROJECT NOMINEE FACT SHEET
January 27, 2016

Project Name
Lake Sand Shoreline Protection Project

Project Location
Region III, Teche-Vermilion Basin, Iberia Parish

Master Plan Consistency
Measure 03.SP.06a Rock shoreline protection along a total of 83,000lf of Vermilion and West Cote Blanche Bay shorelines – Critical Areas

Problem
Marsh Island supports a diversity of important fish and wildlife species, and serves as a crucial geomorphic structure that influences tidal circulation and preserves the estuarine character of the Vermilion-Cote Blanche Bays system. The Lake Sand Shoreline Protection Project lies on the eastern point of Marsh Island, and consists of shallow interior lakes, including Lake Sand, that are surrounded and separated by fragmenting marsh areas. This eastern point of the Island receives multi-directional impacts from waves that are generated across long fetch lengths of East and West Cote Blanche Bays and converge with wave and tidal energy propagated out of the Gulf of Mexico.

Direct marsh loss occurs via shoreline retreat at a rate of 14 feet per year, and of particular concern is the impending loss of certain reaches that would allow West Cote Blanche Bay to breach existing bands of surrounding marsh and coalesce with the large shallow interior lakes. In addition, multiple storms in the last decade have accelerated marsh fragmentation that is leading to the merge of these interior lakes and their expansion into a much larger, higher-energy water body. Capture of these interconnected shallow lake-marsh ecosystems by the bay will significantly alter hydrology, intensify wave and tidal exchange impacts, and immediately escalate break up and loss of fragile interior wetland habitat.

Goal: The goal of this project is to halt erosion, protect critical shoreline reaches and restore marsh along the southern West Cote Blanche Bay shoreline, thereby preventing the bay from capturing the adjacent interior lakes.

Proposed Solutions: The project consists of a total of 20,260 LF of rock breakwater shoreline protection and the beneficial use of material dredged for access to create bands of marsh that will protect and restore the emergent marsh areas separate West Cote Blanche Bay from the interior lakes.

Preliminary Project Benefits: The project would prevent loss of these critical reaches of West Cote Blanche Bay shoreline and create emergent marsh thereby maintaining the integrity of the shoreline and interior shallow-lake wetland areas which are utilized by a variety of fish and wildlife, including endangered species. The shoreline structure will protect approximately 120 acres of emergent marsh, and beneficial use of the material dredged for access will create an additional 65 net acres of emergent marsh over the 20-year project life, for a total of 185 acres protected and created. In addition, the project features would prevent the bay from capturing substantial acreage of existing shallow-water lakes and surrounding marsh over the project life.

Preliminary Project Benefits

1) *What is the total acreage benefited both directly and indirectly?*
   The total acreage expected to be benefited both directly and indirectly is approximately 1,160 ac. The direct benefits totaling 185 acres are composed of 120 acres of emergent marsh protected from shoreline erosion, 37 acres of emergent marsh created via beneficial use of dredged material which would be

maintained, plus an additional 28 acres of land gain achieved via sediment accretion and expansion of the created areas and existing marsh shoreline. These acres would be combined with 975 acres indirectly benefitted by preventing West Cote Blanche Bay from breaching through surrounding marsh into Lake Sand & the Hawkins Bayou lake in multiple locations, escalating the lakes' interior shoreline erosion and marsh breakup, and causing irretrievable loss of the complex.

2) *How many acres of wetlands will be protected/created over the project life?*
The project is expected to directly benefit approximately 185 net acres of interior marsh that will be directly protected and created over the 20-year 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)?*
Construction of the proposed project features is expected to reduce the shoreline loss rate by 100%, and maintain the created marsh areas and promote concurrent land gain via sediment accretion over the project's twenty-year 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?*
This project would protect the West Cote Blanche Bay shoreline and prevent the Bay from capturing substantial acreage of interior shallow-water lakes and surrounding marsh over the project life. In addition, this project area is situated in the eastern end of Marsh Island which serves as the principal geomorphic structure that helps to maintain the tidal prism and buffers the Vermilion-Cote Blanche Bays system from direct marine influence of the Gulf of Mexico. This project would help prevent breakup and narrowing of the eastern Marsh Island point.

5) *What is the net impact of the project on critical and non-critical infrastructure?*
The project would have a small positive impact to non-critical infrastructure such as recreational camps and oilfield infrastructure by maintaining the width and breadth of Marsh Island and its buffering influence on the Bays' wave environment, tidal exchange and storm impacts from the Gulf of Mexico.

6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?*
This project will have significant synergistic effects with existing restoration and protection projects on the refuge including the adjacent TV-14 Hydrologic Restoration Project, TV-21 Marsh Creation Project, and other protection and restoration actions.

Identification of Potential Issues
There are pipelines in the project area however there are no major issues anticipated as a result: some of the pipelines crossing the shoreline are already lying below armored plugs, and the others can likely be avoided by deliberate placement of breaks in the rock dike and the marsh creation band. In addition, a potential source of a portion of the rock needed for the shoreline protection structure may be available to be moved from a deauthorized project in the Atchafalaya Delta, although this circumstance is not currently included in the project cost estimate.

Preliminary Construction Costs
The estimated construction cost including 25% contingency is approximately $15 million. The fully funded cost range is $20M-$25M.

Preparer(s) of Fact Sheet:
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1/13/2016

NAIP 2013 IMAGERY

LAKE SAND
SHORELINE PROTECTION PROJECT

IBERIA PARISH, LOUISIANA

United States Department of Agriculture

Natural Resources Conservation Service

File No.
Drawing1.mxd

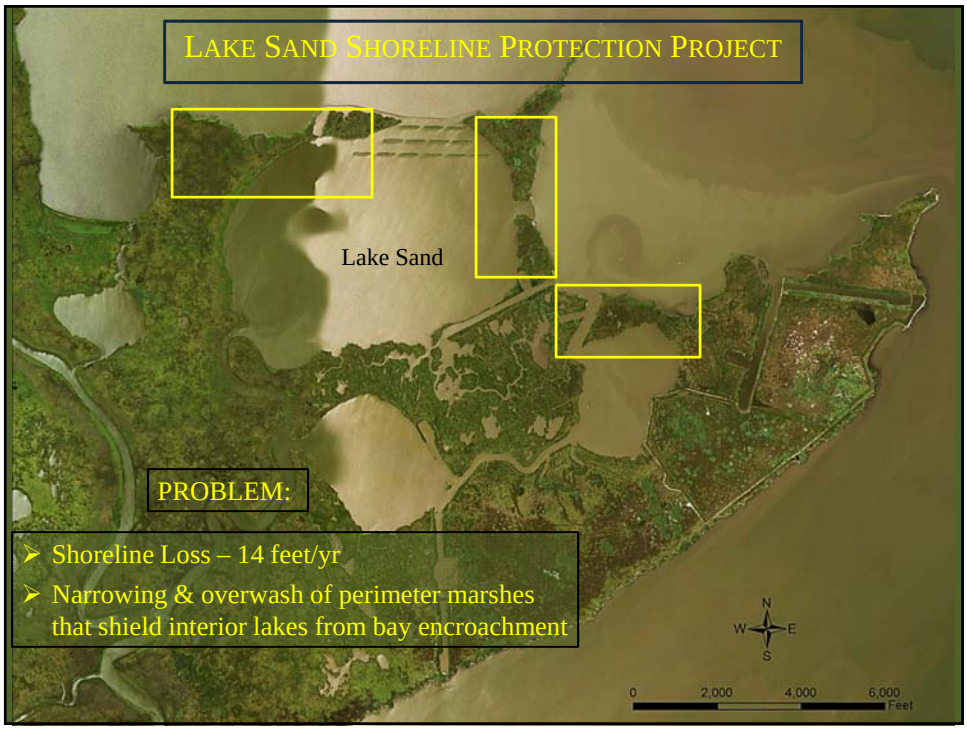
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Sheet X of X

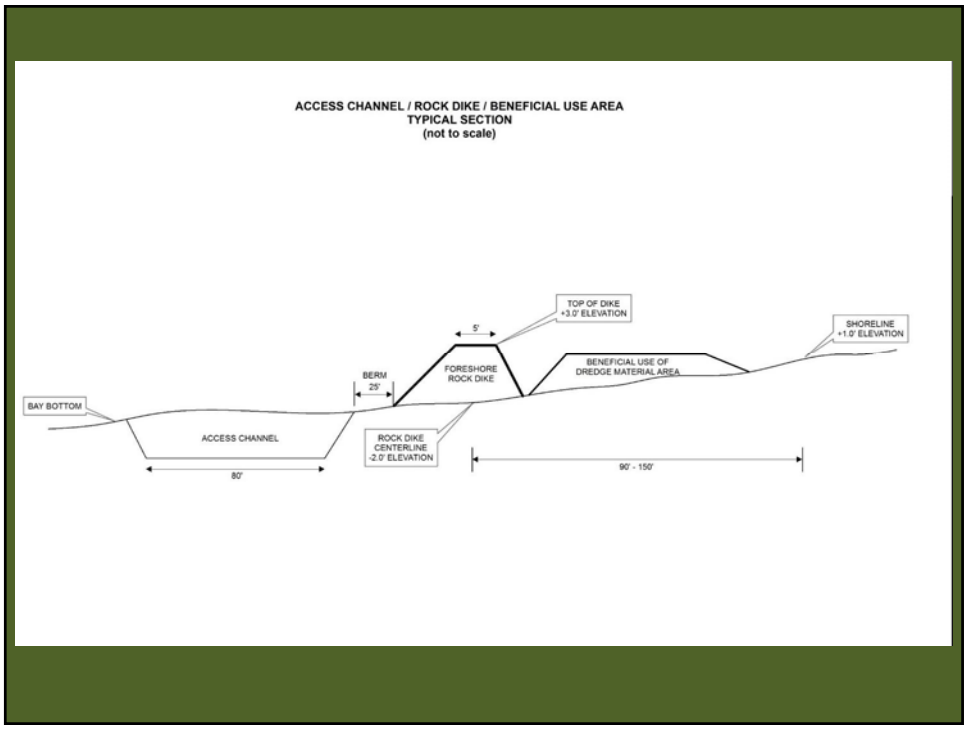


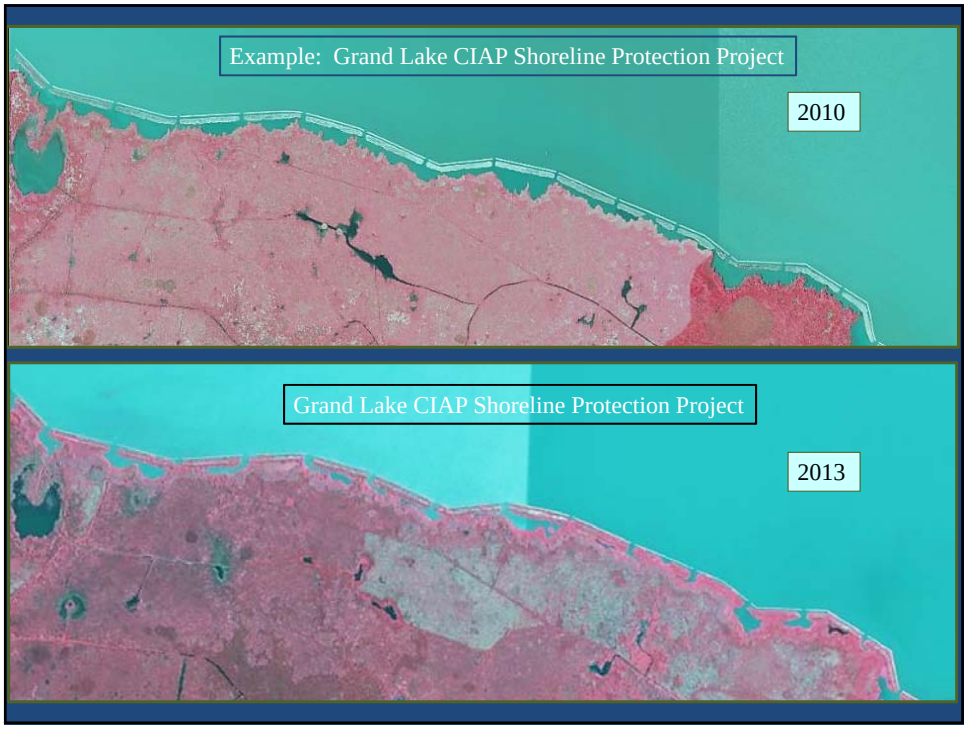
MP 03b.SP.06a: Vermilion & W Cote Blanche Bays Shoreline Protection - Critical Areas

Shoreline protection through rock breakwaters along approx 83,000 LF of shoreline on the Vermilion & West Cote Blanche Bays to preserve shoreline integrity and reduce wetland degradation from wave erosion.



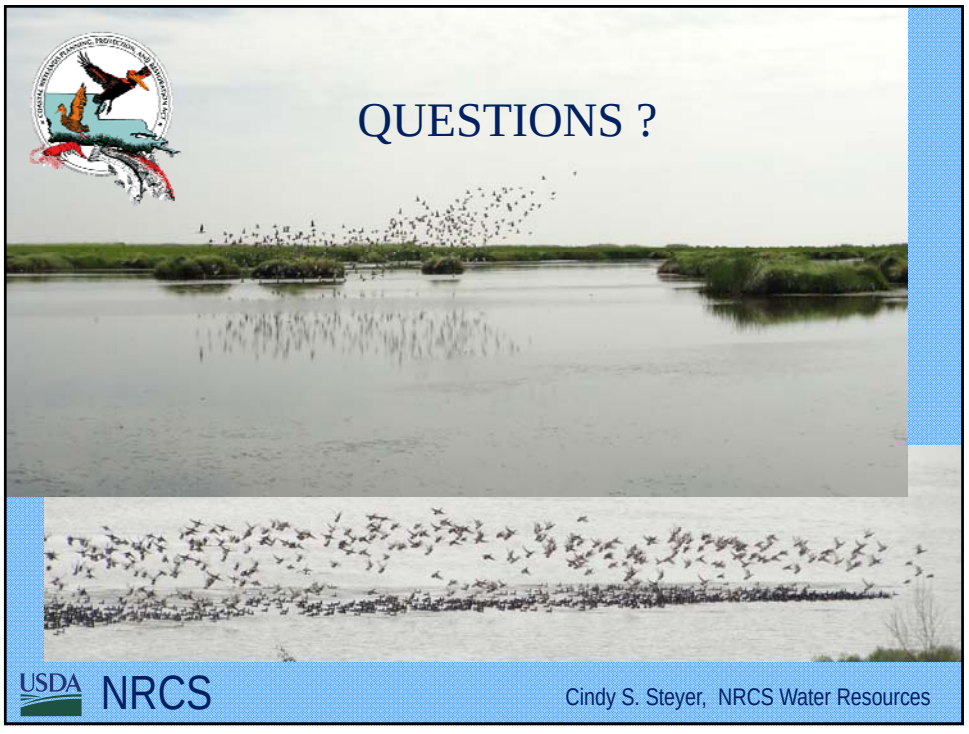

LAKE SAND SHORELINE PROTECTION PROJECT:
20,260 LF Rock Breakwater & Beneficial Use of Dredged Material
N
WEST COTE BLANCHE BAY
SEE TYPICAL SECTION
LAKE SAND
HAWKINS LAKE
GULF OF MEXICO
Legend
0 1,000 2,000
Feet


ACCESS CHANNEL / ROCK DIKE / BENEFICIAL USE AREA
TYPICAL SECTION
(not to scale)
TOP OF DIKE
+3.0' ELEVATION
5'
SHORELINE
+1.0' ELEVATION
FORESHORE
ROCK DIKE
BENEFICIAL USE OF
DREDGE MATERIAL AREA
BERM
25'
BAY BOTTOM
ACCESS CHANNEL
ROCK DIKE
CENTERLINE
-2.0' ELEVATION
80'
90' - 150'


Example: Grand Lake CIAP Shoreline Protection Project
2010
Grand Lake CIAP Shoreline Protection Project
2013


BENEFITS:
Shoreline Protection:
➢ 20,260 LF rock breakwater – Protect 120 acres marsh
LAKE SAND
AWKINS LAKE
GULF OF MEXICO
Marsh Creation via Beneficial Use of Dredged Material:
➢ 37 acres marsh creation
➢ 28 acres accreted over 20-yr project life
Total Benefits: 1,160 acres total benefitted directly & indirectly
Total Cost: Construction with Contingency = $15 million


Vermilion
St Mary
Iberia


QUESTIONS ?
USDA NRCS
Cindy S. Steyer, NRCS Water Resources

R3-TV-08

Freshwater Bayou East Marsh Creation and Hydrologic Restoration

R3-TV-08

Freshwater Bayou East Marsh Creation and Hydrologic Restoration

PPL-26 Region 3 RPT Meeting
January 27, 2016

State Master Plan Strategy
004.MC.07 West Rainey Marsh Creation

Project Location:
Region 3, Teche/Vermilion Basin, Vermilion Parish, southeast side of Freshwater Bayou canal.

Problem:
The construction of Freshwater Bayou canal has led to much decline in the adjacent marshes. Not only has the channel significantly expanded its width, but has also breached deep into the marsh and allowed for the net export of organic soils and deterioration of the interior marsh. As large ponds develop, erosion accelerates through an increase in tidal prism as well as the increase in wind fetch on fragile marsh banks.

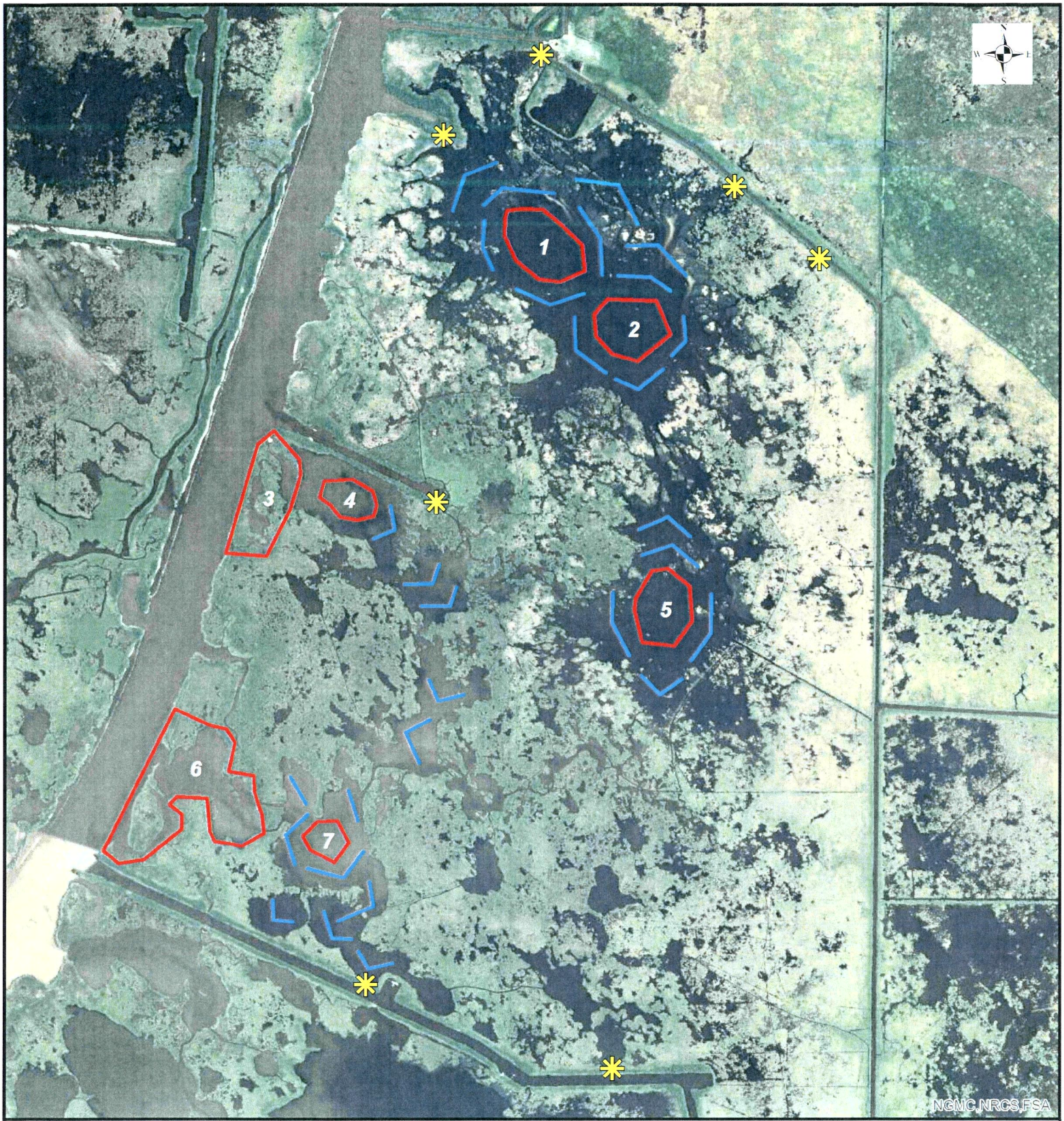
Goals:
The goal of the project is to use a combination of marsh creation cells and terraces to stabilize large open areas within a marsh complex east of freshwater bayou were there has been rapid decline. In addition, culverts will be placed to strategically optimize the tidal movement of water through the system in a one-way direction to allow for increased residence time and trapping of materials with in the system.

Proposed Solutions:
Sediments will be hydraulically dredged from Freshwater Bayou and pumped via pipeline to create approximately 119 acres of marsh habitat and nourish an additional 35 acres of marsh habitat. Terraces will be built around the marsh creation cells constructed in open water to reduce wave energy and stabilize the area. Culverts will be installed on the north and south ends of the project to move water from north to south through the project area to capture sediment and nutrients to enhance marsh growth.

Project Benefits:
The project would result in approximately 175 net acres over the 20 year project life.

Project Costs:
Estimated construction cost with 25% contingency is approximately $11 million.

Preparer(s) of Fact Sheet:
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Cody Colvin, NRCS, planning engineer, cody.colvin@la.usda.gov



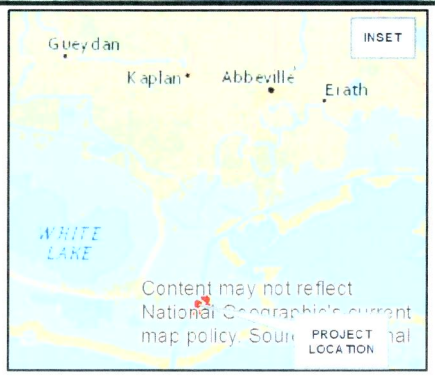
FRESHWATER BAYOU EAST MARSH CREATION AND HYDROLOGIC RESTORATION VERMILION PARISH, LA

USDA

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

Data Source: NAIP 2013

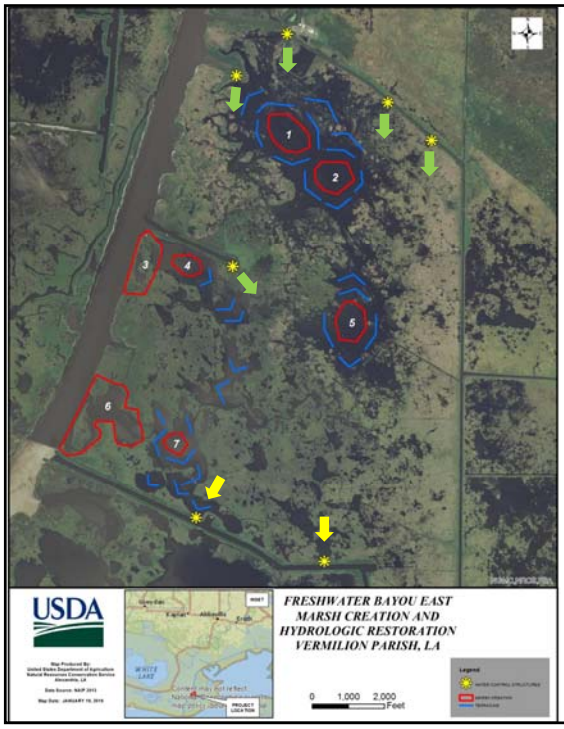
Map Date: JANUARY 19, 2016



0 1,000 2,000 Feet

Legend

- WATER CONTROL STRUCTURES
- MARSH CREATION
- TERRACING



Freshwater Bayou East Marsh Creation and Hydrologic Restoration

Project Objectives:

1) Create marsh
2) Reduce expansion/erosion
3) Improve habitat/edge
4) Optimize cost/benefit in terms total area of impact
5) Enhance tidal flow through the project area to optimize material capture.

Benefits:

119 acres of marsh creation
35 acres marsh nourishment
24,500 linear ft of terraces

Cost:

Construction + 25% = $11M

Note: borrow from FW Bayou

Region 3 – ATCHAFALAYA BASIN

No projects were nominated in this basin.

Region 3 – TERREBONNE BASIN

R3-TE-01

Cocodrie East Marsh Creation Option A

T3 - TE-01

PPL26 PROJECT FACT SHEET
January 27, 2016

Project Name
Cocodrie East Marsh Creation Option A

Master Plan Strategy
Terrebonne Bay Rim Marsh Creation Study 03a.MC.03p. Planning, engineering and design to develop marsh creation along the northern rim of Terrebonne Bay (approximately 3,370 ac).

Project Location
Region 3, Terrebonne Basin. The project is located just east of Cocodrie, Louisiana, northwest and adjacent to Terrebonne Bay.

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 acres 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.

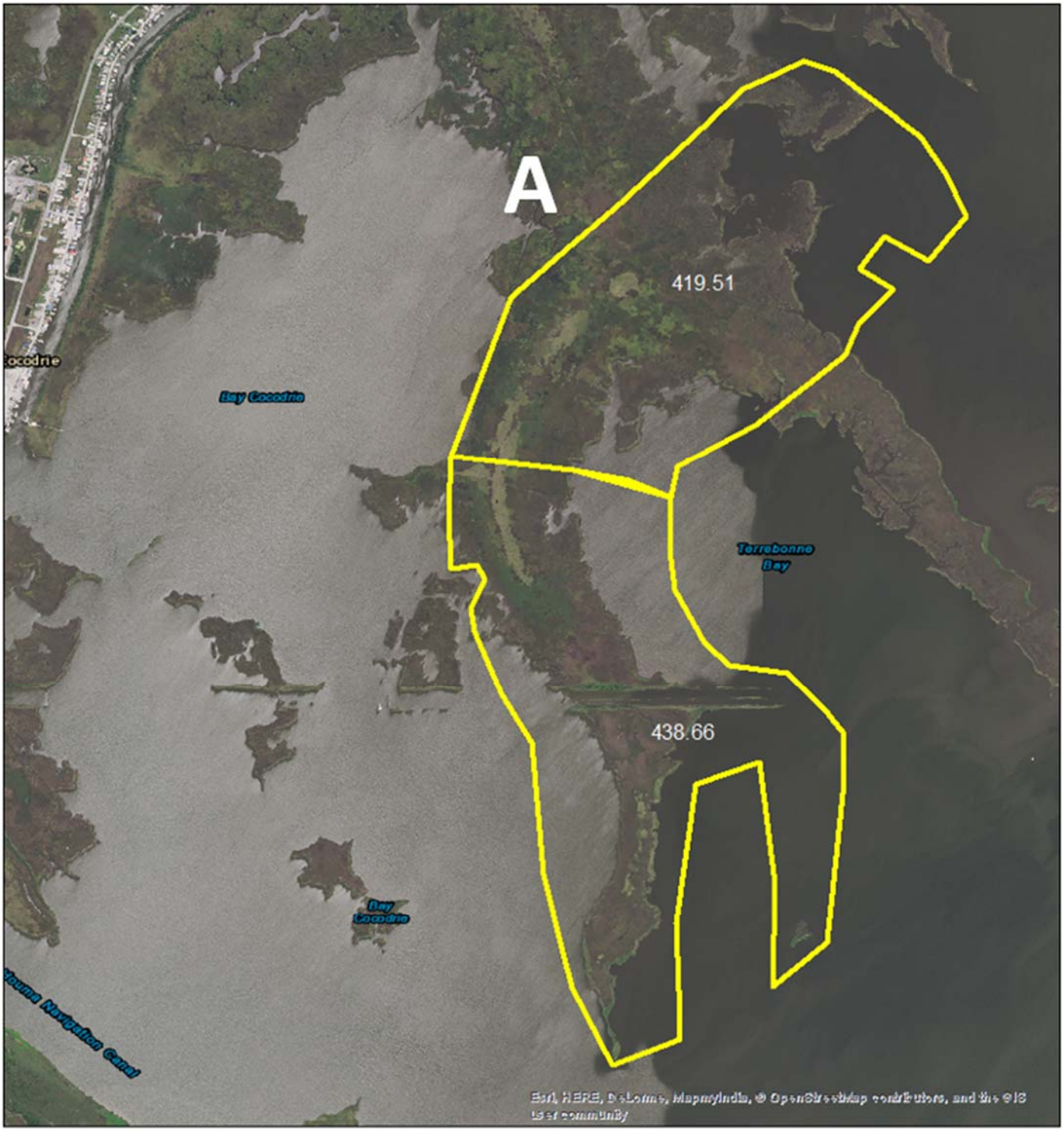
Goals
Create/nourish 420 acres of the much larger target area.

Proposed Solution
The project proposes to create and nourish 420 acres of marsh using sediment from Terrebonne Bay.

Project Benefits
The project will create/nourish 420 acres of emergent marsh habitat.

Preliminary Construction Costs
The preliminary project cost estimate with 25% contingency is approximately $25 million. The fully funded range is $30M - $35M.

Preparer of Fact Sheet
Adrian Chavarria, EPA; (214) 665-3103, chavarria.adrian@epa.gov
Brad Crawford, EPA; (214) 665-7255, crawford.brad@epa.gov



Cocodrie Marsh Creation (PPL26)

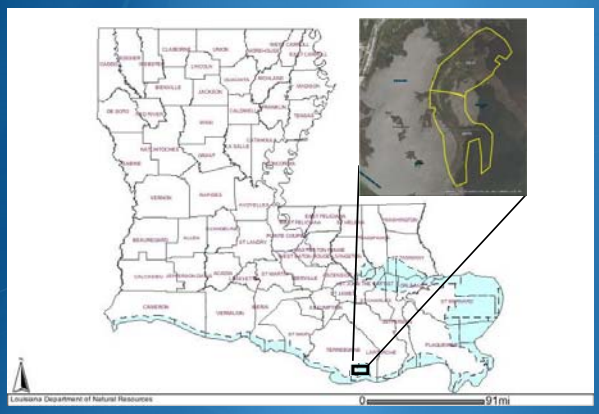
Proposed Marsh Creation

N

Basemap: 2015 NAIP DOQQ - Terrebonne Parish
Produced by: EPA Region 6, Dallas, TX

0 0.125 0.25 0.5 0.75 1 Miles

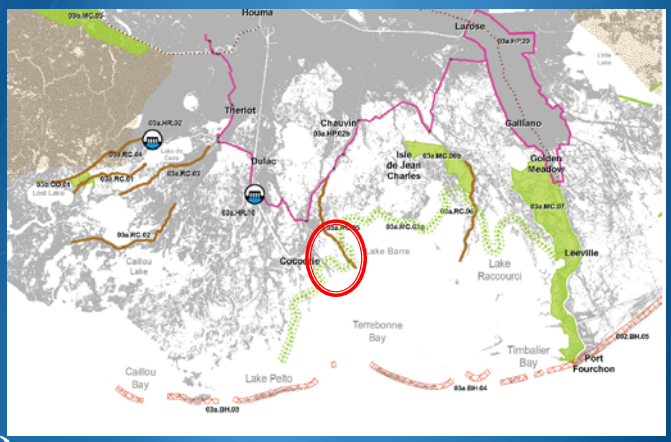
Cocodrie East Marsh Creation Option A



Coastal Wetlands Planning, Protection and Restoration Act

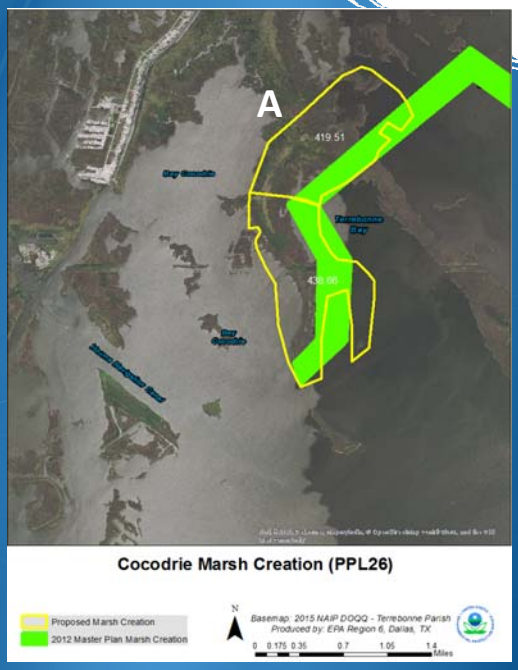
Master Plan Solution

03a.MC.03p Terrebonne Bay Rim Marsh Creation Study: Planning, engineering and design to develop marsh creation along the northern rim of Terrebonne Bay (approximately 3,370 ac).



Master Plan Consistency

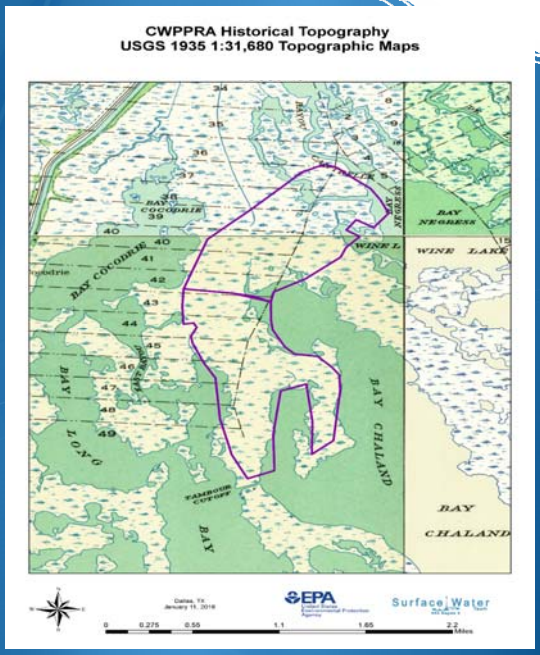
03a.MC.03p
Terrebonne Bay
Rim Marsh
Creation Study



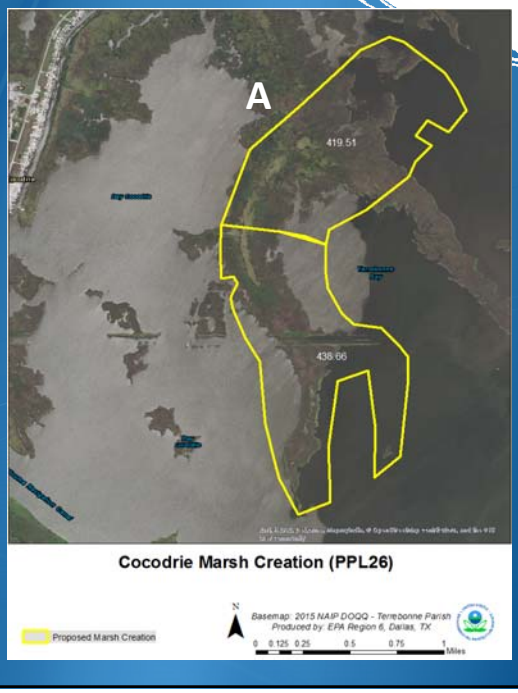
Problem

- This area has experienced tremendous wetland loss due to:
  - Subsidence
  - Saltwater intrusion
  - Lack of sediment supply
  - Oil & gas activity
  - Sea-level rise
- Marsh loss has exposed infrastructure to open water conditions
- Area is less suitable for wildlife and fish species

Historical Reference



Project Features



Project Goals – Option A

- Create/nourish 420 acres emergent marsh with sediment from Terrebonne Bay
- Re-establish the western rim of Terrebonne Bay
- Reduce shoreline erosion
- Estimated preliminary cost w/25% contingency is $25 million
- Fully funded cost range $30M-$35M.



R3-TE-02

Point au Chien Ridge Restoration and Marsh Creation Option A

TE-02

PPL26 PROJECT NOMINEE FACT SHEET
January 27, 2016

Project Name
Pointe au Chien Ridge Restoration and Marsh Creation Option A

Master Plan Strategy
Bayou Pointe au Chien Ridge Restoration 03a.RC.06. Restoration of approximately 57,000 ft (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. Terrebonne Bay Rim Marsh Creation Study 03a.MC.03p. Planning, engineering and design to develop marsh creation along the northern rim of Terrebonne Bay (approximately 3,370 ac).

Project Location
Region 3, Terrebonne Basin, Lafourche and Terrebonne Parish, located east of Leeville. Lies within the Bayou Pointe au Chien Ridge Restoration (03a.RC.06) of State Master Plan.

Problem
Ridges only aggrade or build up when they are being formed along the banks of active distributaries or as active gulf beaches. Surface elevations of all relict natural levee ridges, chenier ridges, artificial ridges, embankments, levees, and uplands become lower through time in response to subsidence. As a result, both the Deltaic and Chenier Plain systems are badly degraded. The salinity gradients within the estuarine basins support the diversity of habitats essential to the function of these systems. These gradients are maintained by the skeletal distributary ridges and cheniers and barrier shorelines at the gulf. If these vital components of the systems are allowed to disappear, the essential character of the estuarine basins will change drastically. If breaches occur in the skeletal framework of natural levee ridges and lake rims which hold the fresh and intermediate marshes together, a tidal pumping process quickly removes the fluid and semi-fluid soils and the barren mud flats are converted to ponds, lakes, and bays. (Coast 2050: Toward a Sustainable Coastal Louisiana).

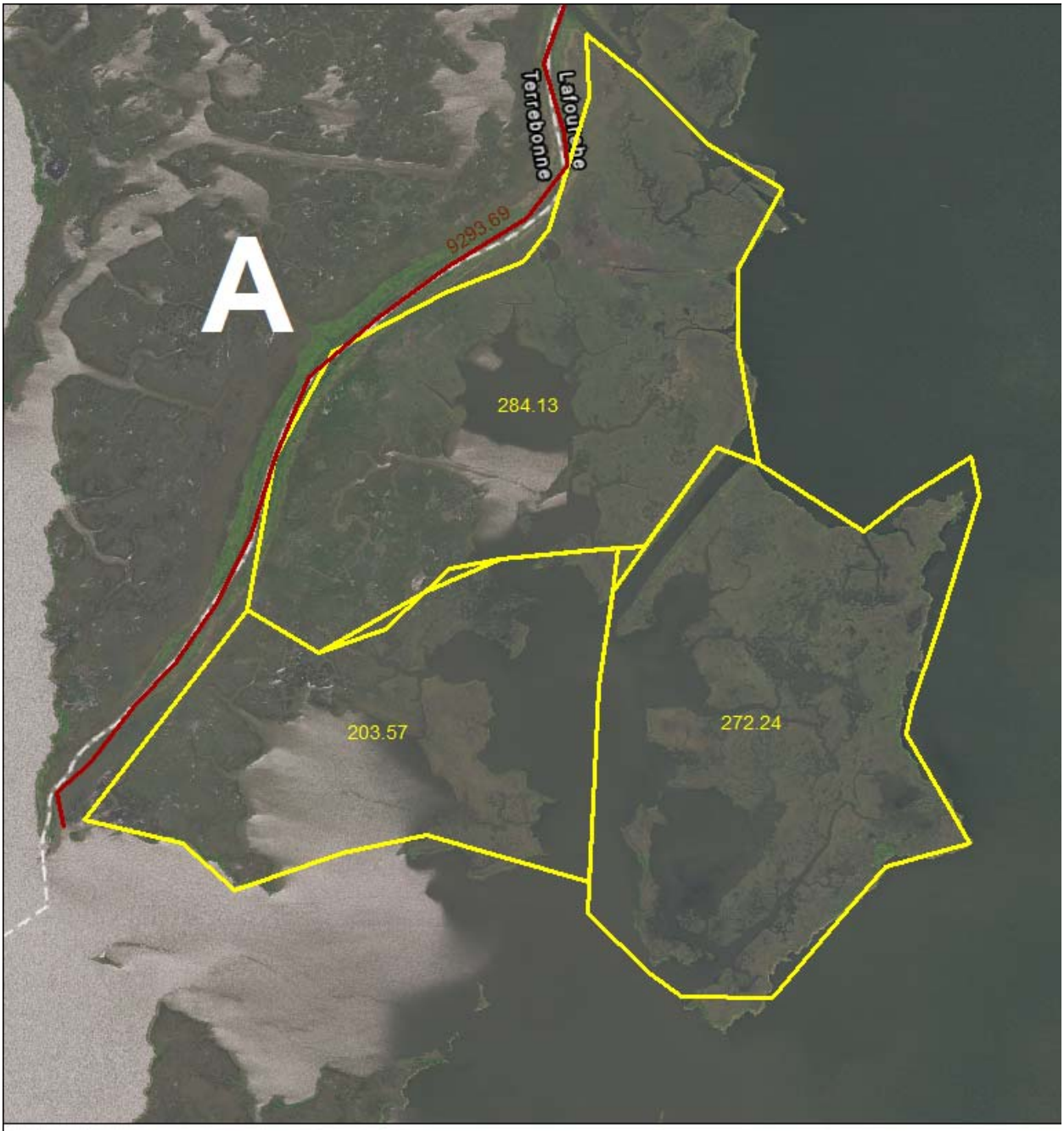
Goals
Create/nourish 760 acres emergent marsh with sediment from the Terrebonne Bay. Create 9,294 linear feet of ridge along southern portions of Bayou Terrebonne to provide coastal upland habitat, restore natural hydrology, and provide wave and storm surge attenuation

Proposed Solution
The proposed project will create/nourish 760 acres of marsh by dredging sediment from designated borrow sources in Terrebonne Bay. Containment features would be degraded or gapped as needed to promote tidal exchange after consolidation of the fill material. In-situ material would be used to create and fortify 9,294 linear feet of ridge. 50% of the newly created area will include vegetative plantings.

Project Benefits
- Create/nourish 760 acres emergent marsh with sediment from the Terrebonne Bay.
- Create 9,294 linear feet of ridge along southern portions of Bayou Terrebonne.

Preliminary Cost
The preliminary project cost estimate with 25% contingency is approximately $26 million. The fully funded range is $30M - $35M.

Preparer(s) of Fact Sheet:
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Adrian Chavarria, EPA; (214) 665-3103, chavarria.adrian@epa.gov



Bayou Pointe au Chien RR and MC Project (PPL26)

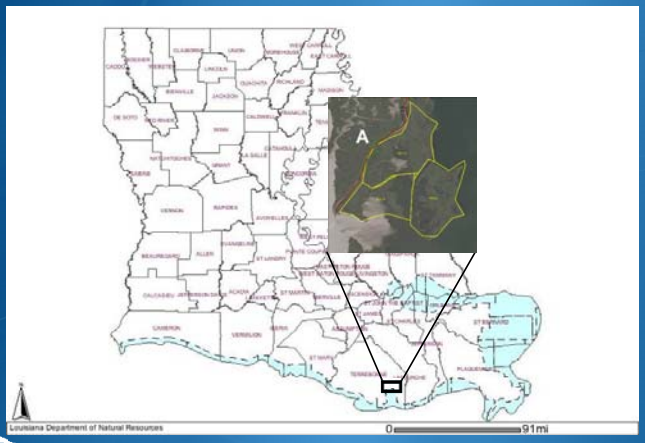
Proposed Ridge Restoration
Proposed Marsh Creation

N

Basemap: 2015 NAIP DOQQ - LaFourche Parish
Produced by: EPA Region 6, Dallas, TX

0 0.1 0.2 0.4 0.6 Miles

Point au Chien Ridge Restoration and Marsh Creation Option A

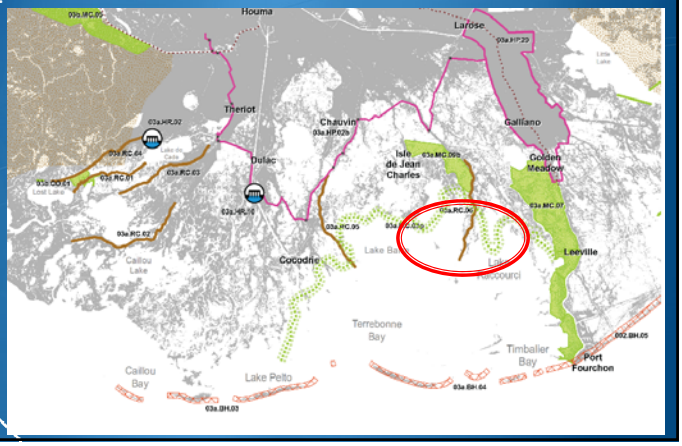


Coastal Wetlands Planning, Protection and Restoration Act

Master Plan Solution

03a.RC.06 Bayou Pointe au Chien Ridge Restoration: Restoration of approximately 57,000 ft (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

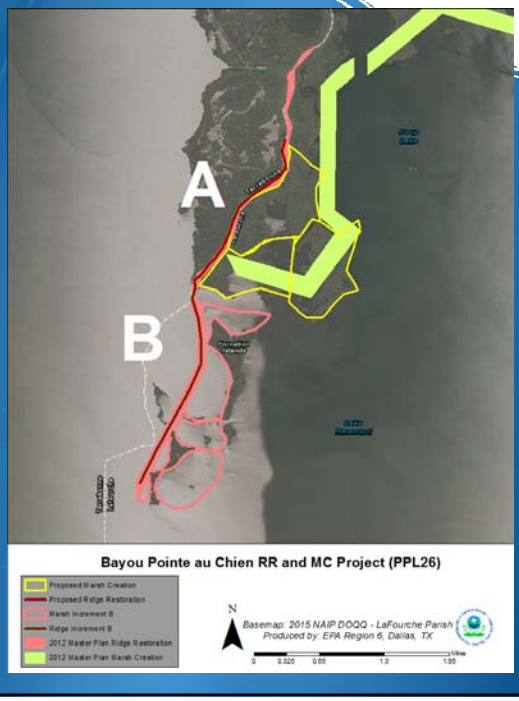
03a.MC.03p Terrebonne Bay Rim Marsh Creation Study: Planning, engineering and design to develop marsh creation along the northern rim of Terrebonne Bay (approximately 3,370 ac).



Master Plan Consistency

03a.RC.06: Bayou Pointe au Chien Ridge Restoration

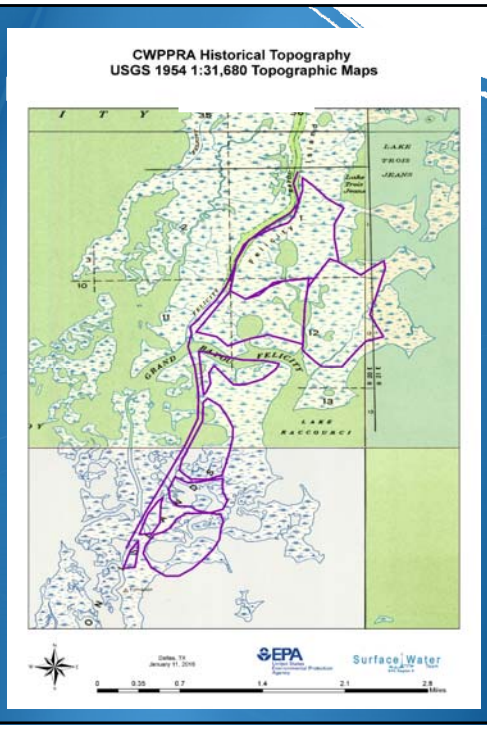
03a.MC.03p: Terrebonne Bay Rim Marsh Creation Study



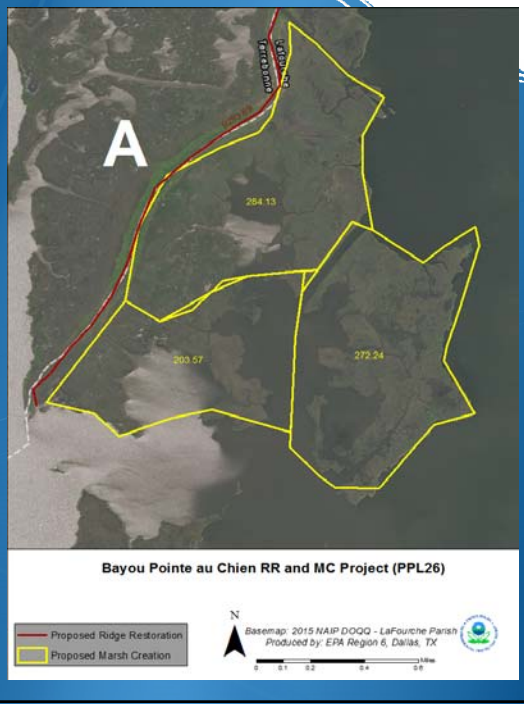
Problem

- Wetland loss has been attributed to a number of factors including:
  - High subsidence of soils & sediment deficit
  - Saltwater intrusion
  - Construction of access/pipeline canals
  - Historic oil and gas activity
- Historic ridges have been damaged or eliminated do to storm surge and erosion
- Natural hydrologic patterns have been affected by the lack of historic ridge features

Historical Reference



Project Features



Project Goals – Option A

- Create/nourish 760 acres emergent marsh with sediment from Deep Lake and Lake Raccourci
- Restore the natural ridge by creating 9,294 linear feet of ridge
- Estimated preliminary cost w/25% contingency is $26 million
- Fully funded cost range $30M-$35M



R3-TE-03

Belle Pass-Golden Meadow Marsh Creation: West Leeville Increment

16-03

PPL26 PROJECT FACT SHEET
January 27, 2016

Project Name
Belle Pass-Golden Meadow Marsh Creation: West Leeville Increment

Master Plan Strategy
Belle Pass-Golden Meadow Marsh Creation 03a.MC.07. Creation of approximately 14,420 acres from Belle Pass to Golden Meadow to create new wetland habitat, restore degraded marsh, and reduce wave erosion.

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 acres 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 caused primarily by wave energy.

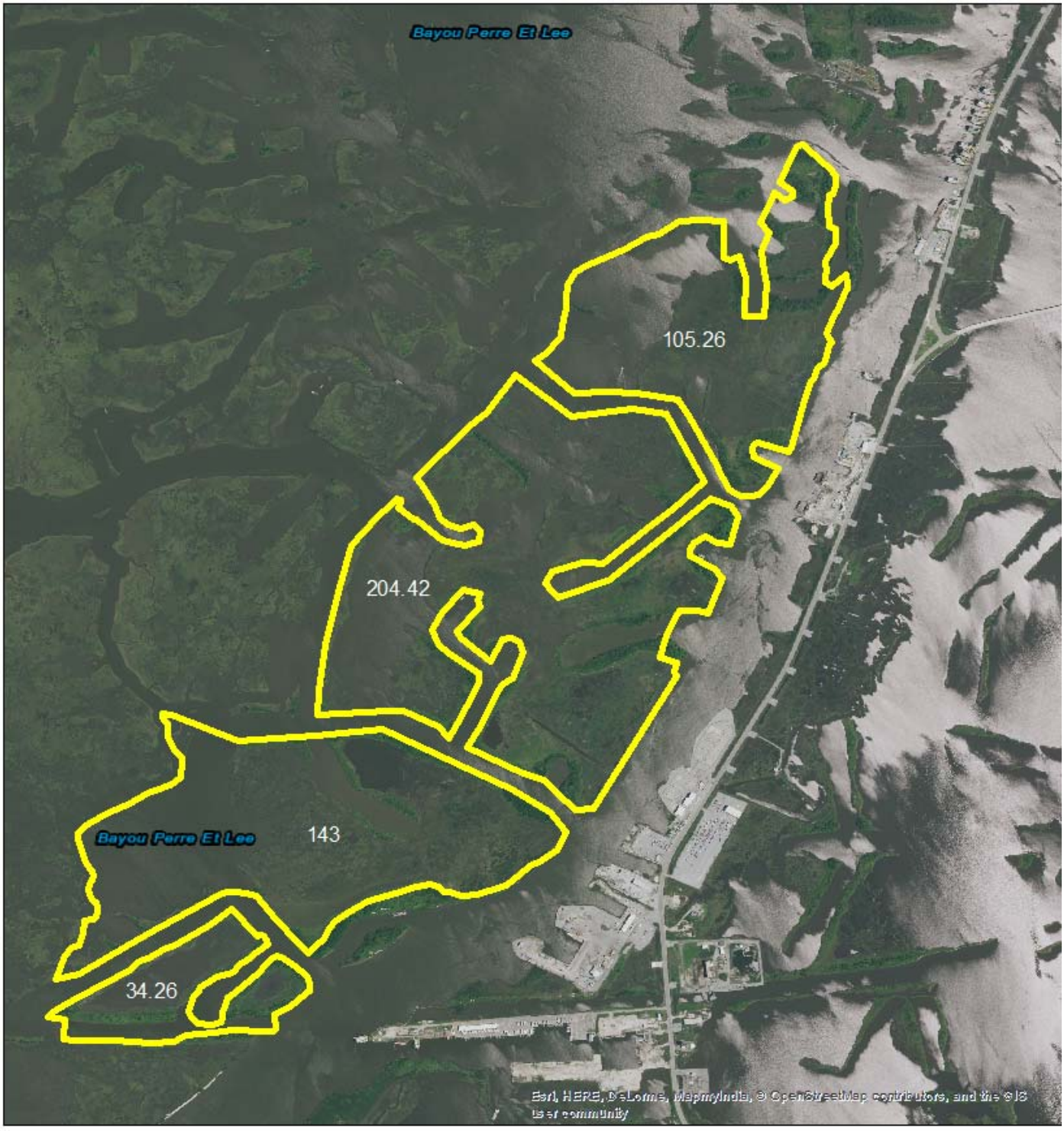
Goals
Create and nourish approximately 400 acres of emergent marsh.

Proposed Solution
The project proposes to create and nourish 400 acres of marsh using sediment from Little Lake.

Project Benefits
The project will create/nourish 400 acres of emergent marsh habitat.

Preliminary Construction Costs
The preliminary project cost estimate with 25% contingency is approximately $24.3 million. The fully funded range is $25M - $30M.

Preparer of Fact Sheet
Adrian Chavarria, EPA; (214) 665-3103,chavarria.adrian@epa.gov



West Leeville Marsh Creation (PPL26)

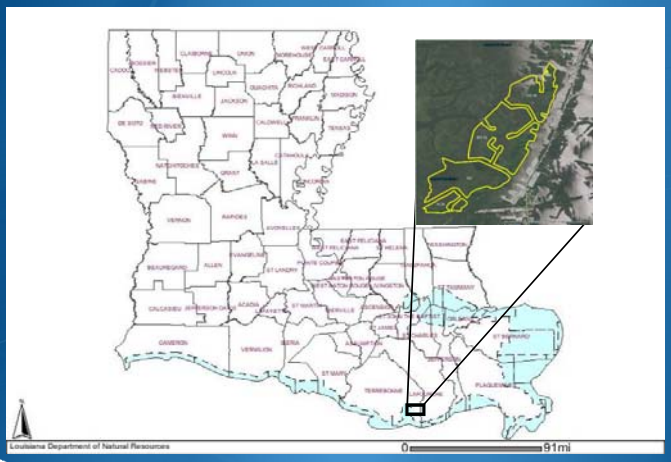
Proposed Marsh Creation

N

Baemap: 2015 NAIP DOQQ
Produced By: EPA Region 6, Dallas, TX

0 0.075 0.15 0.3 0.45 0.6
Miles

Belle Pass-Golden Meadow Marsh Creation: West Leeville Increment



Coastal Wetlands Planning, Protection and Restoration Act

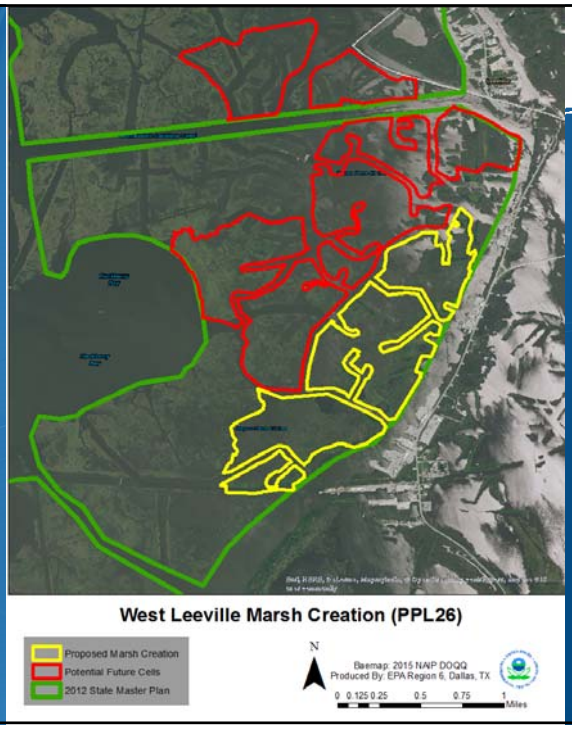
Master Plan Solution

<u>03a.MC.07 Belle Pass-Golden Meadow Marsh Creation (1st Period Increment):</u> Creation of approximately 14,420 acres from Belle Pass to Golden Meadow to create new wetland habitat, restore degraded marsh, and reduce wave erosion.



Master Plan Consistency

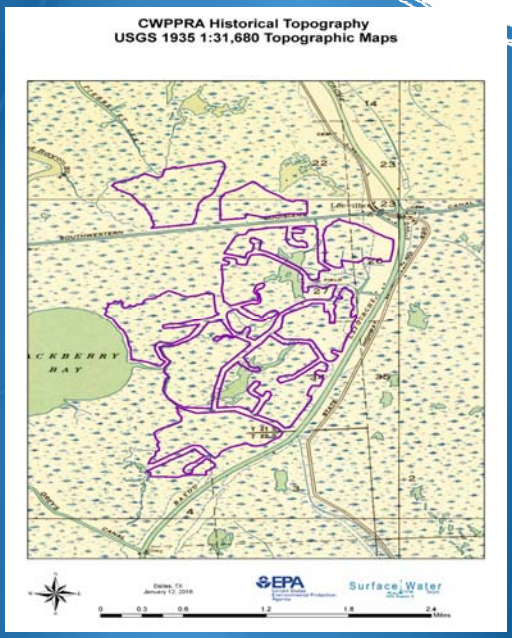
03a.MC.07 Belle Pass-Golden Meadow Marsh Creation (1st Period Increment)



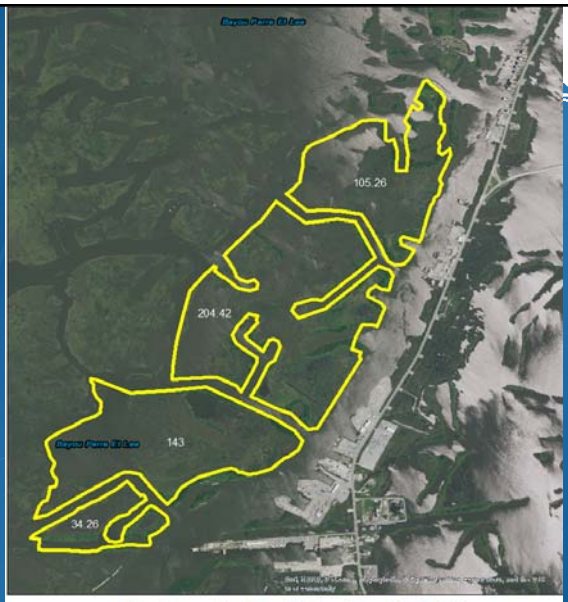
Problem

- 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

Historical Reference



Project Features



Project Goals

- Create/nourish 400 acres emergent marsh with sediment from Little Lake
- Estimated preliminary cost w/25% contingency is $24.3 million
- Fully funded cost range $25M-$30M.



R3-TE-04

North Terrebonne Marsh Creation

TE -04

PPL26 PROJECT FACT SHEET
January 27, 2016

Project Name
North Terrebonne Marsh Creation

Master Plan Strategy
North Terrebonne Bay Marsh Creation-Component B 03a.MC.09b. Creation of approximately 4,940 acres of marsh south of Montegut between Bayou St. Jean Charles and Bayou Point au Chien to create new wetland habitat, restore degraded marsh, and reduce wave erosion.

Project Location
Region 3, Terrebonne Basin, Terrebonne Parish

Problem
The Terrebonne Basin has experienced rapid interior wetland loss over the years. Between 1956 and 2004, Terrebonne Basin lost 321 square miles of land and an additional 17 square miles of coastal land was lost in 2005 due to the effects of Hurricanes Katrina and Rita. Wetland loss has also been attributed to sediment deficit, high subsidence, sea level rise, saltwater intrusion, historic oil and gas activity, and natural deterioration of barrier islands, which contributes to the inland invasion of marine tidal processes (including erosion, scour, and saltwater intrusion). Since 1978 Terrebonne Parish has suffered over 10 percent of its area converting to open water. Projections indicate it is likely to lose another 11 percent by 2050.

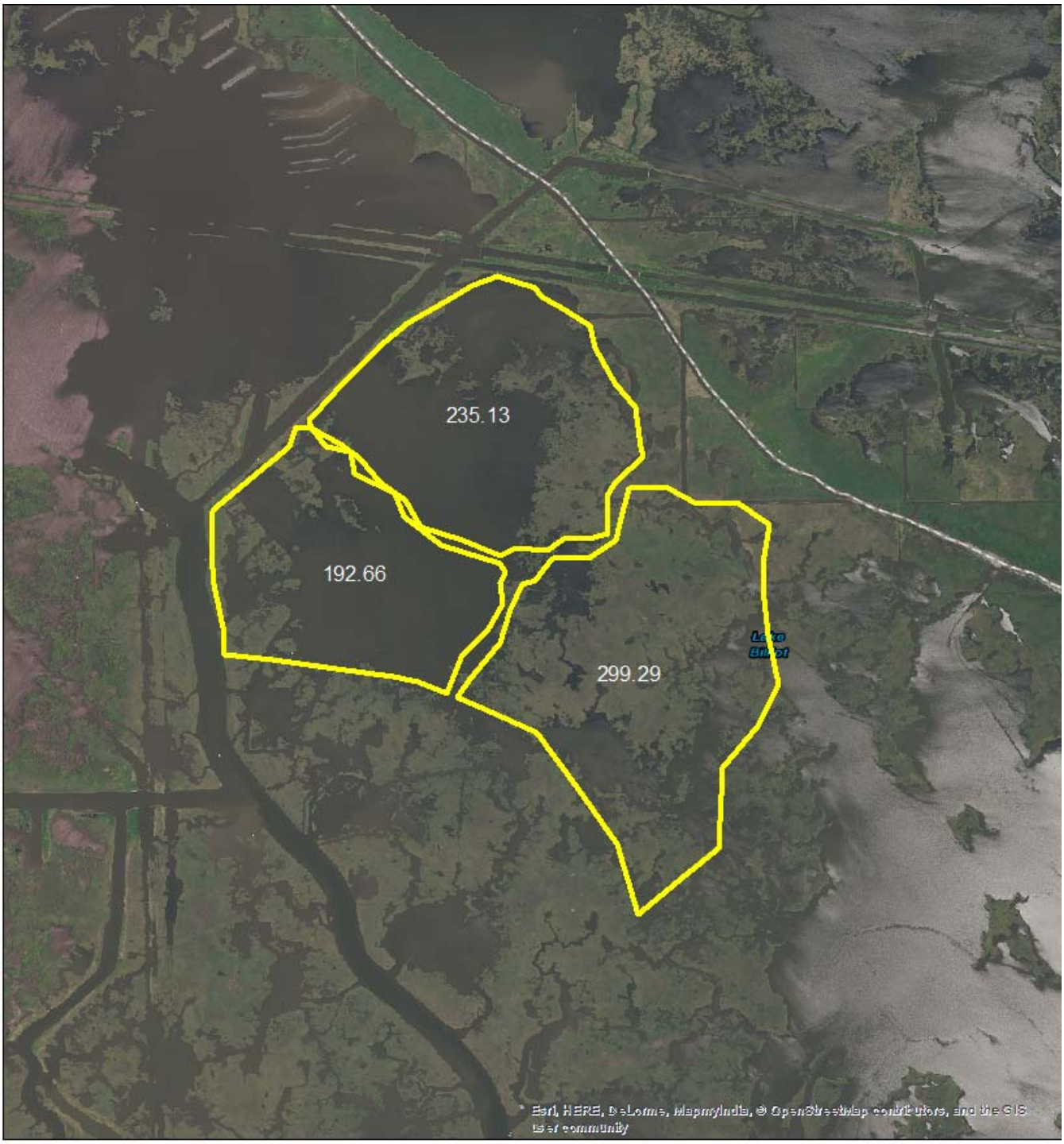
Goals
The project goals are to create/nourish approximately 730 acres of new marsh in areas of open water and restore coastal marsh habitat.

Proposed Solution
This project will create and/or nourish 730 acres of marsh utilizing dredged material from a borrow site located in Lake Felicity. Material would be pumped to a healthy marsh elevation as deemed by healthy marsh survey. Once material is in place and adequately dewatered, containment dikes will be adequately gapped to allow tidal exchange of nutrients and aquatic organisms with the marsh. Additionally the project site would be planted in order to reestablish the plant productivity within the marsh.

Project Benefits
- Create and/or nourish approximately 730 acres of emergent brackish marsh through dredging material from a borrow site located in Lake Felicity.

Preliminary Construction Costs
The estimated cost + 25% is $25 million. The fully funded range is $25M - $30M.

Preparer of Fact Sheet
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Sharon Osowski, Ph.D., EPA; (214) 665-7506, osowski.sharon@epa.gov



North Terrebonne Marsh Creation (PPL26)

Proposed Marsh Creation

N

Basemap: 2015 NAIP DOQQ
Produced by: EPA Region 6, Dallas, TX

0 0.1 0.2 0.4 0.6 0.8
Miles

North Terrebonne Marsh Creation

A Project of the Environmental Protection Agency
Presented by students of the Wetlands Discovery Center



North Terrebonne Marsh Creation

A Project of the Environmental Protection Agency
Presented by students of the Wetlands Discovery Center



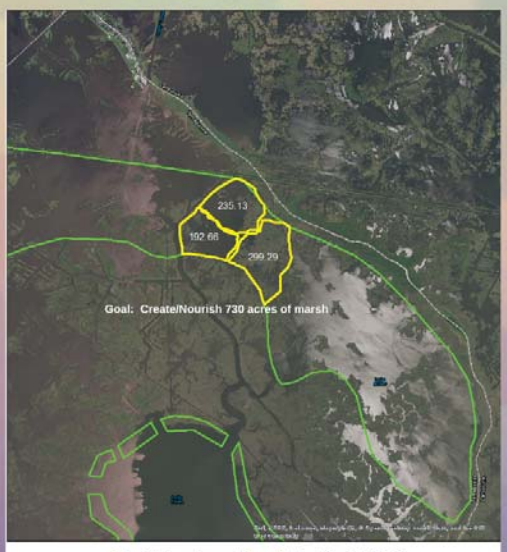
First step to a perfect presentation...



Problems in Terrebonne Basin

- Eastern Terrebonne marshes are the most rapidly degrading marshes in Louisiana
- 1956-2004 321 square miles lost
- 17 square miles lost in 2005 due to hurricanes
- Sediment Deficit
- High Subsidence Rates/Sea Level Rise
- Saltwater Intrusion
- Historic Gas and Oil Activity
- Natural Deterioration of Barrier Islands
- Erosion/Scouring

Project Location - Region 3
Terrebonne Basin



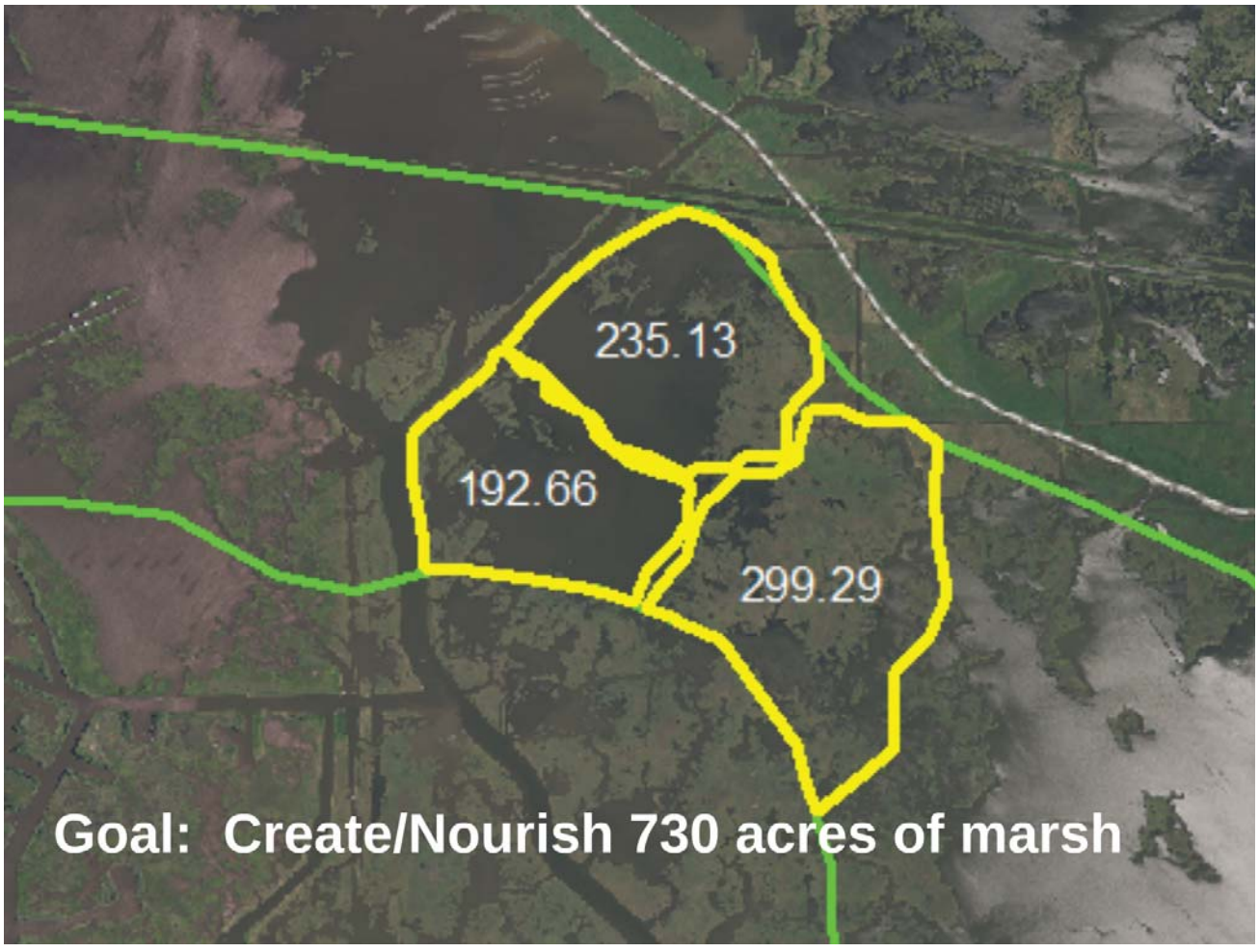
North Terrebonne Marsh Creation (PPL26)

Proposed Marsh Creation
2012 Master Plan Marsh Creation

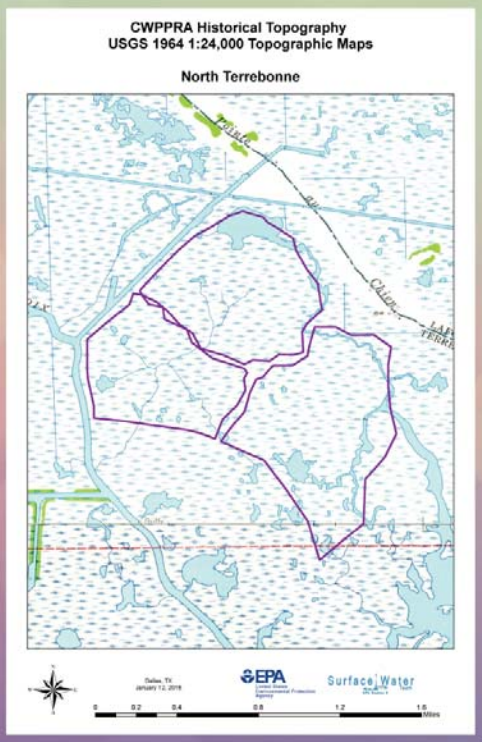
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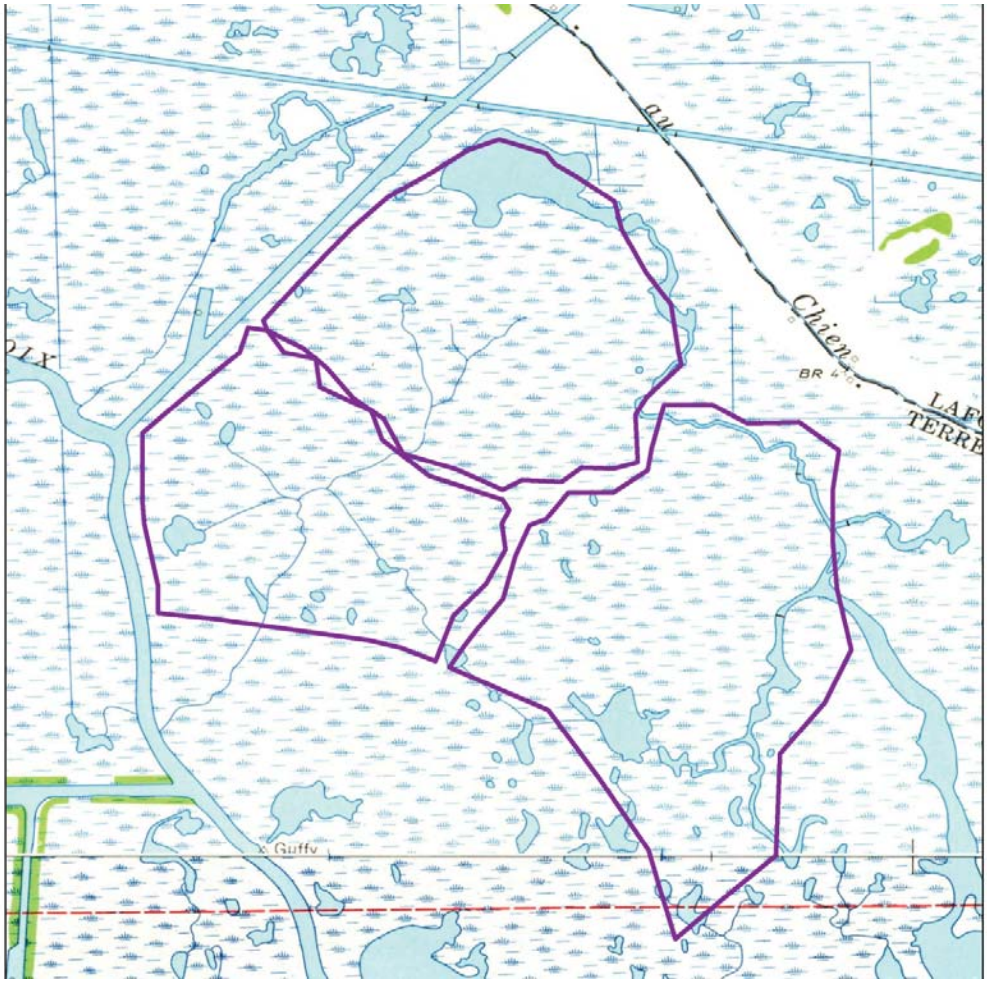
Basemap: 2013 NAIP DOQQ
Produced by: EPA Region 6, Dallas, TX

0 0.25 0.5 1 1.5 2
Miles



Historical Context of Project Location





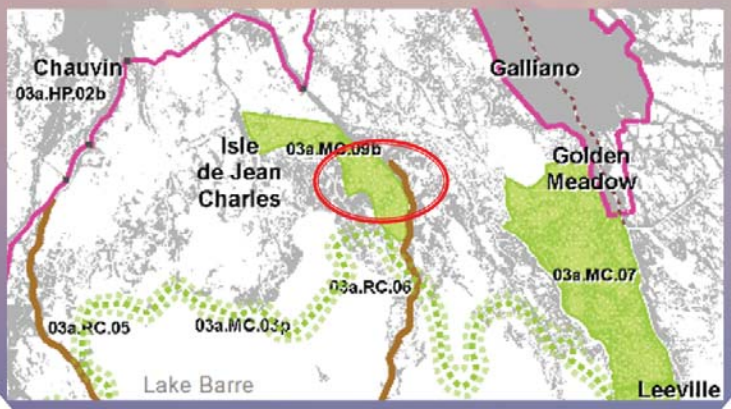

235.13
192.66
299.29
North Terrebonne Marsh Creation (PPL26)
Proposed Marsh Creation
N
Basemap: 2015 NAIP DOQQ
Produced by: EPA Region 6, Dallas, TX
0 0.1 0.2 0.4 0.6 0.8
Miles


235.13
192.66
299.29

Solution

- Create/Nourish 730 acres of marsh
- Use dredged material from Lake Felicity
- Use containment dikes that allow for tidal exchange
- Project site will be planted for sustainability

Master Plan Strategy Marsh Creation 03a.MC.09b



Estimated Costs

- Total Cost + 25% is $25 Million
- Fully Funded Range of $30-$35 Million

Benefits

- Protects Levees, Communities and Infrastructure in our most vulnerable areas
- Marsh Creation in Eastern Terrebonne is desperately needed
- This project may define the future of our coastline

Questions?

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North Terrebonne Marsh Creation

A Project of the Environmental Protection Agency
Presented by students of the Wetlands Discovery Center



R3-TE-05

East Catfish Lake Marsh Creation and Terracing

TE-05

PPL26 PROJECT NOMINEE FACT SHEET
January 27, 2016

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. Shoreline erosion rates along the southeastern Catfish Lake shoreline averaged 29 ft/yr from 1990-2015.

Goals
Goals are to restore the eastern and southeastern shorelines of Catfish Lake via marsh creation and to create habitat via terracing in areas of deteriorated marsh.

Service goals include restoration/protection of habitat for threatened and endangered species and other at-risk species. This project would restore habitat potentially utilized by the black rail and Louisiana eyed silkmoth which are both petitioned for listing as threatened/endangered species. The project could also benefit other at-risk species including the peregrine falcon, osprey, diamondback terrapin, and seaside sparrow.

Proposed Solution
1. Sediments will be hydraulically dredged in Catfish Lake and pumped via pipeline to create/nourish approximately 483 acres of marsh.
2. Containment dikes will be constructed as necessary and gapped upon project completion.
3. Terraces (37,730 linear ft-26 ac) will be constructed in deteriorated marsh areas to reduce fetch, promote SAV production, and provide marsh edge habitat.
4. Gabion mats (6,900 ft) will be placed along the eastern shoreline of Catfish Lake (on the western side of the three marsh creation cells.

Preliminary Project Benefits
1) *What is the total acreage benefited both directly and indirectly*? Approximately 1,115 acres would be benefited directly and indirectly. Direct benefits include 483 acres of marsh creation and 26 acres of terraces. Indirect benefits would occur to surrounding marshes and within the 632-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 405 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
Potentials issues include oil and gas infrastructure, oyster leases, and the Louisiana Highway 1 Improvement Project alignment.

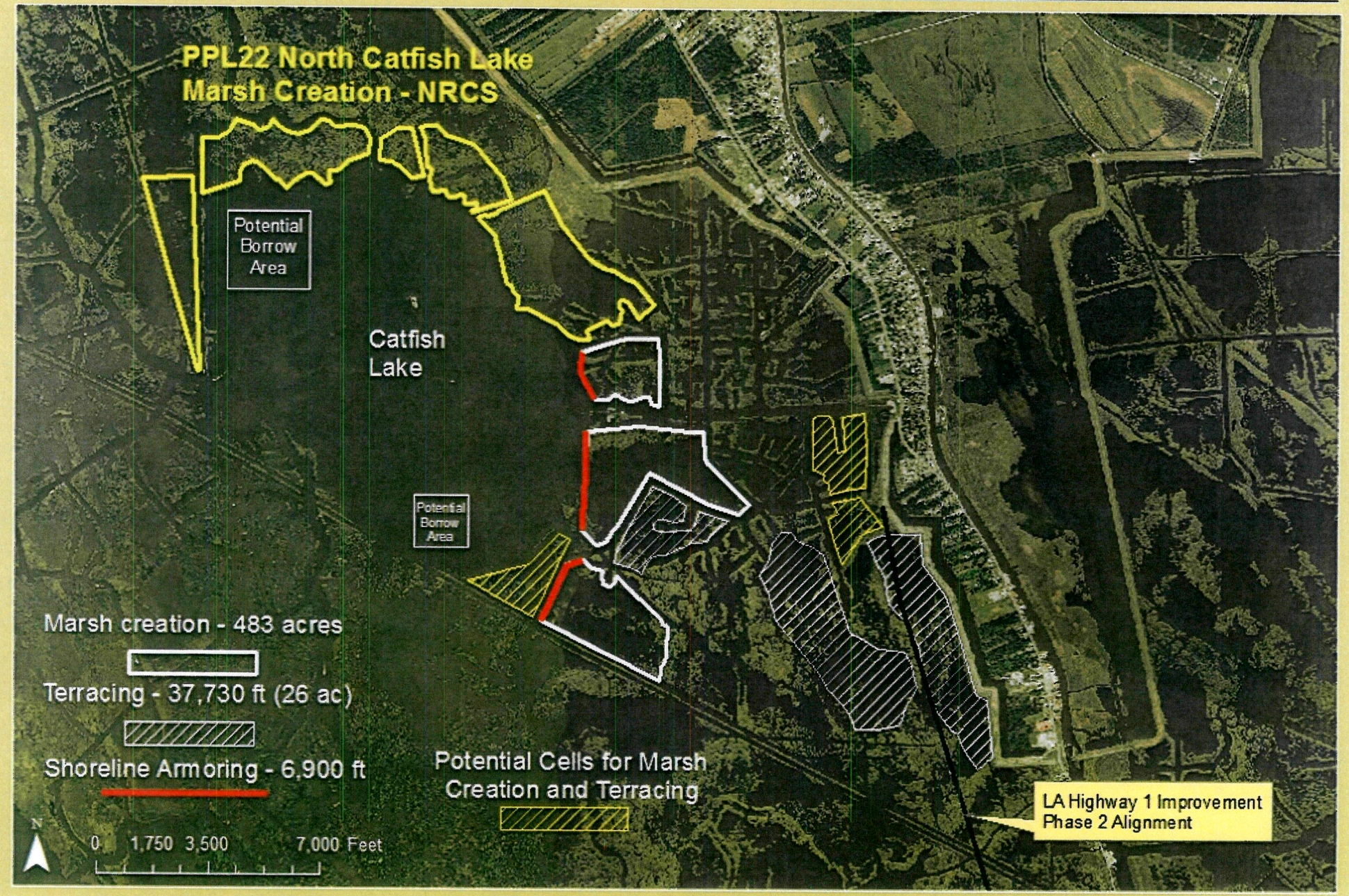
Preliminary Construction Costs
The estimated construction cost including 25% contingency is $23.9M.

Preparer of Fact Sheet
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U.S. Fish & Wildlife Service

Louisiana Ecological Services Field Office

East Catfish Lake Marsh Creation and Terracing





REGION III

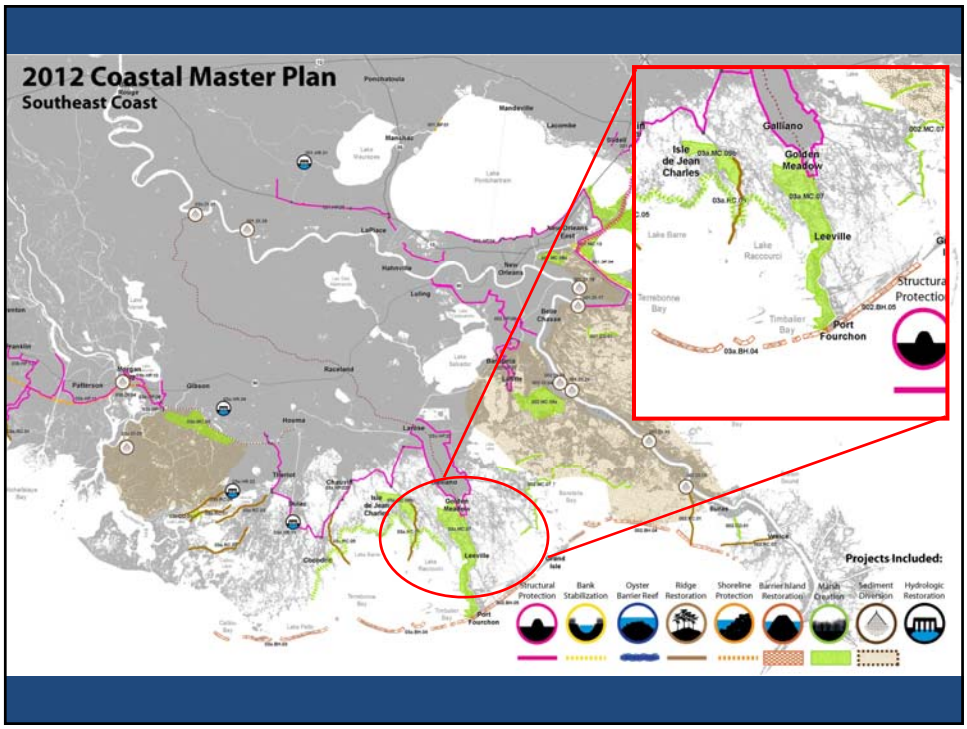
RPT MEETING

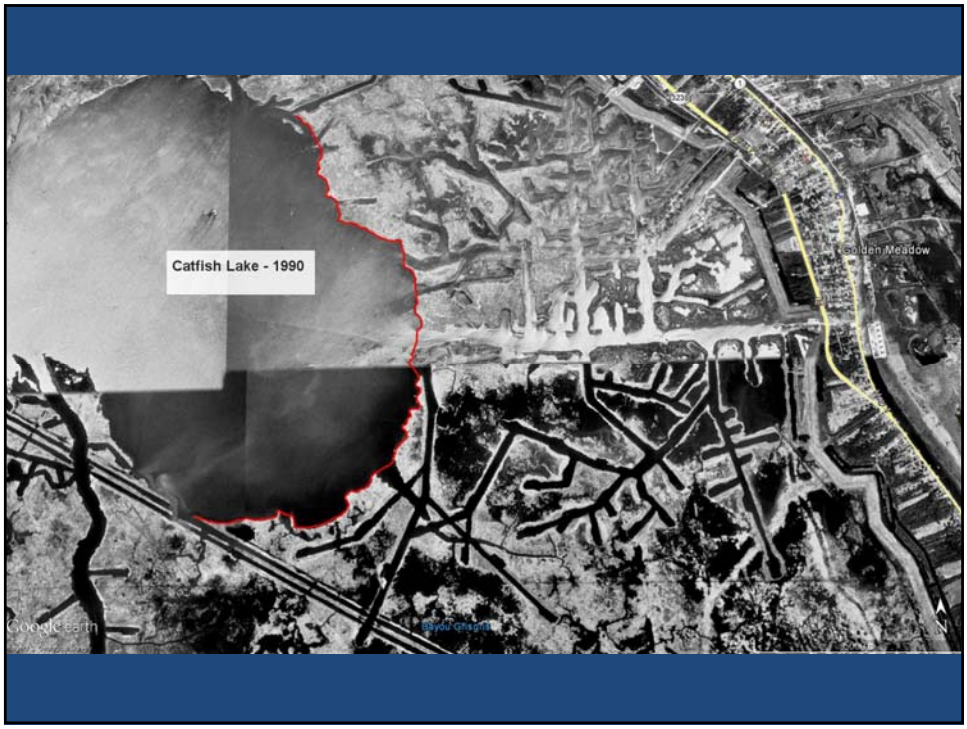
TERREBONNE BASIN

Gray, LA

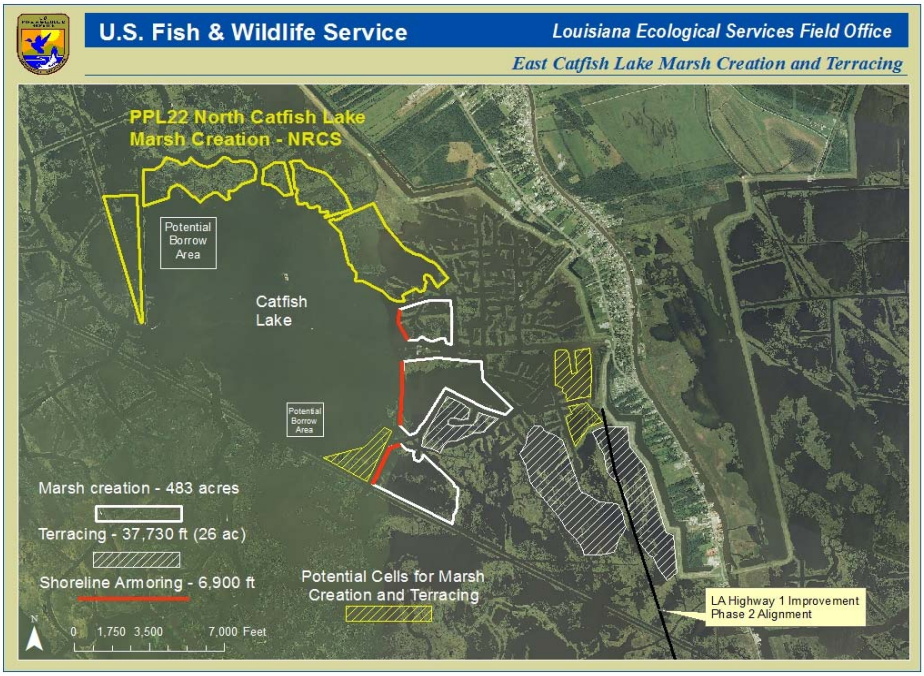
January 27, 2016






Catfish Lake - 1990
Golden Meadow
Google earth
Bayou Grisgris
N


6 ft/yr
Catfish Lake - 2015
20 ft/yr
29 ft/yr
Golden Meadow
Google earth
Bayou Grisgris
5000 ft
N



East Catfish Lake Marsh Creation and Terracing

- Catfish Lake borrow site
- Maximum pump distance of 18,000 feet
- 483 acres of marsh creation/nourishment
- 37,730 linear feet of terraces – 26 acres
- 6,900 linear feet of shoreline armoring
- Net acres = 405
- Construction plus contingency = $23.9M

R3-TE-06

Bayou Terrebonne Ridge Restoration and Marsh Creation

PPL26 PROJECT NOMINEE FACT SHEET
January 27, 2016

Project Name
Bayou Terrebonne Ridge Restoration and Marsh Creation

Project Location
Region 3, Terrebonne Basin, Terrebonne Parish

Problem
The Terrebonne Basin was historically structured by a series of remnant north-south ridges 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, canal dredging, altered hydrology and development. USGS calculated a 1985-2010 loss rate of -0.73% per year for the PPL25 Bayou Terrebonne Ridge Restoration and Marsh Creation Project.

Goals
Goals of the project to restore a portion of the ridge on the eastern bank of Bayou Terrebonne as well as a band of marsh habitat via marsh creation/nourishment along the alignment of the existing and restored Bayou Terrebonne ridge.

Service goals include restoration/protection of habitat for threatened and endangered species and other at-risk species. This project would restore habitat potentially utilized by the black rail and Louisiana eyed silkmoth which are both petitioned for listing as threatened/endangered species. The project could also benefit other at-risk species including the peregrine falcon, osprey, diamondback terrapin, and seaside sparrow.

Proposed Solution
1. Sediments will be hydraulically dredged in Lake Barre and pumped via pipeline to create/nourish approximately 243 acres of marsh.
2. Containment dikes will be constructed as necessary and gapped upon project completion.
3. Material will be bucket dredged from Bayou Terrebonne to restore approximately 12,543 linear feet (~2.4 miles/15 acres) of ridge habitat.

Preliminary Project Benefits
1) *What is the total acreage benefited both directly and indirectly*? Approximately 258 acres would be benefited directly and indirectly. Direct benefits include 243 acres of marsh creation and 15 acres of restored ridge. Indirect benefits would include enhancement and nourishment of adjacent wetlands, increased resiliency and stabilization of the Bayou Terrebonne ridge system, greater integrity of public infrastructure, and private property protection.

2) *How many acres of wetlands will be protected/created over the project life*? The total net acres created/restored over the project life is approximately 199 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 structural and habitat functions of ridge along the eastern bank of Bayou Terrebonne.

5) *What is the net impact of the project on critical and non-critical infrastructure*? The project would afford protection to Bayou Terrebonne and associated navigable waterways, several private properties, state highways 55 and 56, and Terrebonne Parish hurricane protection infrastructure.

6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects*? At this time there are no approved or constructed restoration projects that would complement the nominee. It has been historically difficult to get approval for project construction in this area of the Terrebonne Basin due to soil conditions, erosion and subsidence rates, water depths, and the high costs associated with construction of the candidate projects. However, this project provides opportunities for future projects to protect both the structural and habitat functions of Bayou Terrebonne and adjacent wetlands while affording an opportunity for subsequent projects, in a concerted effort, to continue to safeguard critical infrastructure in Terrebonne Parish.

Identification of Potential Issues
Oil and gas infrastructure, oyster leases, and private property owners.

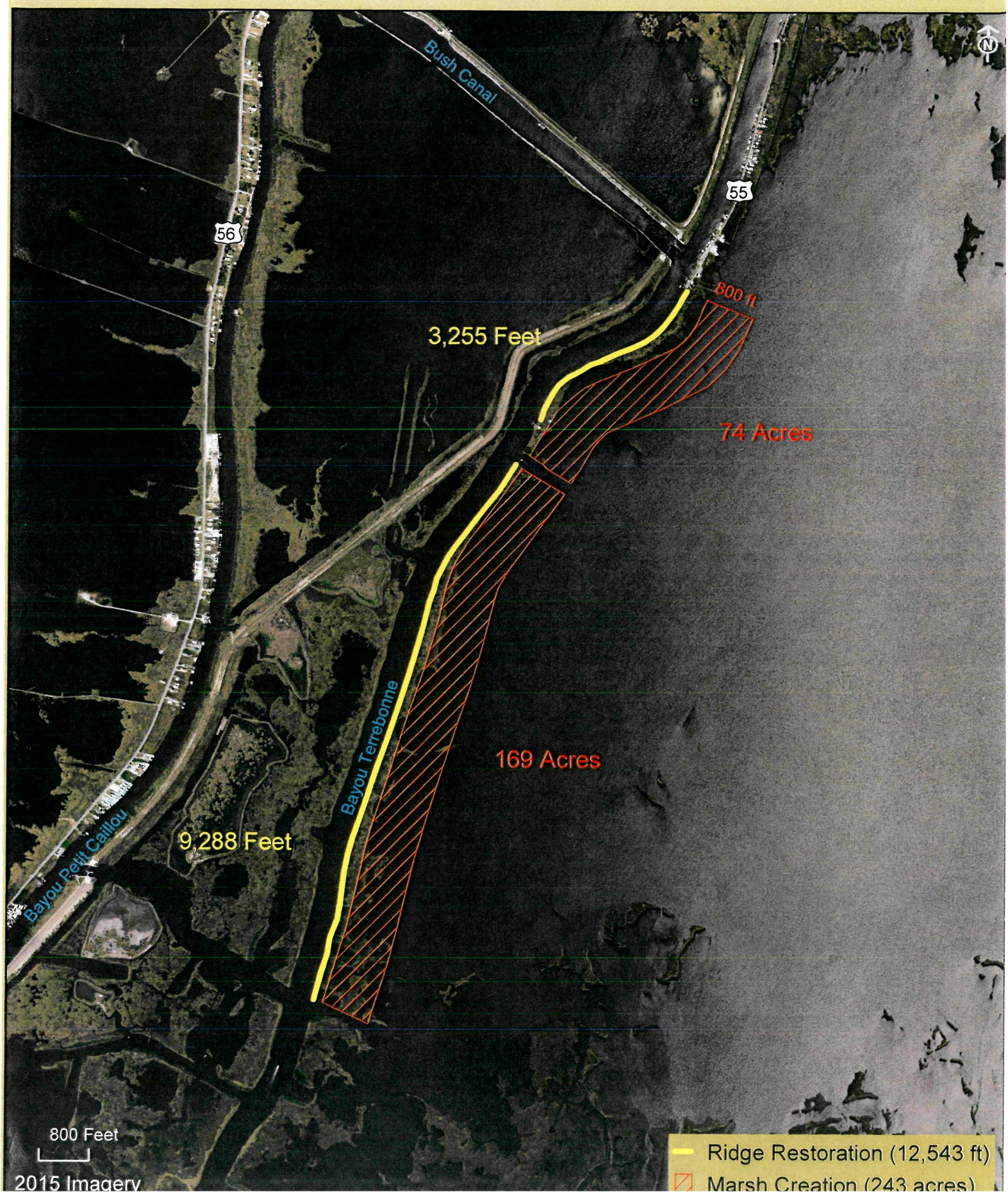
Preliminary Construction Costs
The estimated construction cost including 25% contingency is $25.6M.

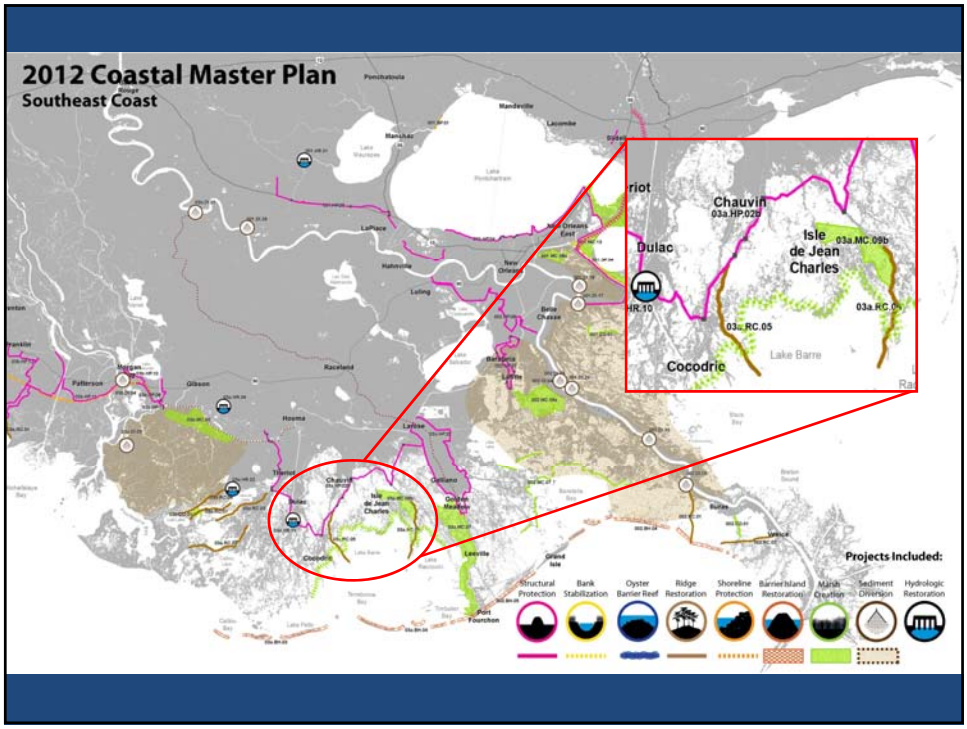
Preparer of Fact Sheet
John Savell, USFWS, (337) 291-3144, john_savell@fws.gov

U.S. Fish & Wildlife Service

Louisiana Ecological Services

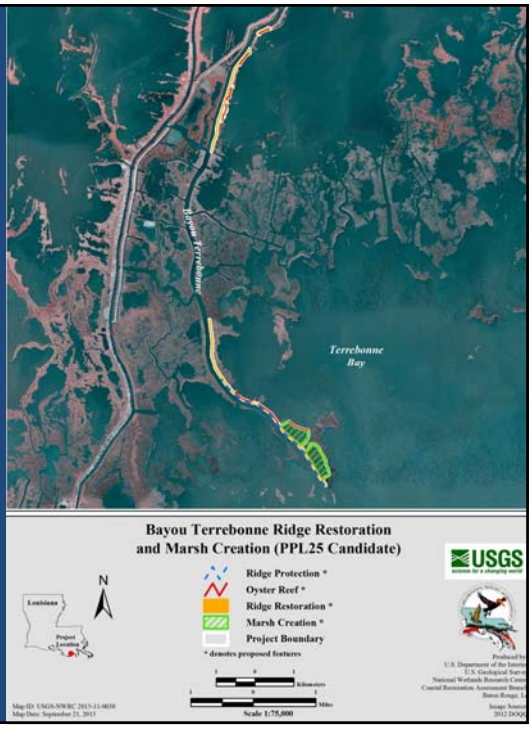
Bayou Terrebonne Ridge Restoration and Marsh Creation





PPL 25 Candidate

- Lake Barre borrow site
- 123 acres of marsh creation/nourishment
- 28,501 lf (25 ac) of ridge restoration
- 24,692 lf of armoring
- Net acres = 126
- Construction + Contingency = **$27.3M**

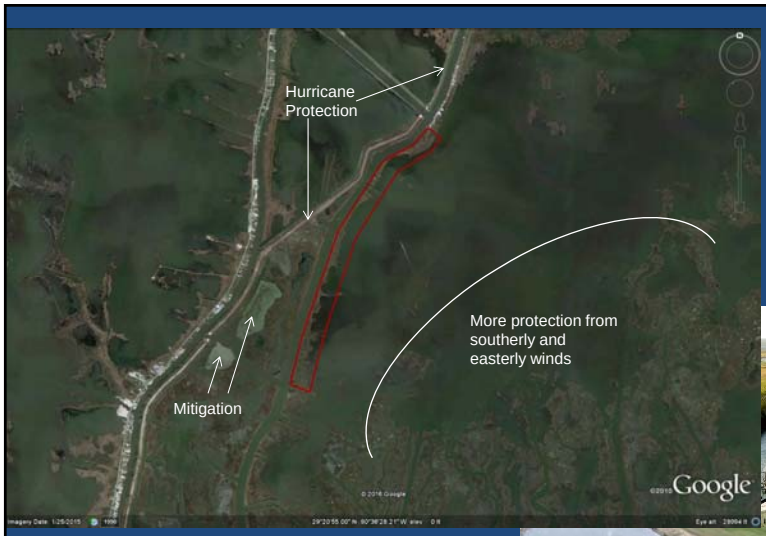


PPL 26 Nominee

- Lake Barre borrow site
- Marsh creation/nourishment
  - 209 ac created
  - 34 ac nourished
- 12,543 lf (15 ac) of ridge restoration
- Net acres = 199
- Construction + Contingency = **$25.6M**



Nominee Advantages





- More protected than southern reach
- Protection of mitigation projects
- Protection of public infrastructure
- More cost effective



R3-TE-07

Small Bayou LaPointe Marsh Creation and Ridge Restoration

~~#5~~
TE-07

PPL26 PROJECT NOMINEE FACT SHEET
January 27, 2016

Project Name
Small Bayou LaPointe Marsh and Ridge Restoration

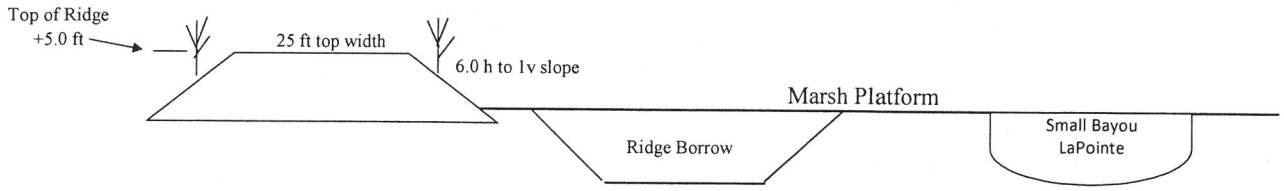
Project Location
Region 3, Terrebonne Basin, Terrebonne Parish, east of Raccourci Bay, adjacent to Small Bayou LaPointe

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.

Service goals include restoration/protection of habitat for threatened and endangered species and other at-risk species. This project would restore habitat potentially utilized by the black rail and Louisiana eyed silkmoth which are both petitioned for listing as threatened/endangered species. Restoration of forested coastal ridge habitat would benefit neotropical migratory songbirds. The project could also benefit other at-risk species including the diamondback terrapin and seaside sparrow. The mottled duck, a priority species for the Gulf Coast Joint Venture, would also be benefited by the restoration of low-salinity brackish marsh habitat.

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 $27M.

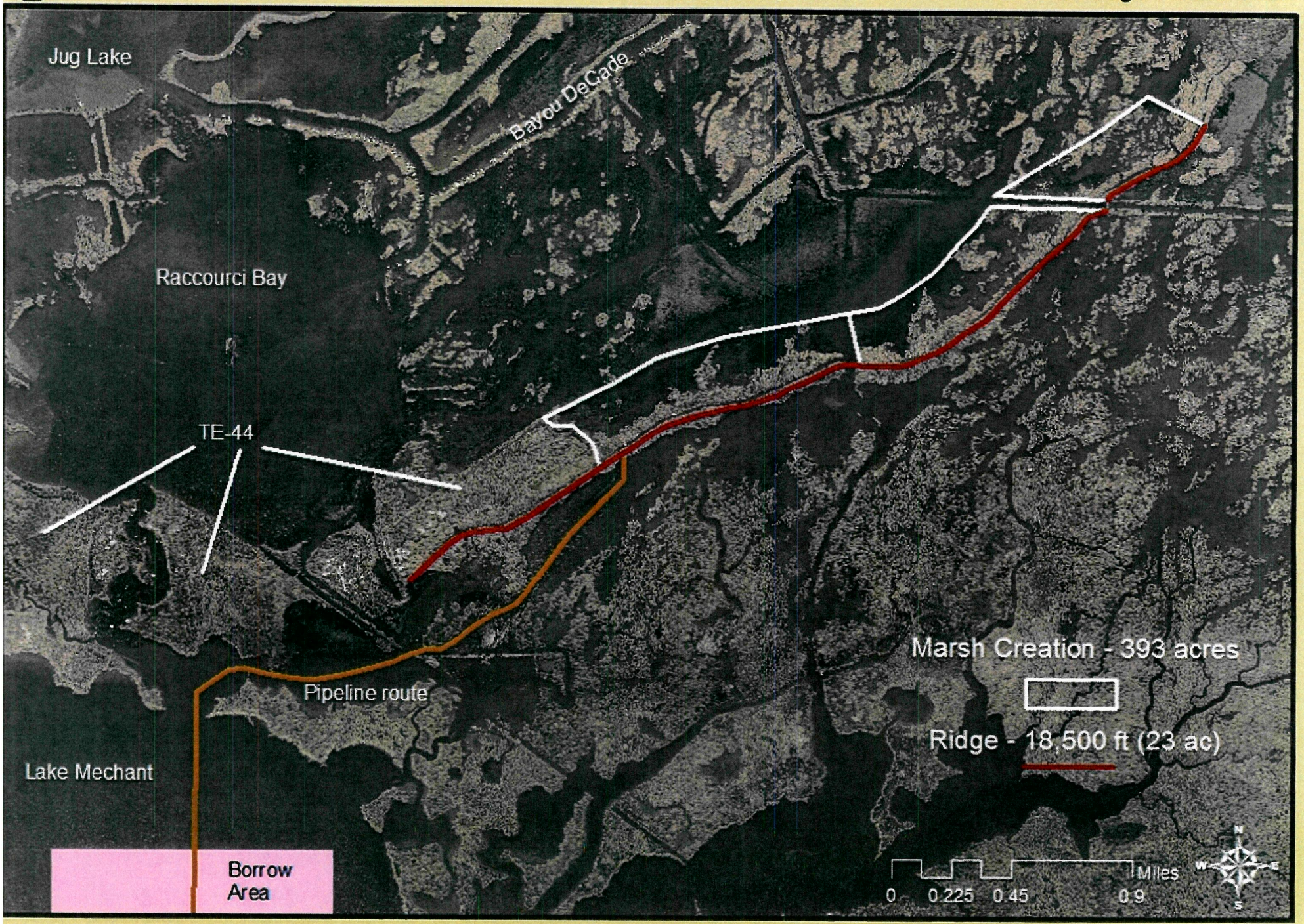
Preparer of Fact Sheet

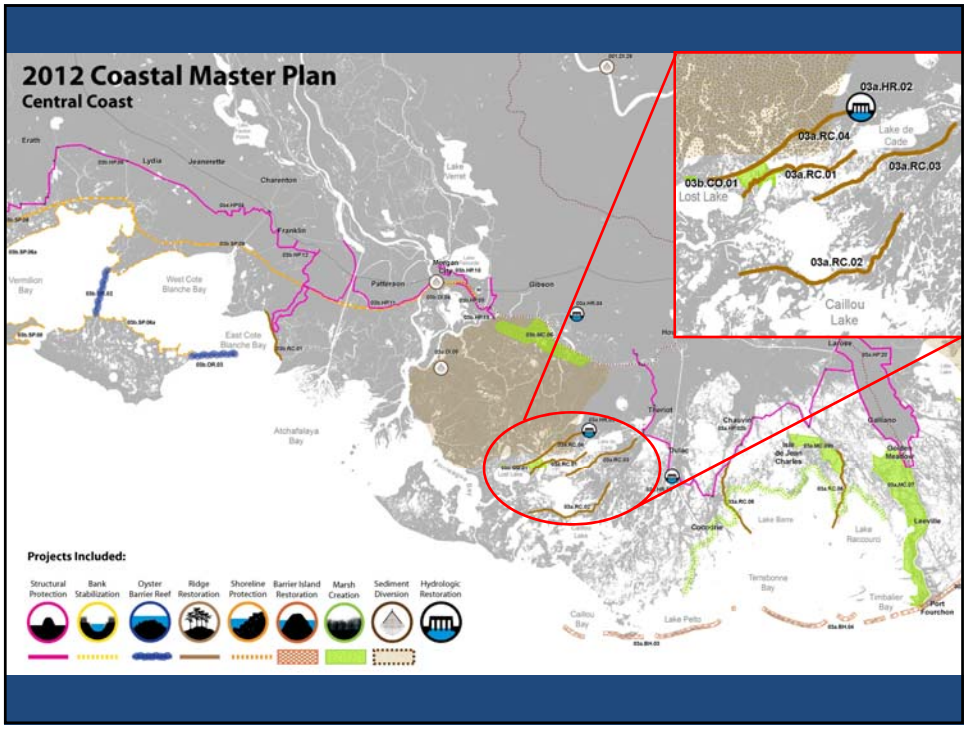
Kevin Roy, USFWS, (337) 291-3120, kevin_roy@fws.gov

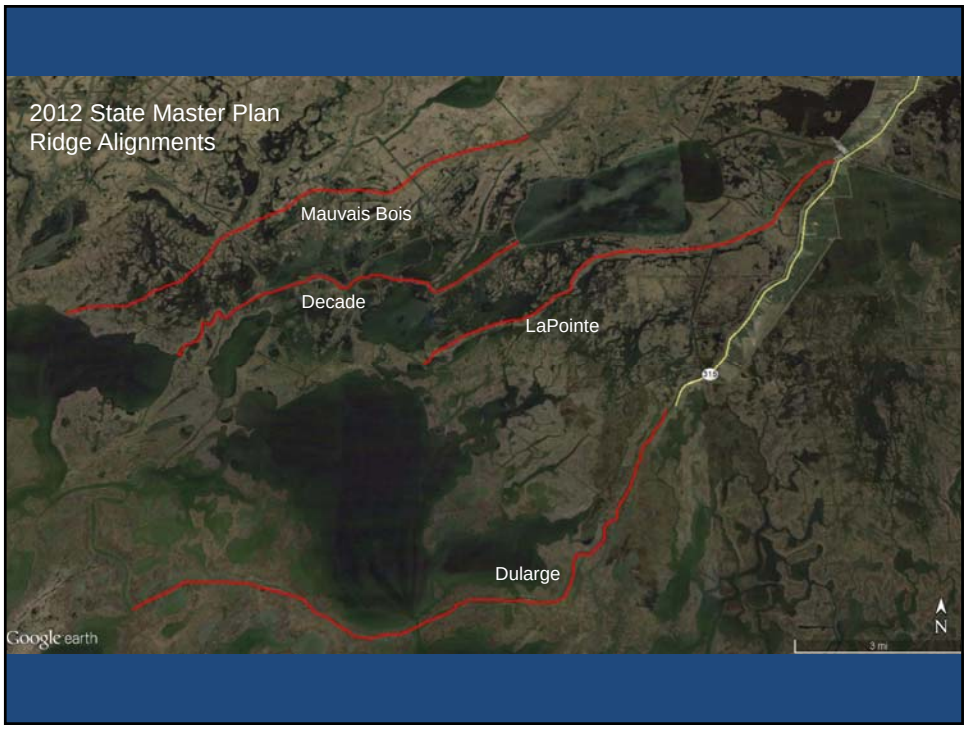
U.S. Fish & Wildlife Service

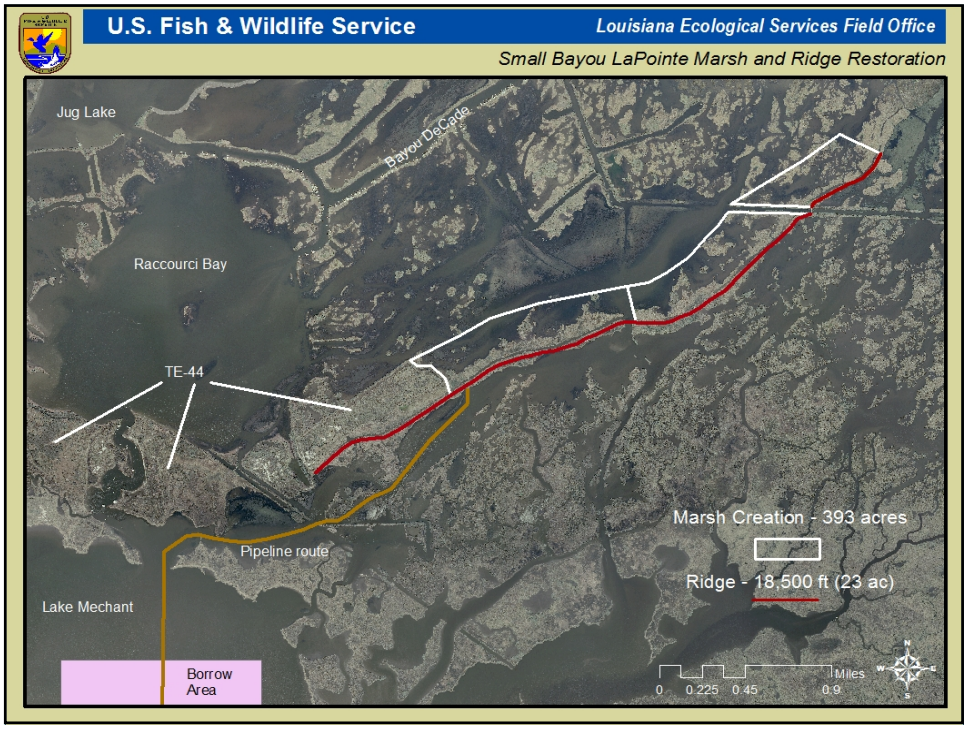
Louisiana Ecological Services Field Office

Small Bayou LaPointe Marsh and Ridge Restoration

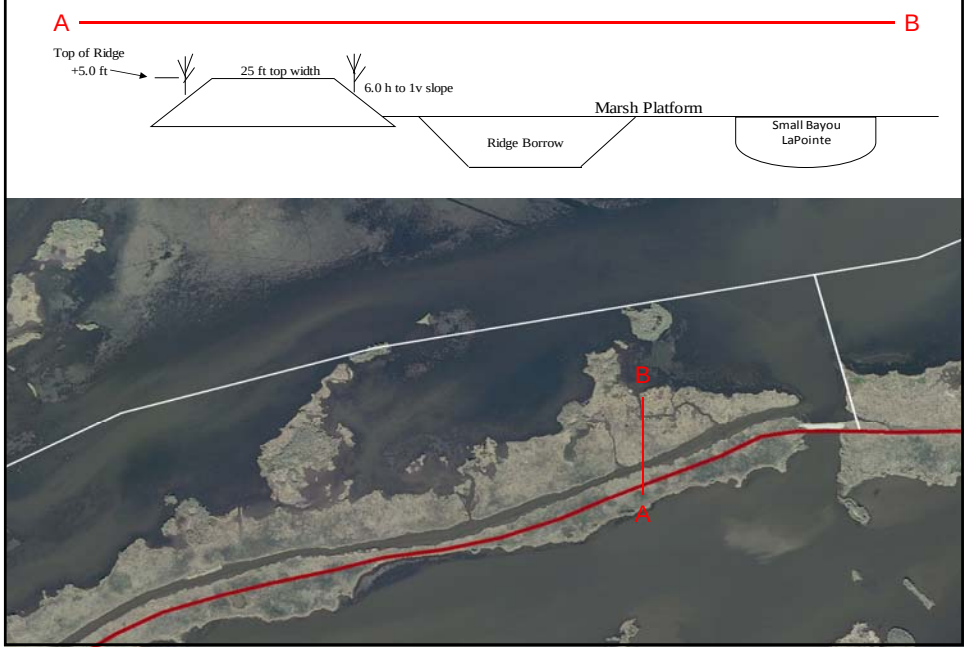



2012 Coastal Master Plan
Central Coast
03a.HR.02
03a.RC.04
03a.RC.01
03a.RC.03
03b.CO.01
Lost Lake
03a.RC.02
Caillou Lake
Projects Included:
Structural Protection
Bank Stabilization
Oyster Barrier Reef
Ridge Restoration
Shoreline Protection
Barrier Island Restoration
Marsh Creation
Sediment Diversion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


2012 State Master Plan
Ridge Alignments
Mauvais Bois
Decade
LaPointe
Dularge
Google earth
N
3 mi



Small Bayou LaPointe Ridge Feature



Small Bayou LaPointe Marsh and Ridge Restoration

- Lake Mechant borrow site
- 393 acres of marsh creation/nourishment
- 18,500 ft of ridge restoration (23 ac)
- Net acres = 279
- Construction plus contingency = $27M
- Advantages – Adjoins TE-44 Project, Nearly Continuous Ridge for >10 miles, No Camps, Protected

Questions?

~~R3-TE-08~~

~~Bayou Jean Lacroix Marsh Creation and Terracing~~

(Dropped from voting list)

TE-08

PPL26 PROJECT NOMINEE FACT SHEET
January 27, 2016

Project Name
Bayou Jean Lacroix Marsh Creation and Terracing

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 351 acres of emergent brackish marsh;
- construct 25,900 linear ft. of terraces (14 acres) south of and adjacent to the newly restored marsh platform

Proposed Solution
The proposed project's primary feature is to create 311 acres and nourish 40 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 (155 acres) will be planted following construction to stabilize the platform and reduce time for full vegetation. The project will also construct 25,900 ft. (14 acres) of terraces in 425 acres of shallow open water in two cells west and 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-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 776 acres (311 acres of marsh creation and 40 acres of marsh nourishment + 425 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 302 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, cheniers, etc?*
The project will help restore a small portion of Bayou Jean Lacroix.

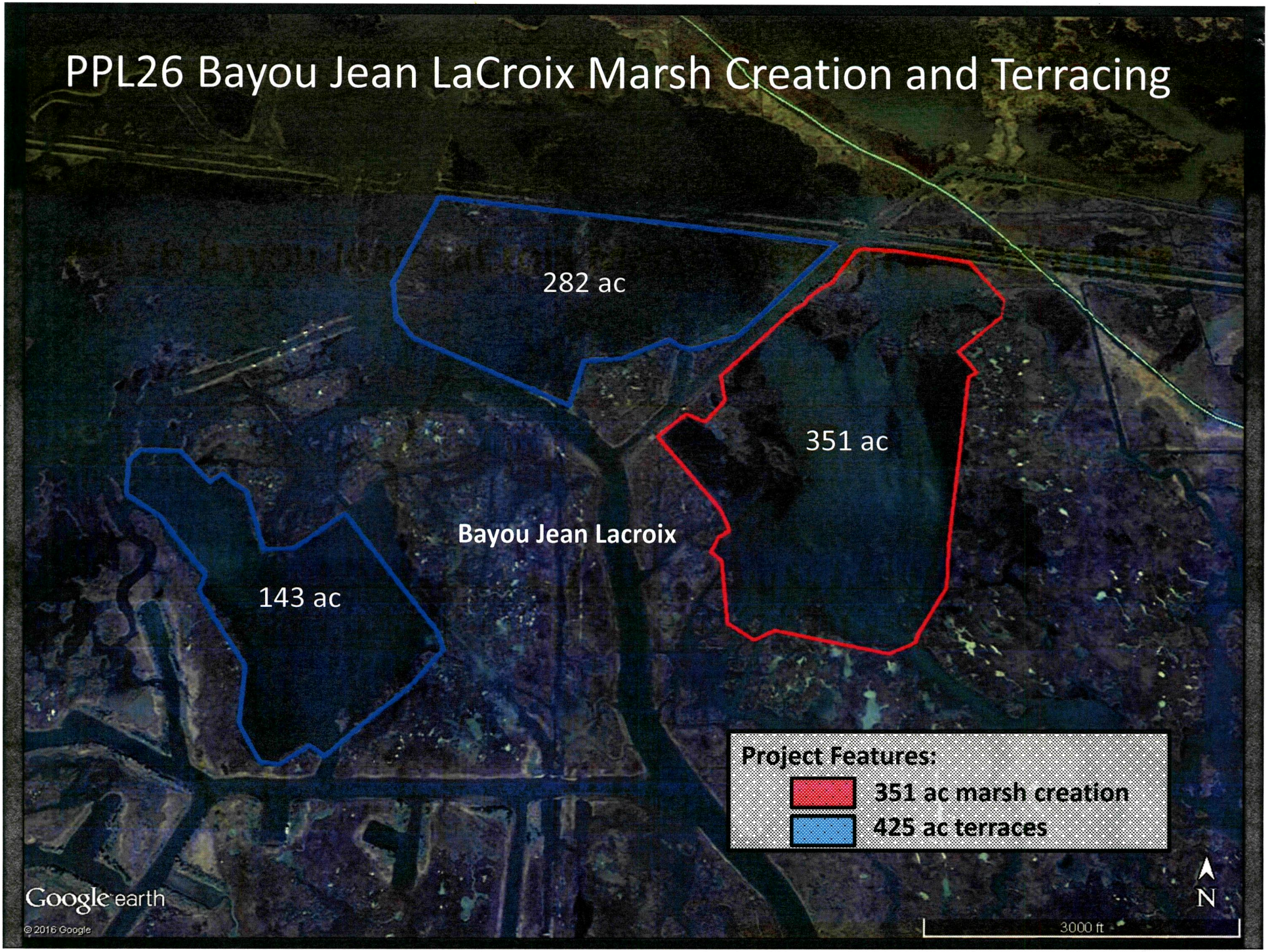
5) *What is the net impact of the project on critical and non-critical infrastructure?*
The project would provide positive impacts to non-critical (i.e., minor oil and gas facilities) infrastructure. Minor oil and gas facilities and pipelines in the area would benefit from an increase in marsh acreage.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

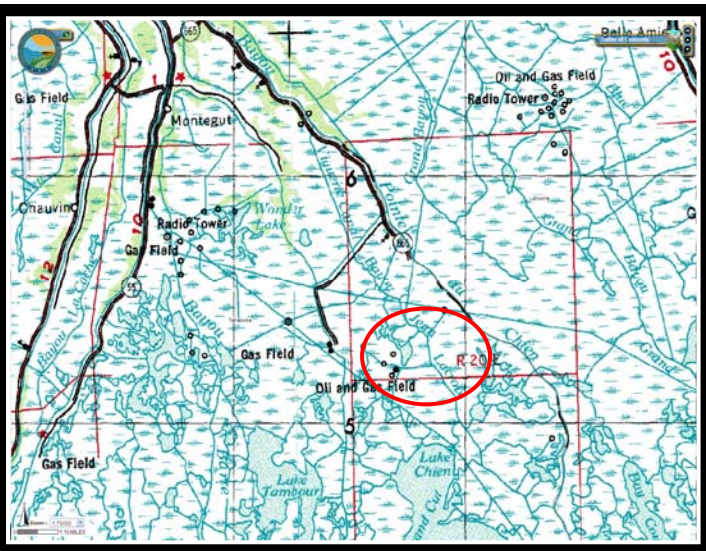
6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?*
The project may have indirect synergy with the (TE-117) Island Road Marsh Creation and Nourishment project; the Ducks Unlimited marsh management unit on Point aux Chien Wildlife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

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 $19,364,191. The fully-funded cost range is $25M - $30M.

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


PPL26 Bayou Jean LaCroix Marsh Creation and Terracing
282 ac
351 ac
Bayou Jean Lacroix
143 ac
Project Features:
351 ac marsh creation
425 ac terraces
Google earth
© 2016 Google
N
3000 ft

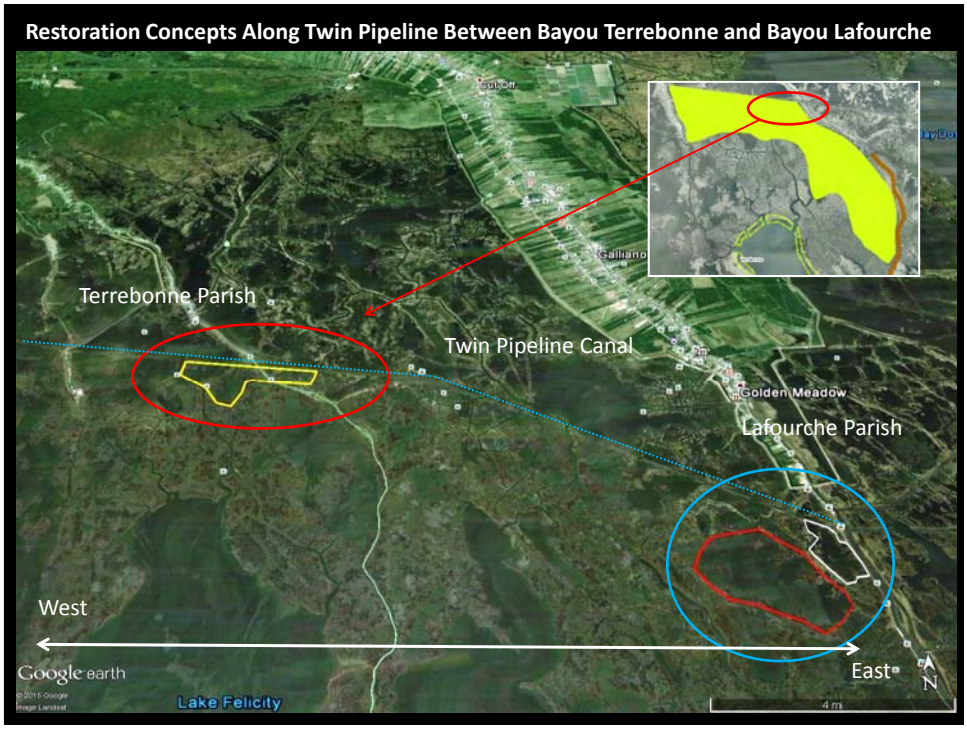


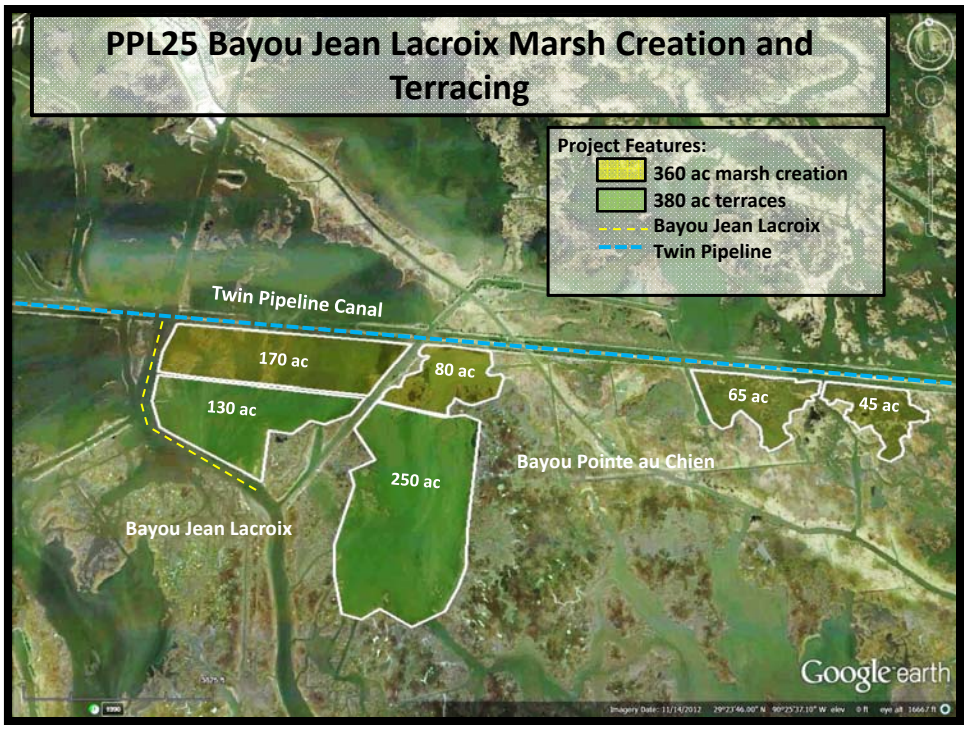
PPL26 BAYOU JEAN LACROIX MARSH CREATION AND TERRACES

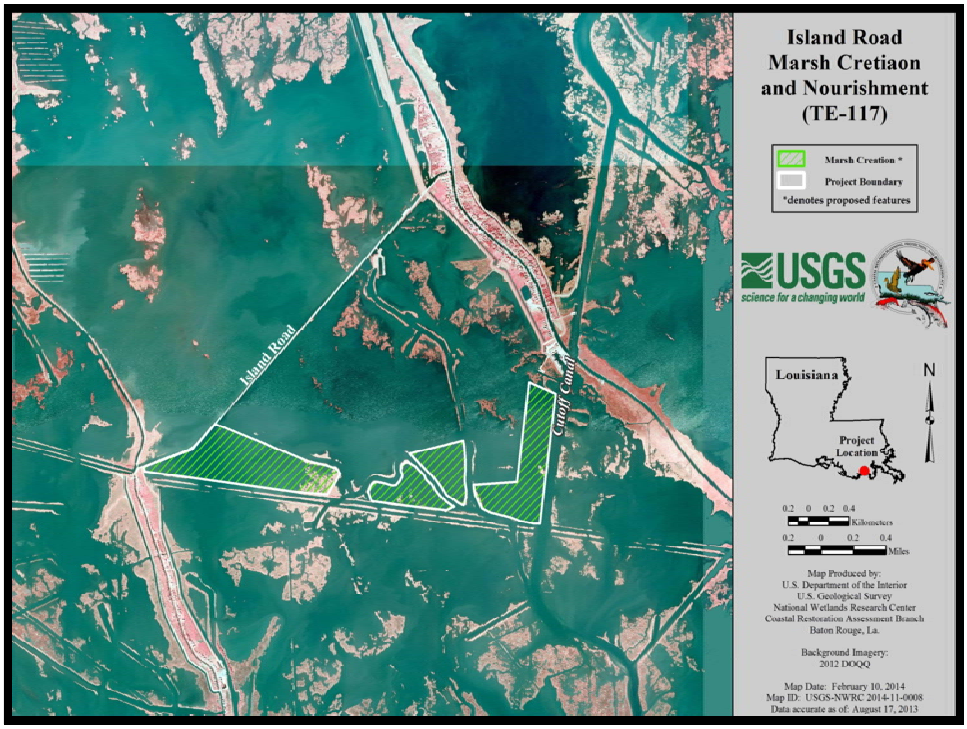
PPL26 Region 3 RPT, January 27, 2016
Kimberly Clements
National Marine Fisheries Service

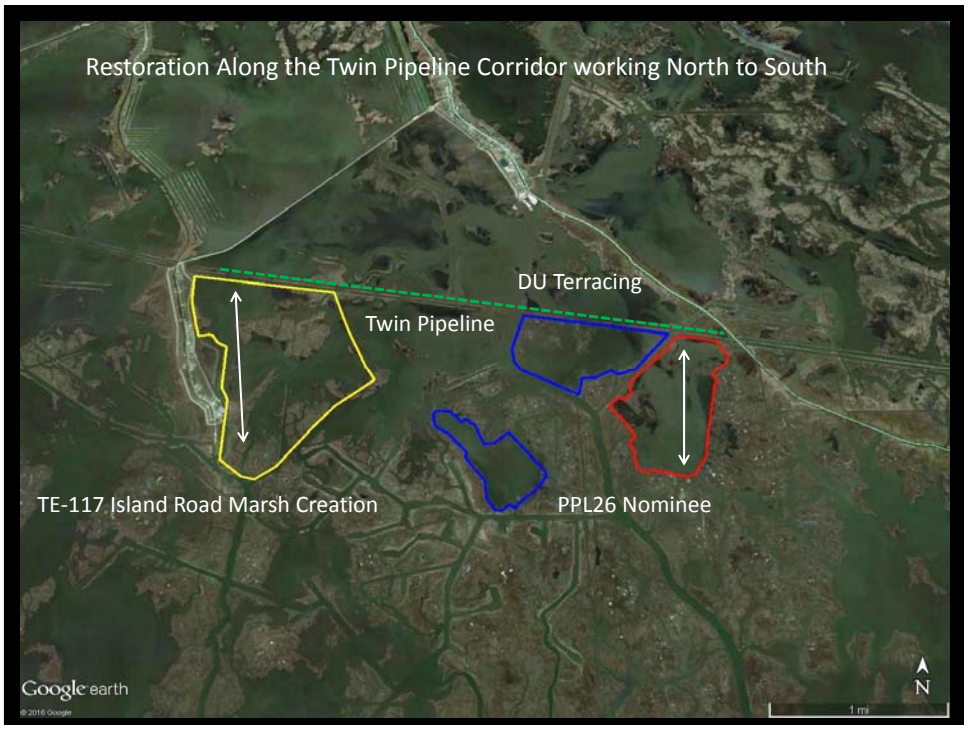
Problems near Point au Chene Area

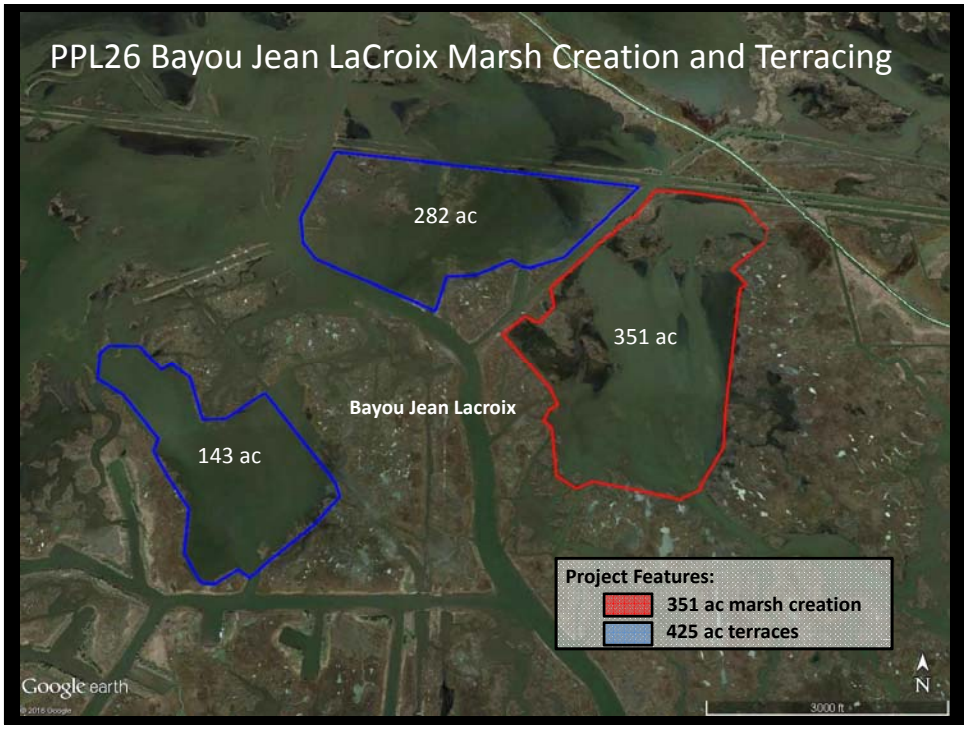
- High Land Loss rates in Terrebonne Basin, 20% since 1932 and currently 4,000-6,500 acres lost per year
- High Subsidence in the area,0.5 ft/20 yr, 2012 SMP (mod rate 8.8 mm/yr)
- Wetland Loss Rate for the Wonder Lake subunit is -0.87%/year
- Limited protection to surrounding communities


Restoration Concepts Along Twin Pipeline Between Bayou Terrebonne and Bayou Lafourche
Terrebonne Parish
Twin Pipeline Canal
Golden Meadow
Lafourche Parish
West
East
Google earth
Lake Felicity
N


PPL25 Bayou Jean Lacroix Marsh Creation and Terracing
Project Features:
360 ac marsh creation
380 ac terraces
Bayou Jean Lacroix
Twin Pipeline
Twin Pipeline Canal
170 ac
80 ac
130 ac
65 ac
45 ac
250 ac
Bayou Pointe au Chien
Bayou Jean Lacroix
Google earth


Island Road
Marsh Cretiaon and Nourishment (TE-117)
Marsh Creation *
Project Boundary
*denotes proposed features
USGS
science for a changing world
Louisiana
Project Location
N
0.2 0 0.2 0.4
Kilometers
0.2 0 0.2 0.4
Miles
Map Produced by:
U.S. Department of the Interior
U.S. Geological Survey
National Wetlands Research Center
Coastal Restoration Assessment Branch
Baton Rouge, La.
Background Imagery:
2012 DOQQ
Map Date: February 10, 2014
Map ID: USGS-NWRC 2014-11-0008
Data accurate as of August 17, 2013


Restoration Along the Twin Pipeline Corridor working North to South
DU Terracing
Twin Pipeline
TE-117 Island Road Marsh Creation
PPL26 Nominee
Google earth
N
1 mi



Project Features and Benefits

- Total Acres is 364 (350 acres of marsh and 14 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 $19.3 M

R3-TE-09

West Louisiana Highway 1 Marsh Creation and Terracing

TE-09

PPL26 West Louisiana Highway 1 Marsh Creation and Terracing
January 27, 2016

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 360 acres of emergent brackish marsh
- Construct up to 37 acres of terraces in a 1000 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 360 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 (307 acres) will be planted following construction to stabilize the platform and reduce time for full vegetation. The project will also construct 50,000 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. Additional areas of deteriorating marsh south of the proposed project and along the western side of LA Hwy 1 will be investigated should the project be considered for further evaluation.

Preliminary Project Benefits

1) *What is the total acreage benefited both directly and indirectly?*
   This total project area is approximately 1,360 acres (315 acres of marsh creation and 45 acres of marsh nourishment + 1000 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 327 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.

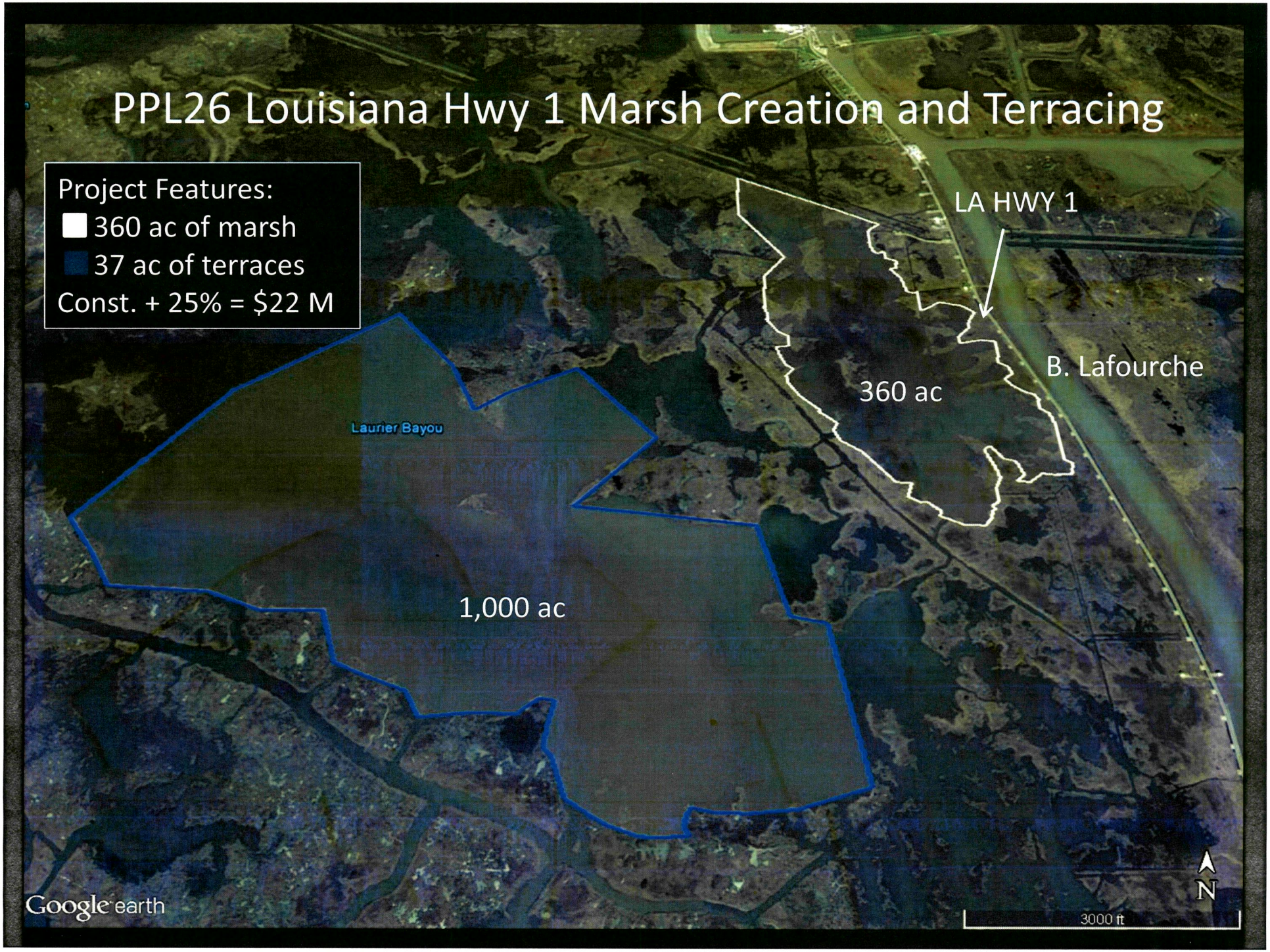
5) *What is the net impact of the project on critical and non-critical infrastructure?*
The project will provide additional protection to LA 1 south of Golden Meadow. The project would also provide positive impacts to non-critical (i.e., minor oil and gas facilities) infrastructure. Minor oil and gas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

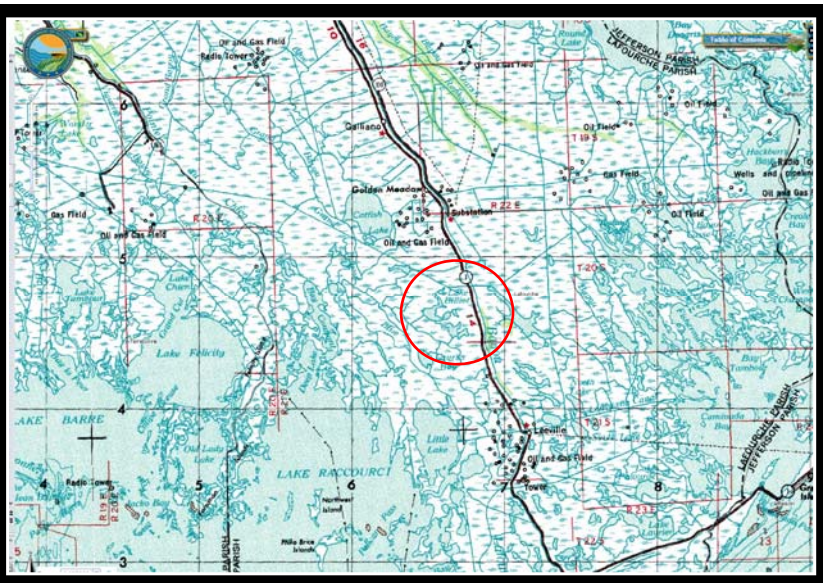
6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?*
This is an area of need due to the lack of previous restoration efforts.

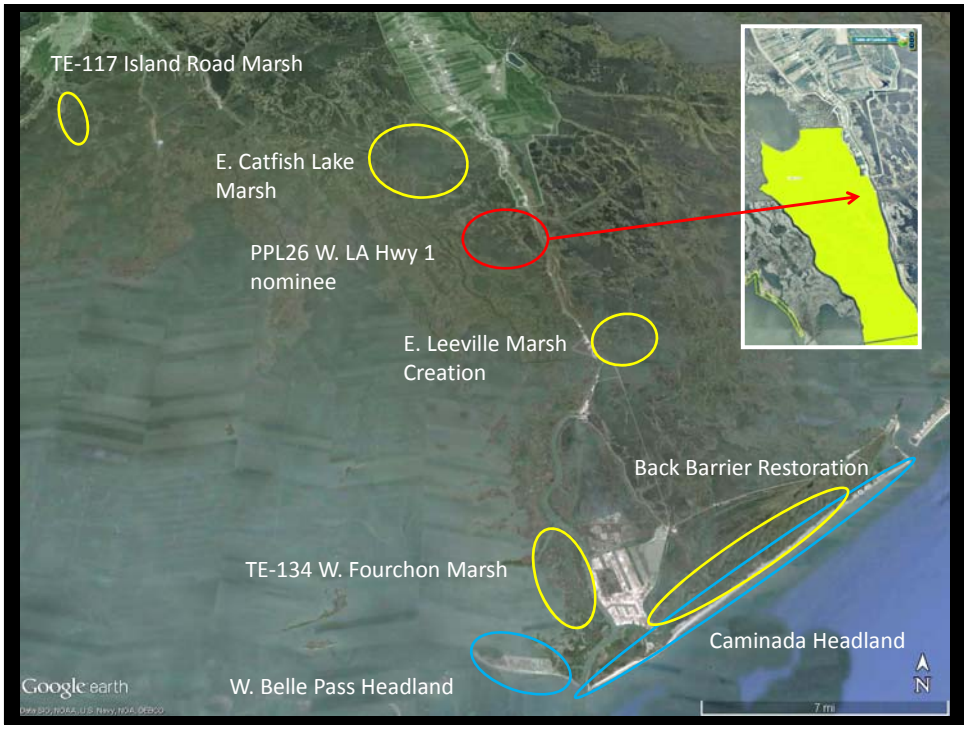
Identification of Potential Issues:
The proposed project has potential utility/pipeline issues along with oyster leases along the dredge pipeline path.

Preliminary Construction Costs
The estimated construction cost including 25% contingency is $22,707,049. The fully-funded cost range is $30M - $35M.

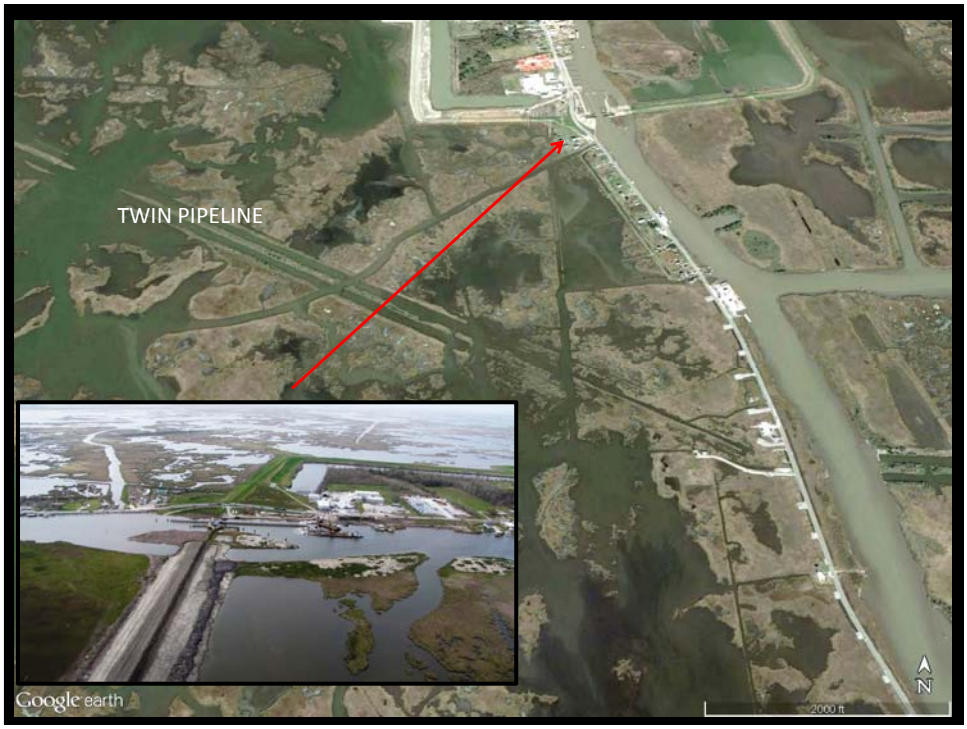
Preparer(s) of Fact Sheet:
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Dawn Davis, NOAA Fisheries, 225-389-0508 ext 206, dawn.davis@noaa.gov
Patrick Williams, NOAA Fisheries, 225-389-0508, ext 208, patrick.williams@noaa.gov


PPL26 Louisiana Hwy 1 Marsh Creation and Terracing
Project Features:
360 ac of marsh
37 ac of terraces
Const. + 25% = $22 M
LA HWY 1
B. Lafourche
360 ac
Laurier Bayou
1,000 ac
Google earth
N
3000 ft


Golden Meadow
Oil and Gas Field
Lake Felicity
LAKE BARRE
LAKE RACCOURCI
Leeville
Oil and Gas Field
Tower
Oil Field
Gas Field
Oil and Gas Field
Radio Tower
Radio Tower
Substation
Oil and Gas Field
Oil and Gas Field
Oil Field
Gas Field
Oil and Gas Field
Oil Field
Oil and Gas Field
Oil and Gas Field
Oil and Gas


TE-117 Island Road Marsh
E. Catfish Lake Marsh
PPL26 W. LA Hwy 1 nominee
E. Leeville Marsh Creation
Back Barrier Restoration
TE-134 W. Fourchon Marsh
Caminada Headland
W. Belle Pass Headland
Google earth
N


200 feet
Google earth
N


TWIN PIPELINE
Google earth
2000 ft
N


Additional Considerations
Future Hwy 1 expansion
270 ac
120 ac
Laurier Bayou
Laurier Bay
Borrow from Little Lake to south
Google earth
4000 ft
N



Project Features and Benefits

- Total Acres 397 acres (360 acres of marsh creation and 37 acres of terraces)
- Borrow from outside immediate project area in Catfish 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 (Twin Pipelines) for Lafourche Parish, 5th Annual Coastal Restoration Workshop
- Promotes protection to HWY LA 1
- Construction + 25% Contingency is $22 M

R3-TE-10

Bayou De Cade Bankline and Marsh Restoration

TE-10

PPL26 Bayou De Cade Bankline and Marsh Restoration
January 27, 2016

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, sediment 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.

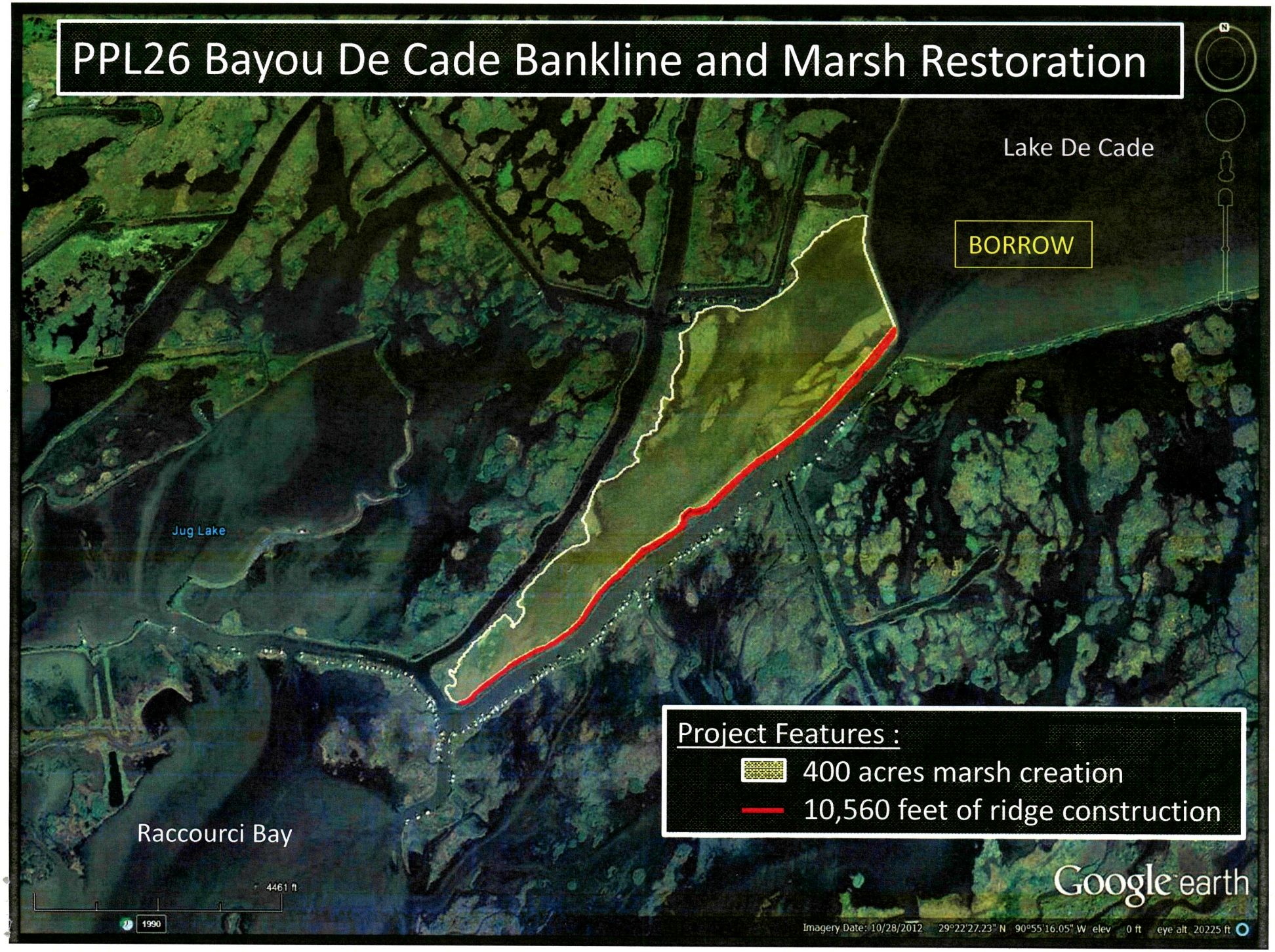
5) *What is the net impact of the project on critical and non-critical infrastructure?*
N/A

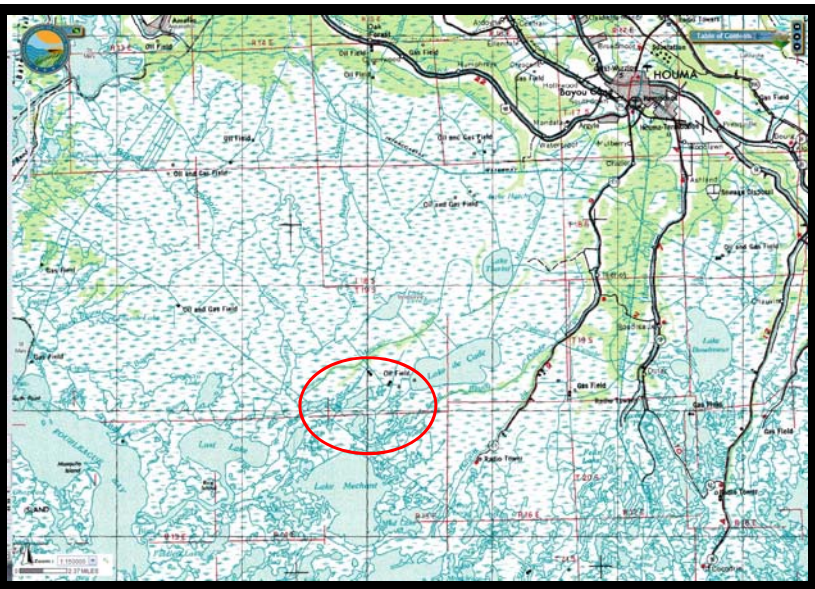
6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?*
(TE-39) South Lake Decade Freshwater Introduction Project and (TE-44) North Lake Mechant Landbridge Restoration

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:
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Dawn Davis, NOAA Fisheries, 225-389-0508 ext 206, dawn.davis@noaa.gov
Patrick Williams, NOAA Fisheries, 225-389-0508, ext 208, patrick.williams@noaa.gov


PPL26 Bayou De Cade Bankline and Marsh Restoration
Lake De Cade
BORROW
Jug Lake
Raccourci Bay
Project Features :
400 acres marsh creation
10,560 feet of ridge construction
4461 ft
1990
Google earth
Imagery Date: 10/28/2012 29°22'27.23" N 90°55'16.05" W elev 0 ft eye alt 20225 ft



PPL26 BAYOU DECADE BANKLINE AND MARSH RESTORATION

PPL26 Region 2 RPT, January 27, 2016

Kimberly Clements
National Marine Fisheries Service



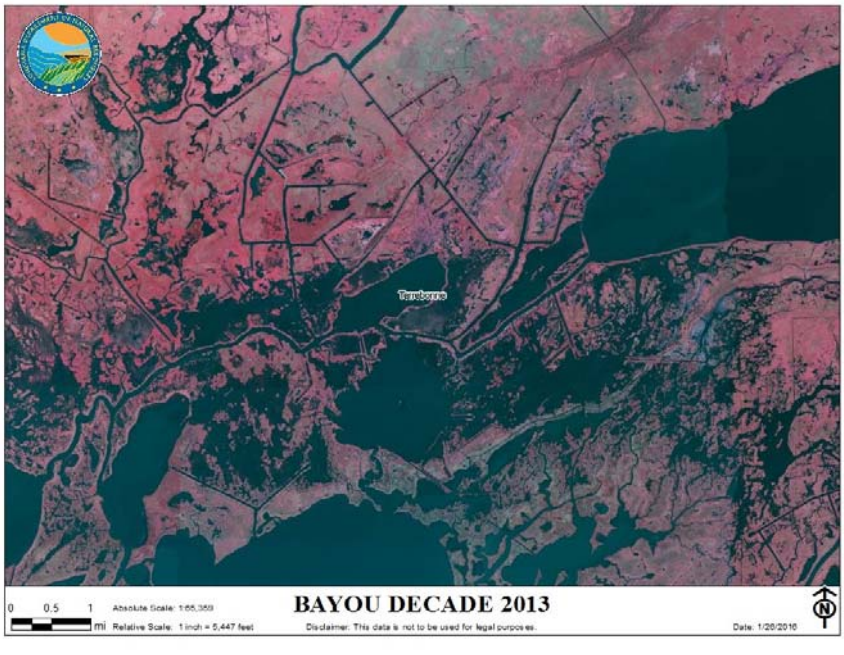
PPL26 BAYOU DECADE BANKLINE AND MARSH RESTORATION

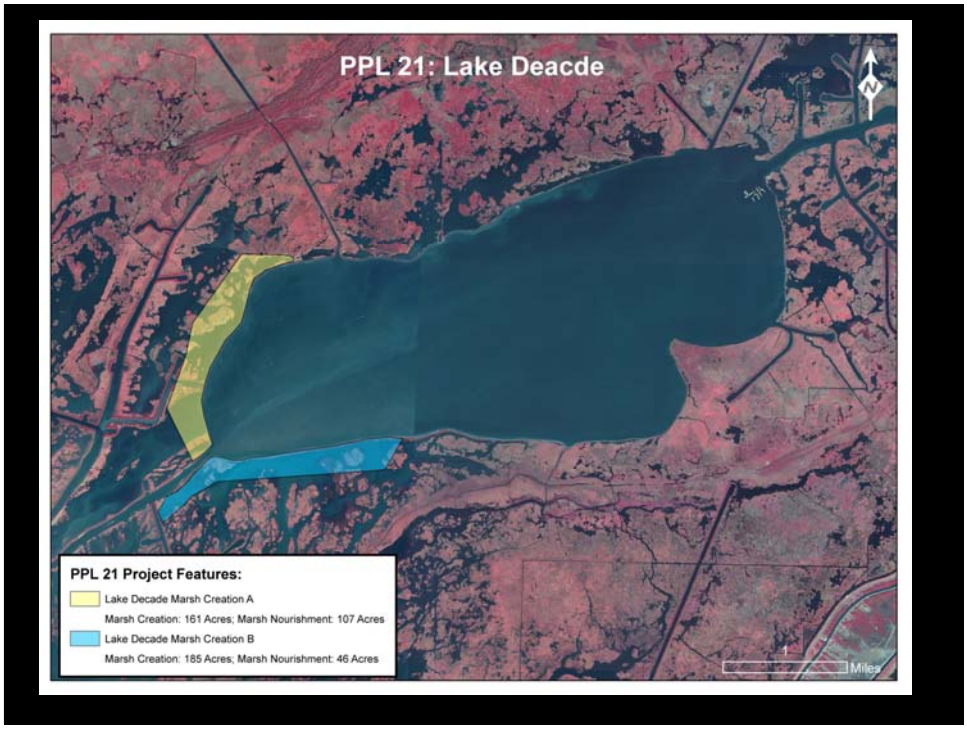
PPL26 Region 2 RPT, January 27, 2016

Kimberly Clements
National Marine Fisheries Service

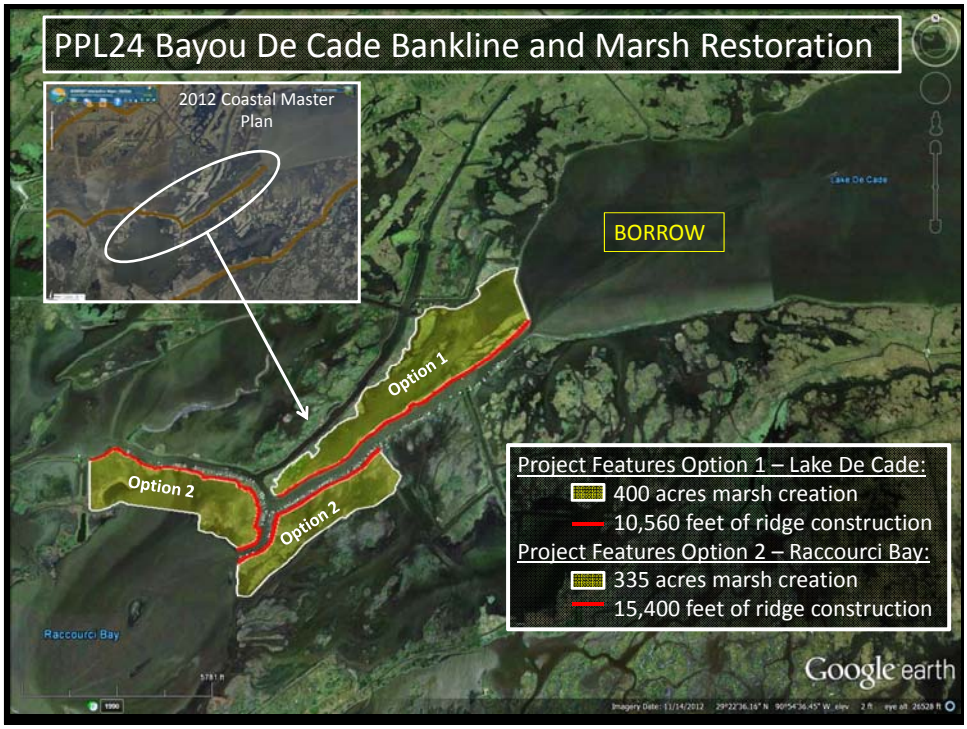
Problems near Bayou De Cade Area:

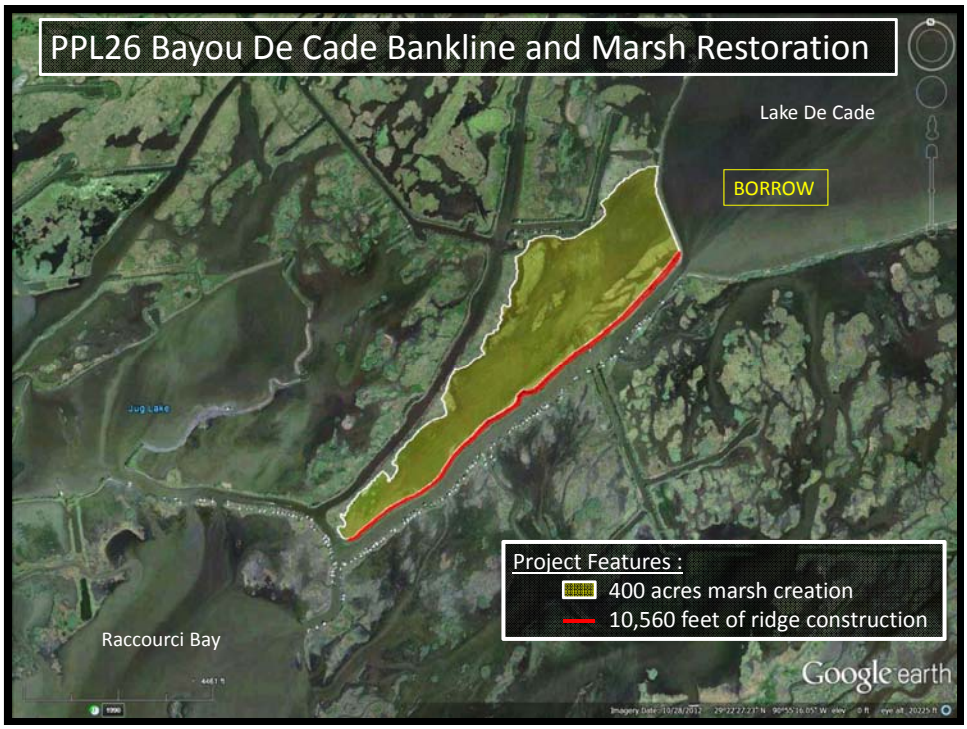
- High Land Loss rates in Terrebonne Basin, 20% since 1932 and currently 4,000-6,500 acres lost per year
- Wetland Loss Rate for the Lake Mechant subunit is -0.45%/year (USGS)
- High Subsidence in the area, 0.5 ft/20 yr, 2012 SMP Appendix C (mod rate of 8.8 mm/yr)
- Reduced “intermediate/brackish” habitat for fisheries in the overall area




PPL 21: Lake Deacde
N
PPL 21 Project Features:
Lake Decade Marsh Creation A
Marsh Creation: 161 Acres; Marsh Nourishment: 107 Acres
Lake Decade Marsh Creation B
Marsh Creation: 185 Acres; Marsh Nourishment: 46 Acres
1
Miles


Louisiana 2012 Coastal Master Plan
Table of Contents


PPL24 Bayou De Cade Bankline and Marsh Restoration
2012 Coastal Master Plan
BORROW
Option 1
Option 2
Option 2
Project Features Option 1 – Lake De Cade:
400 acres marsh creation
10,560 feet of ridge construction
Project Features Option 2 – Raccourci Bay:
335 acres marsh creation
15,400 feet of ridge construction
Raccourci Bay
Google earth


PPL26 Bayou De Cade Bankline and Marsh Restoration
Lake De Cade
BORROW
Project Features :
400 acres marsh creation
10,560 feet of ridge construction
Raccourci Bay
Google earth

Project Features and Benefits

- Total habitat restored = 418 acres, including 400 acres of marsh 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-11

Terrebonne Floating Marsh Restoration

TE-11

PPL26 PROJECT NOMINEE FACT SHEET
January 26, 2016

Project Name
Terrebonne Floating Marsh Restoration

Project Location
Region 3, Terrebonne Basin, Terrebonne Parish

Problems
- Floating marsh mat fragmentation north of GIWW due to high water and wave energy
- Floating marsh mat fragmentation south of GIWW due to excessive water flow from GIWW
- Fragmented marsh mat exported thru bank failures via water movement and "dragging" by water hyacinth rafts
- Water hyacinth rafts over-topping and smothering marsh mat
- Reduced SAV due to turbidity, wave energy, and excessive water exchange

Goals
- Create floating marsh acres, create a "platform" upon which "self-sustaining" floating marsh would form, and create an environment for expansion of existing floating marsh
- Eliminate the export of fragmented marsh mat thru bank failures
- Reduce the movement of "free-floating" hyacinth rafts that tend to break existing floats apart and drag them out of the marsh complex
- Reduce Wave Action to Protect Existing Floating Marsh
- Reduce fetch, wave energy, and turbidity which would improve conditions for growth of submerged aquatic vegetation. SAV provides additional protection for floating marsh by reduce wave energy.

Proposed Solution
The following features would be utilized to restore the integrity and productivity of floating marsh / SAV complex in the project area.
- 164,000 LF of Floating Marsh Terraces
- 160 acres of Water Hyacinth Fields
- 33,600 LF of Bank Maintenance
- 2,220 LF of Bank Breach Repair
- 1,600 LF of Bank Stabilization
- 73 Acres Marsh Creation Platform

Preliminary Project Benefits
1) What is the total acreage benefited both directly and indirectly? Not yet determined.

2) How many acres of wetlands will be protected/created over the project life? Not yet determined..

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)?* Not yet determined.

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 the integrity and productivity of floating marsh / SAV complex in northern Terrebonne

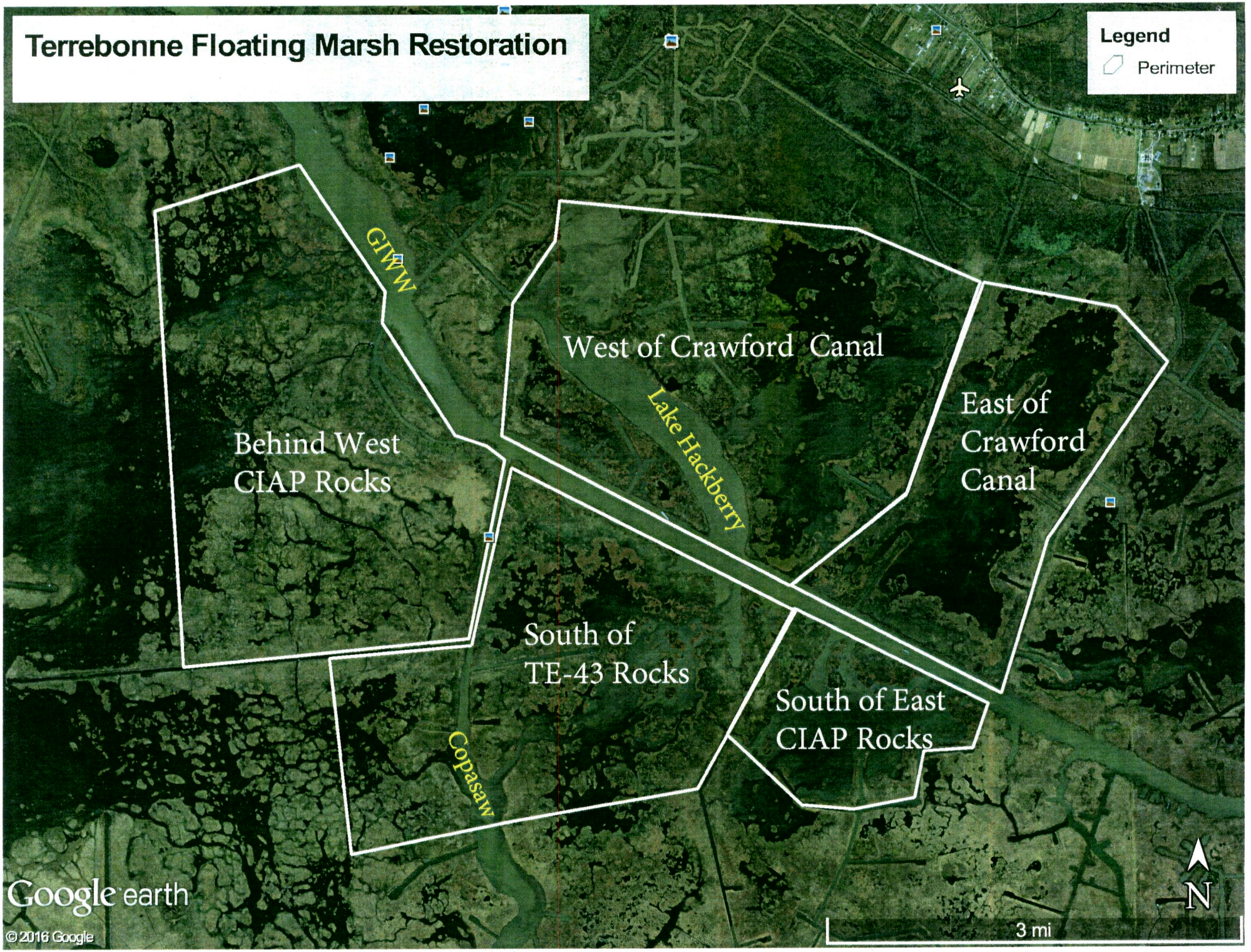
5) What is the net impact of the project on critical and non-critical infrastructure? This project would buffer the effect of tropical weather events for the communities of Gibson and Bayou Black which lie to the north.

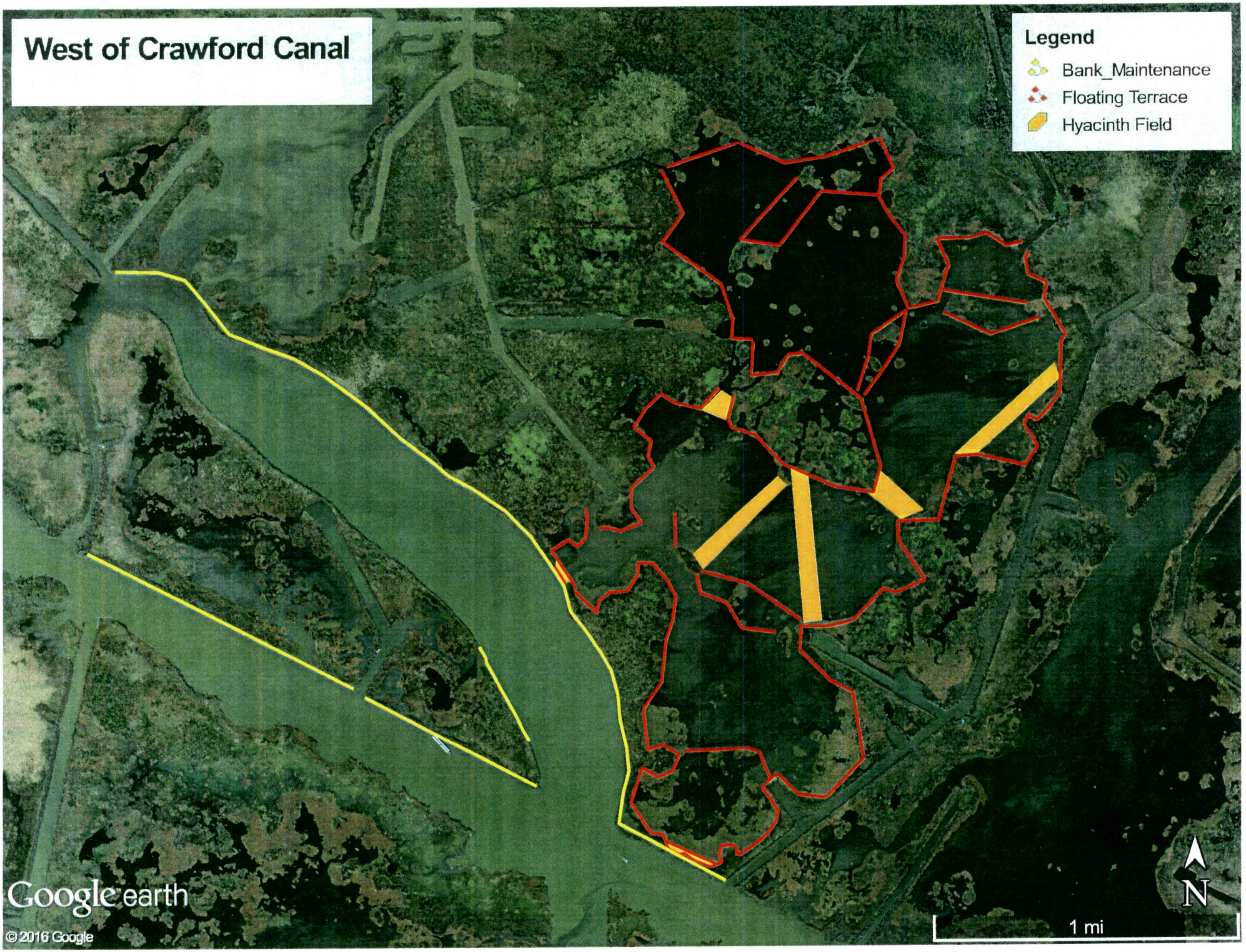
6) To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects? This project would enhance the effectiveness of the CWPPRA TE-43 and two CIAP GIWW bank protection projects. The project would also complement the TE-110 (Increase Atchafalaya Flow to Eastern Terrebonne) project.

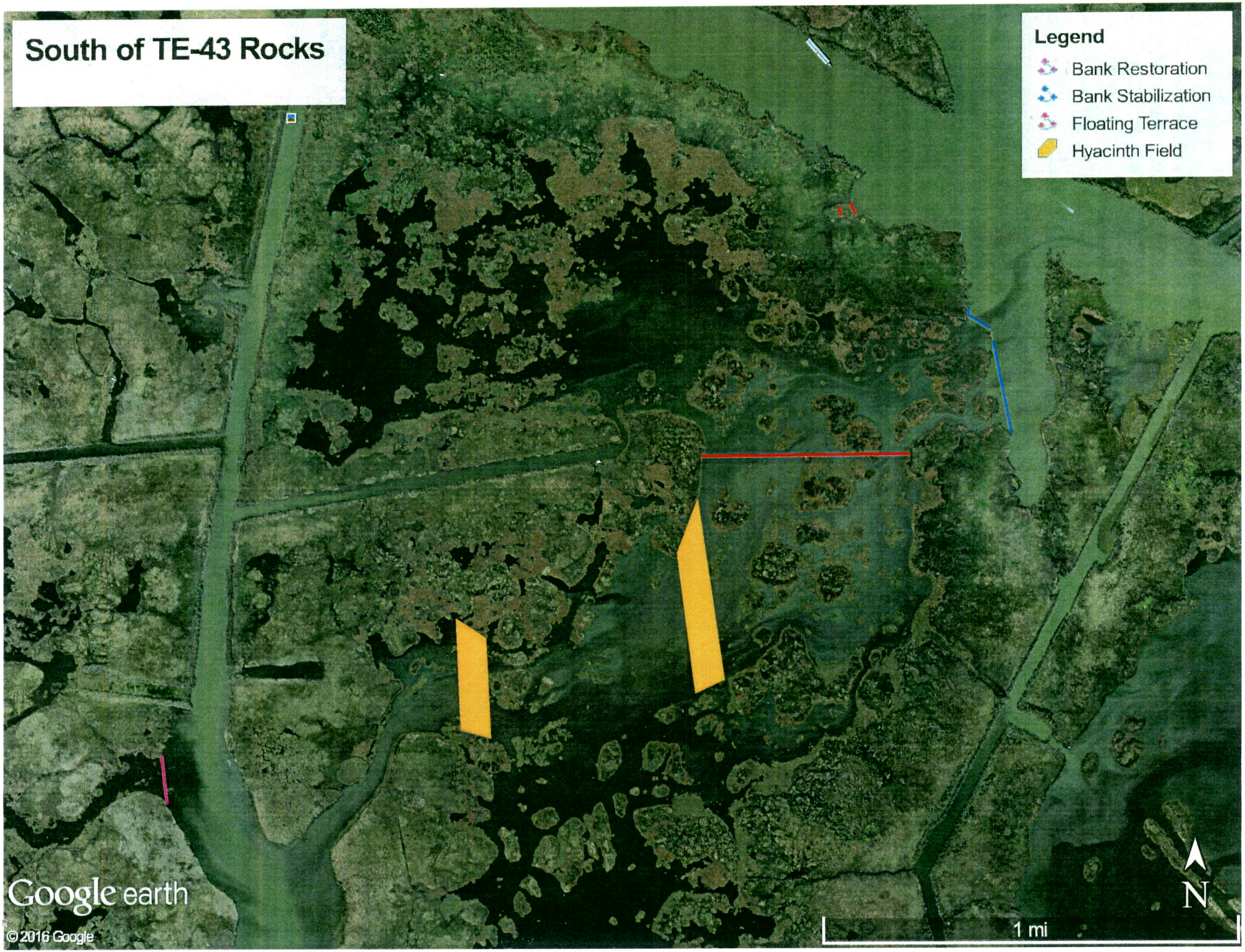
Identification of Potential Issues
Because of the challenges posed by the highly organic soils, there is uncertainty about success of traditional marsh creation in floating marsh areas. Therefore, this proposal includes some non-traditional marsh creation features as well as other features that would protect, restore, and enhance the floating marsh complex in this area.

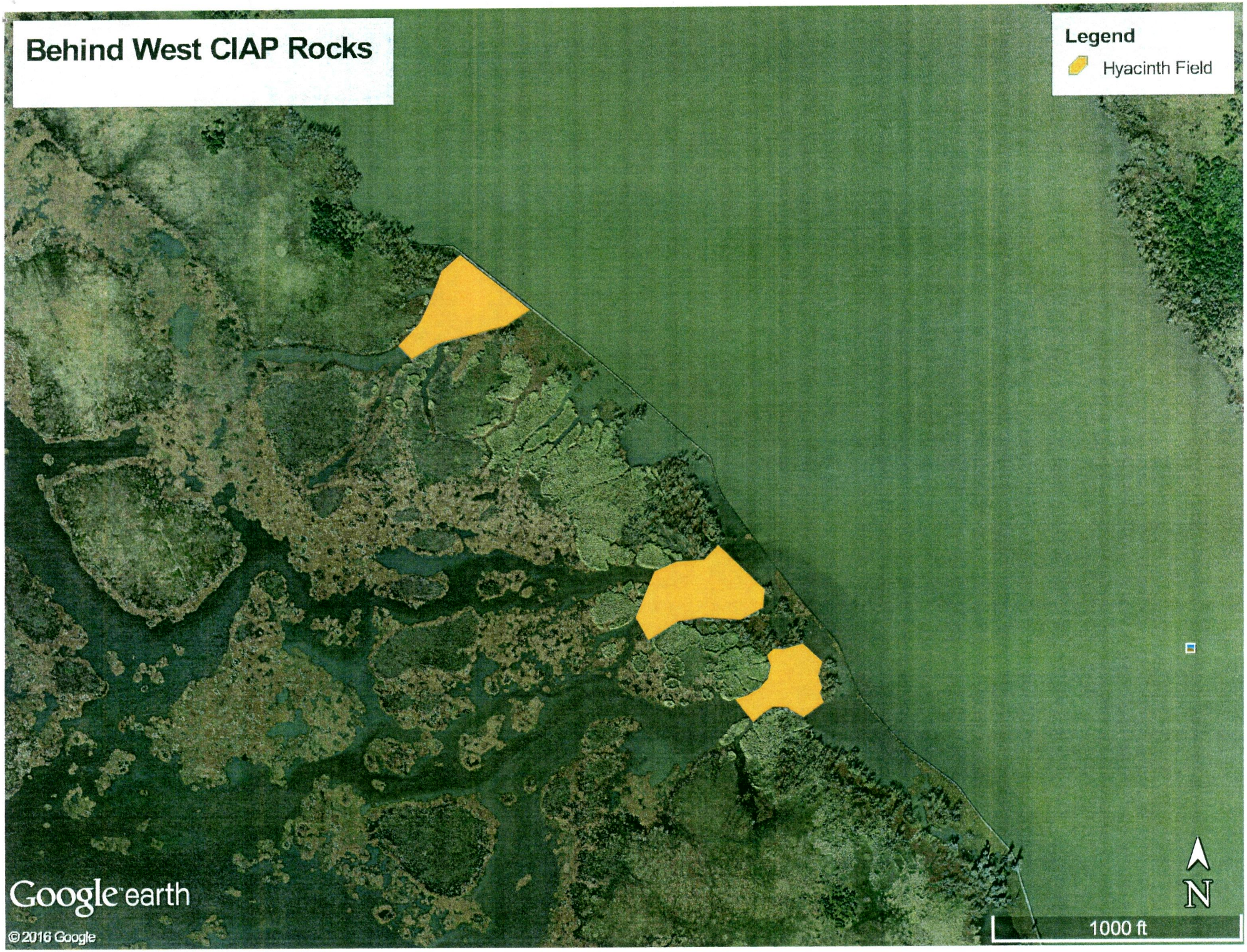
Preliminary Construction Costs
$29 Million ($36 Million with 25% contingency)

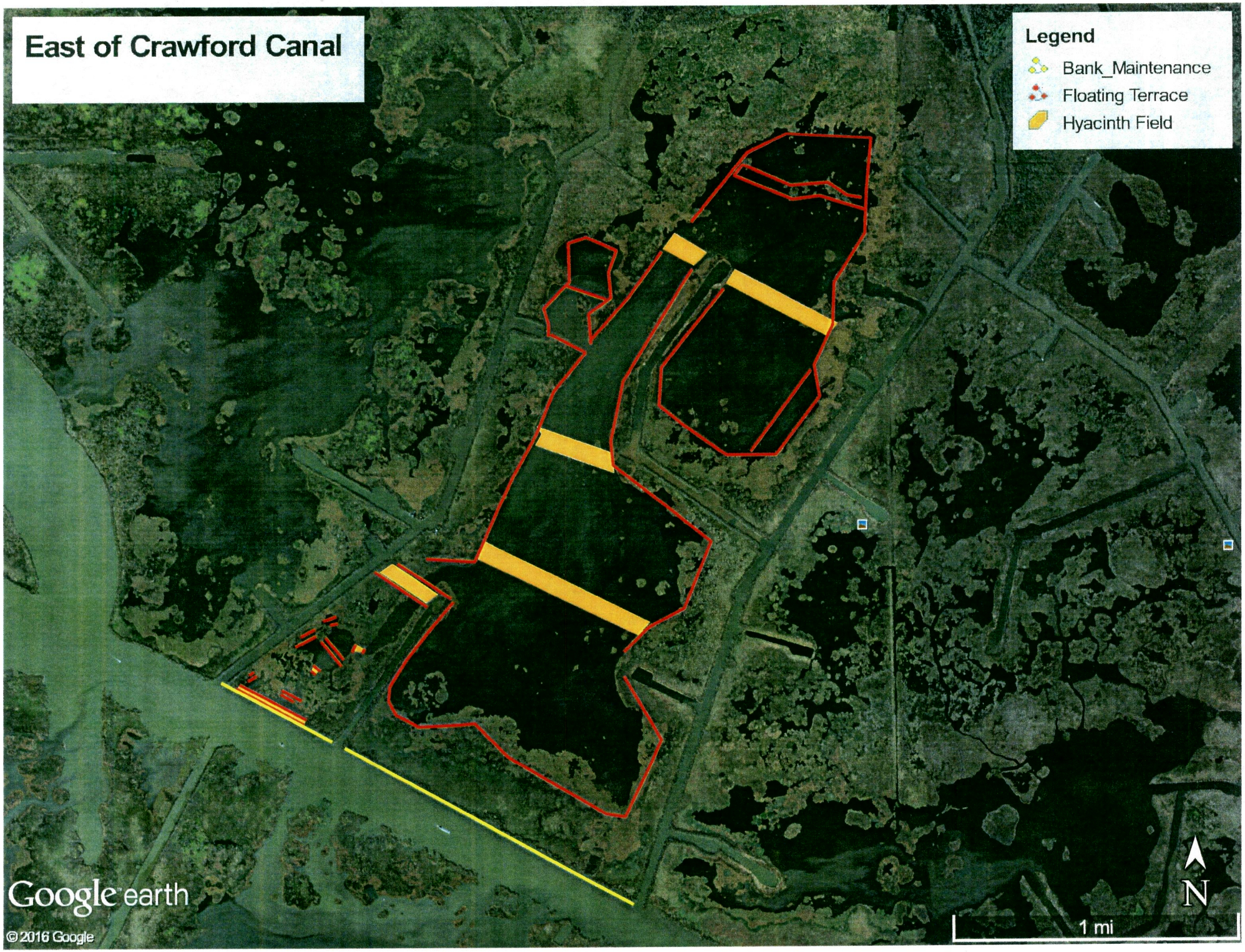
Preparers of Fact Sheet:
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Cody Colvin, USDA-NRCS, 225-665-4253 ext 109, cody.colvin@la.usda.gov

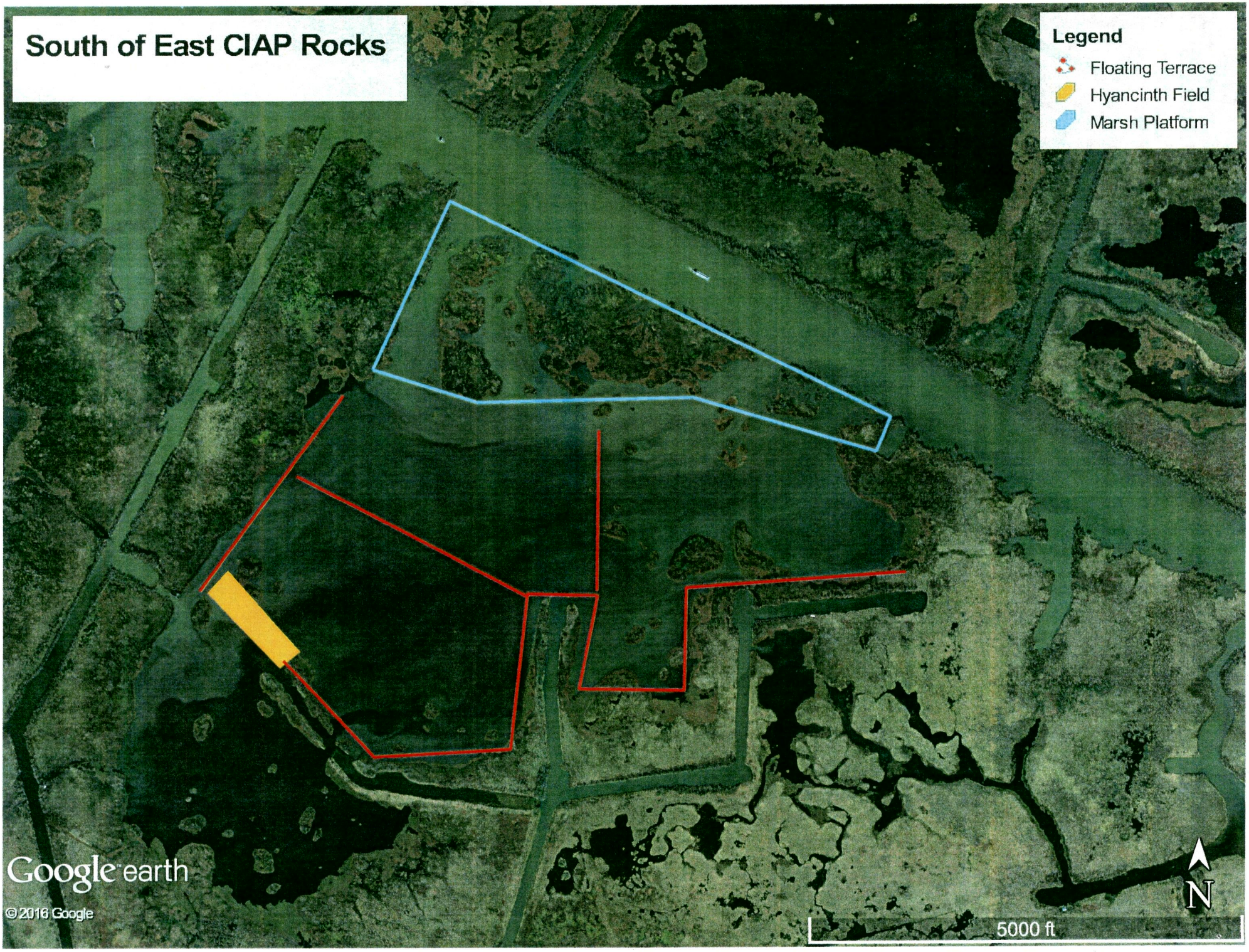

Terrebonne Floating Marsh Restoration
Legend
Perimeter
GIWW
West of Crawford Canal
Lake Hackberry
East of Crawford Canal
Behind West CIAP Rocks
South of TE-43 Rocks
South of East CIAP Rocks
Copasaw
Google earth
© 2016 Google
N
3 mi


West of Crawford Canal
Legend
Bank_Maintenance
Floating Terrace
Hyacinth Field
Google earth
© 2016 Google
N
1 mi


South of TE-43 Rocks
Legend
Bank Restoration
Bank Stabilization
Floating Terrace
Hyacinth Field
Google earth
© 2016 Google
1 mi
N


Behind West CIAP Rocks
Legend
Hyacinth Field
Google earth
© 2016 Google
N
1000 ft


East of Crawford Canal
Legend
Bank_Maintenance
Floating Terrace
Hyacinth Field
Google earth
© 2016 Google
N
1 mi


South of East CIAP Rocks
Legend
Floating Terrace
Hyancinth Field
Marsh Platform
Google earth
© 2016 Google
N
5000 ft

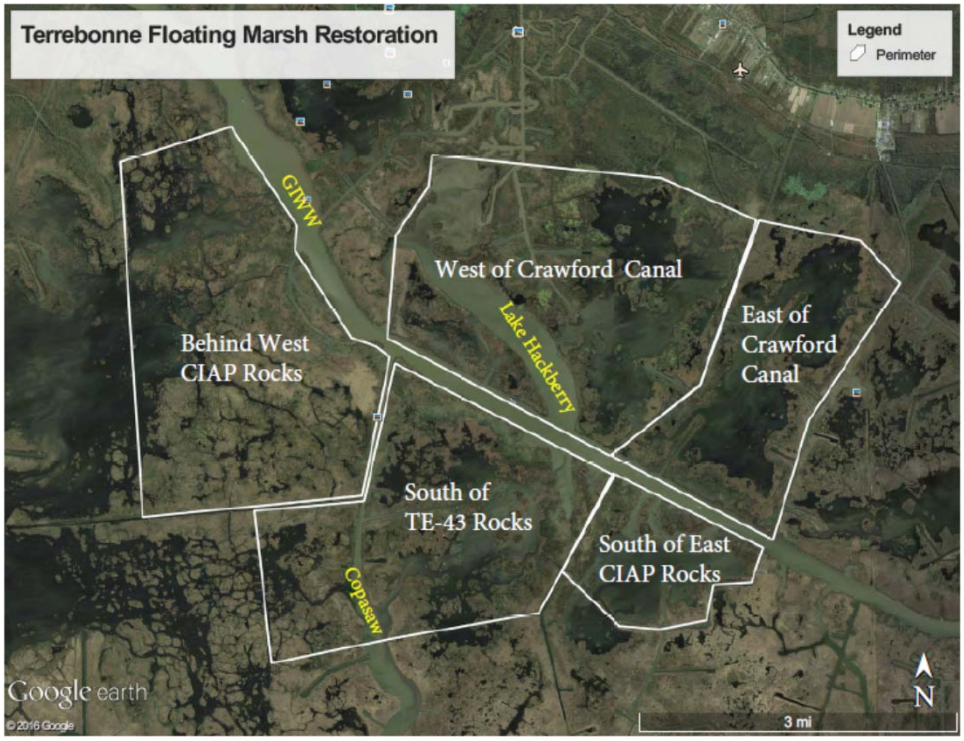
PPL 26
Regional Planning Team
January 27, 2016

Region 3
Terrebonne Basin

Terrebonne Floating Marsh Restoration

Factors Detrimental to Floating Marshes and Associated SAV in Terrebonne

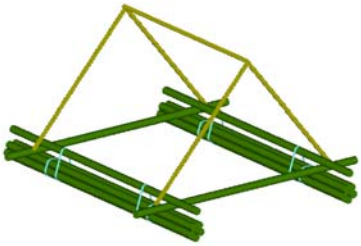
- Floating Marsh Mat Fragmentation north of GIWW due to High Water and Wave Energy
- Floating Marsh Mat Fragmentation south of GIWW due to Excessive Water Flow from GIWW
- Fragmented Marsh Mat Exported thru Bank Failures via Water Movement and "Dragging" by Water Hyacinth Rafts
- Water Hyacinth Rafts Over Topping and Smothering Marsh Mat
- Reduced SAV due to Turbidity, Wave Energy, and Excessive Water Exchange

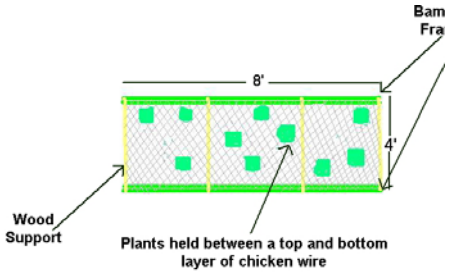


Project Features

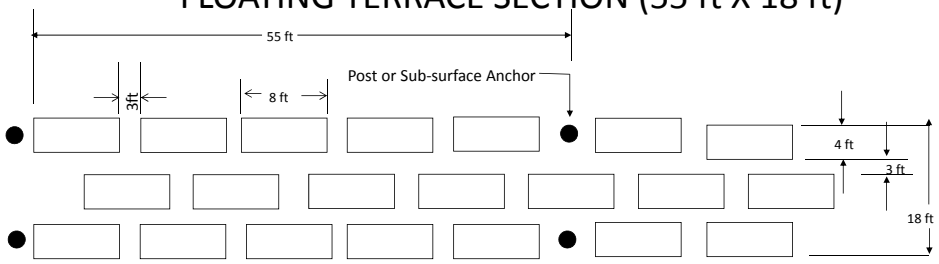
- ❑ Bank Features
  - •Breach Repairs
  - •Bank Maintenance
  - •Bank Stabilization
- ❑ Floating Marsh Terraces
- ❑ Water Hyacinth Fields
- ❑ Creation of Marsh Platform

FLOATING MAT UNIT (Design Based on CWPPRA LA-05)



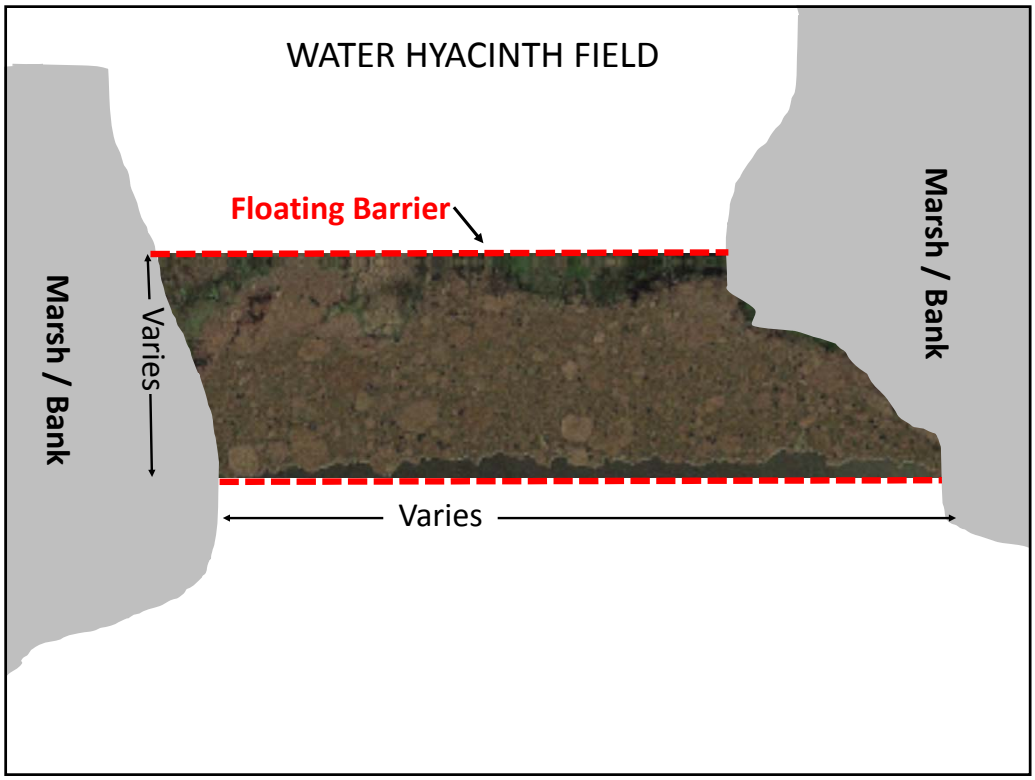


FLOATING TERRACE SECTION (55 ft X 18 ft)



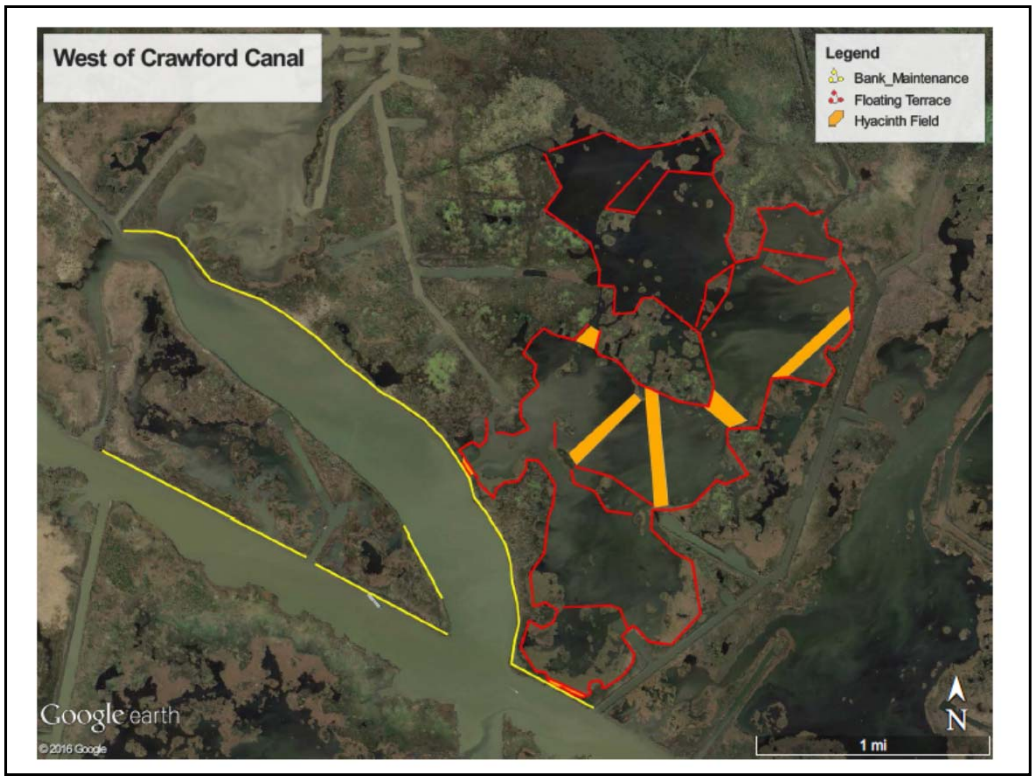
FLOATING MARSH TERRACES

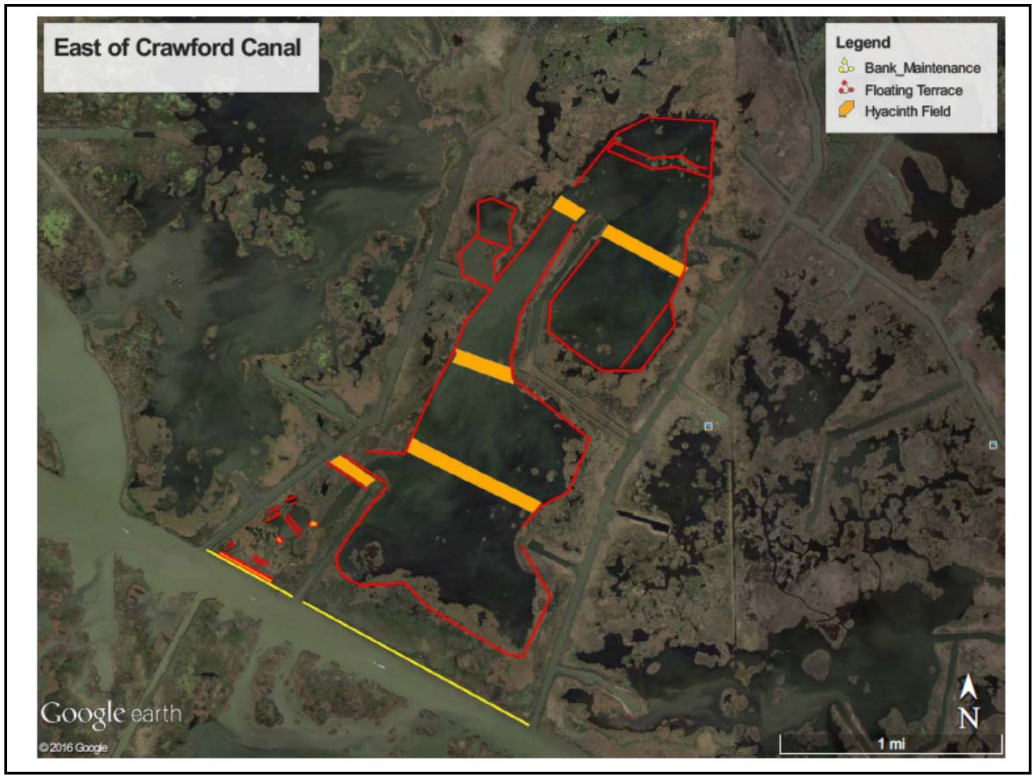
- Create Floating Marsh Acres
- Reduce Wave Action to Protect Existing Floating Marsh
- Create Environment for Expansion of Existing Floating Marsh

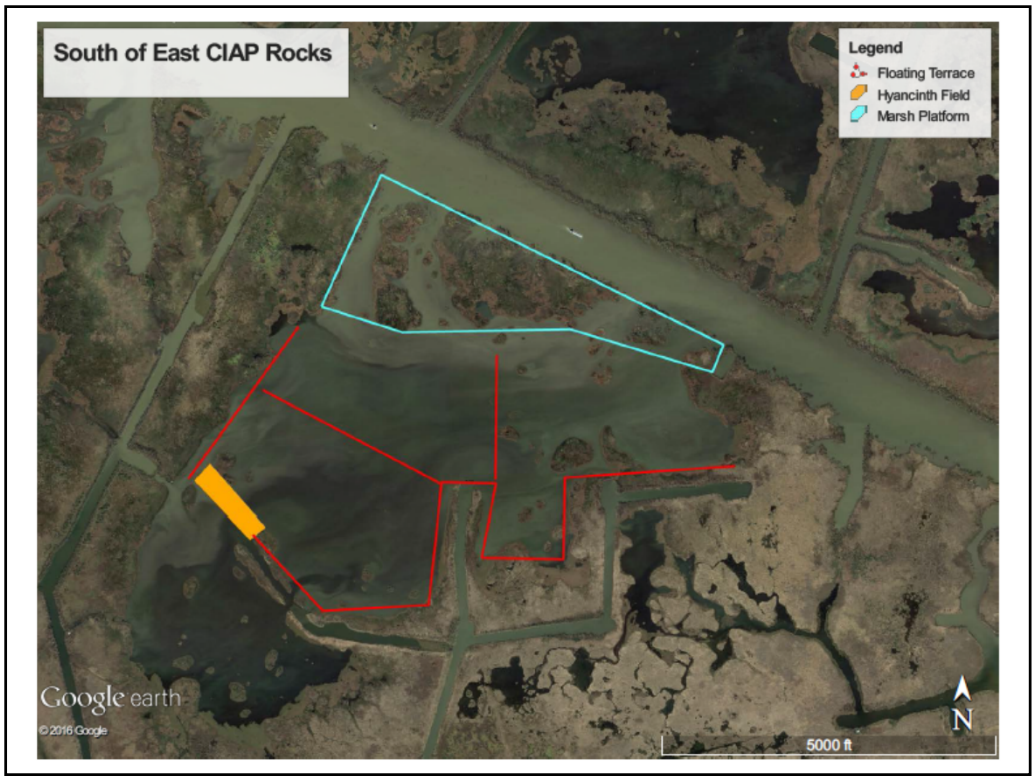


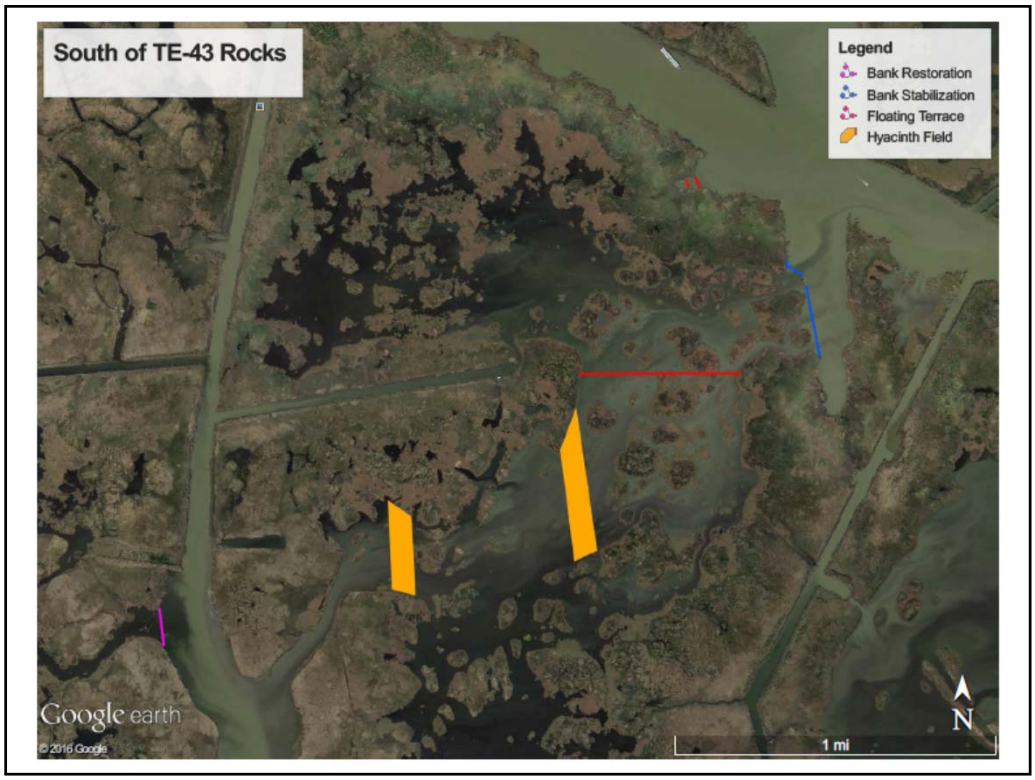
WATER HYACINTH FIELDS

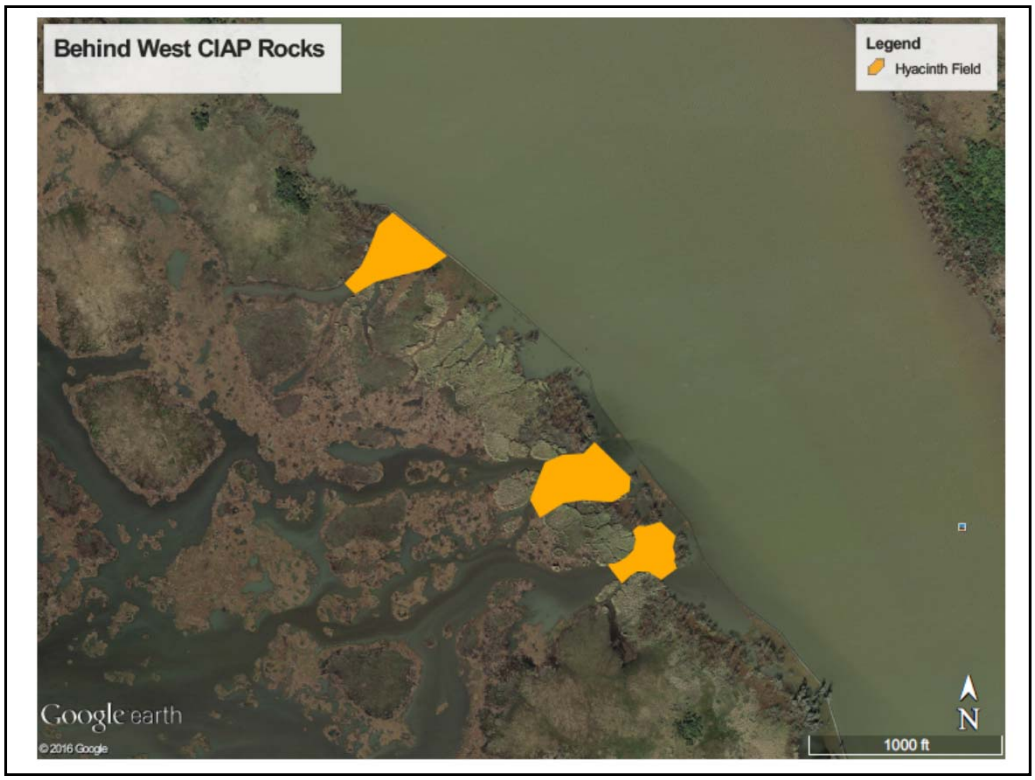
- Potentially create a "platform" upon which "self-sustaining" floating marsh would form
- Reduce the movement of "free-floating" hyacinth rafts that tend to break existing floats apart and drag them out of the marsh complex
- Reduce fetch and wave energy which would better allow the "floating terraces" to grow and spread
- Reduce fetch, wave energy, and turbidity which would improve conditions for growth of submerged aquatic vegetation.


West of Crawford Canal
Legend
Bank_Maintenance
Floating Terrace
Hyacinth Field
Google earth
© 2016 Google
1 mi
N


East of Crawford Canal
Legend
Bank_Maintenance
Floating Terrace
Hyacinth Field
Google earth
© 2016 Google
1 mi
N


South of East CIAP Rocks
Legend
Floating Terrace
Hyancinth Field
Marsh Platform
Google earth
© 2016 Google
5000 ft
N


South of TE-43 Rocks
Legend
Bank Restoration
Bank Stabilization
Floating Terrace
Hyacinth Field
Google earth
© 2016 Google
1 mi
N



Terrebonne Floating Marsh Restoration

- 164,000 LF of Floating Marsh Terraces
- 160 acres of Water Hyacinth Fields
- 33,600 LF of Bank Maintenance
- 2,220 LF of Bank Breach Repair
- 1,600 LF of Bank Stabilization
- 73 Acres Marsh Creation Platform

$ 29M ($36M w/ 25% contingency)

R3-TE-12

Bayou Terrebonne Freshwater Diversion

PPL26 PROJECT NOMINEE FACT SHEET

PPL-26 Region 3 RPT Meeting
January 27, 2016

Project Name:
Bayou Terrebonne Freshwater Diversion Project

State Master Plan Strategy
03b.DI.04 Increase Atchafalaya Flow to Eastern Terrebonne

Project Location:
Region 3, Terrebonne Basin, Terrebonne Parish, Bayou Terrebonne, Montegut Unit, PAC WMA

Problem:
The Central and Eastern Terrebonne marshes are greatly deprived of freshwater, nutrients and sediments from riverine sources. Consequently, subsidence and saltwater intrusion have resulted in high rates of land loss. More recently, efforts have been underway to try to optimize freshwater flows to some of these areas where possible; however, the sources of freshwater are greatly limited. The Gulf Intracoastal Waterway (GIWW) has been recognized as a lateral source of freshwater from the Atchafalaya River extending from west to east across the entire Terrebonne Basin. This resource provides the potential to reroute freshwater through the bayous to the Central and East Terrebonne marshes.

Goals:
To convey freshwater, nutrients and sediments from the Atchafalaya River east via the GIWW and Bayou Terrebonne into the Central and Eastern Terrebonne marshes.

Proposed Solutions:
The project will construct a freshwater diversion to move freshwater, nutrients and sediments originating largely from the Atchafalaya River via the GIWW and Bayou Terrebonne into the Montegut Unit and Pointe aux Chenes marshes in Central and Eastern Terrebonne Parish. The project will include rerouting water from Bayou Terrebonne through an existing canal system where a series of forced drainage pumps will be used to move freshwater into two adjacent marsh complexes. Approximately 26,300 linear feet of terraces will be constructed in the Montegut Unit to offset losses to the area.

Preliminary Project Benefits:
1) What is the total acreage benefited both directly and indirectly? The benefits from this project will be generated from the positive effects of additional nutrients and sediment introduced to a highly deprived marsh area and concurrently reduce salinities to promote more vigorous plant production. Approximately 6022 acres of marsh would indirectly benefit from the project. The project would create approximately 95 acres of marsh through terraces and freshwater introduction.

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 95 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%). Preliminary model estimates are that the project would reduce land loss by approximately 17% (<25% category).

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. None identified.

5) What is the net impact of the project on critical and non-critical infrastructure? The target restoration area is adjacent to the protection levy system.

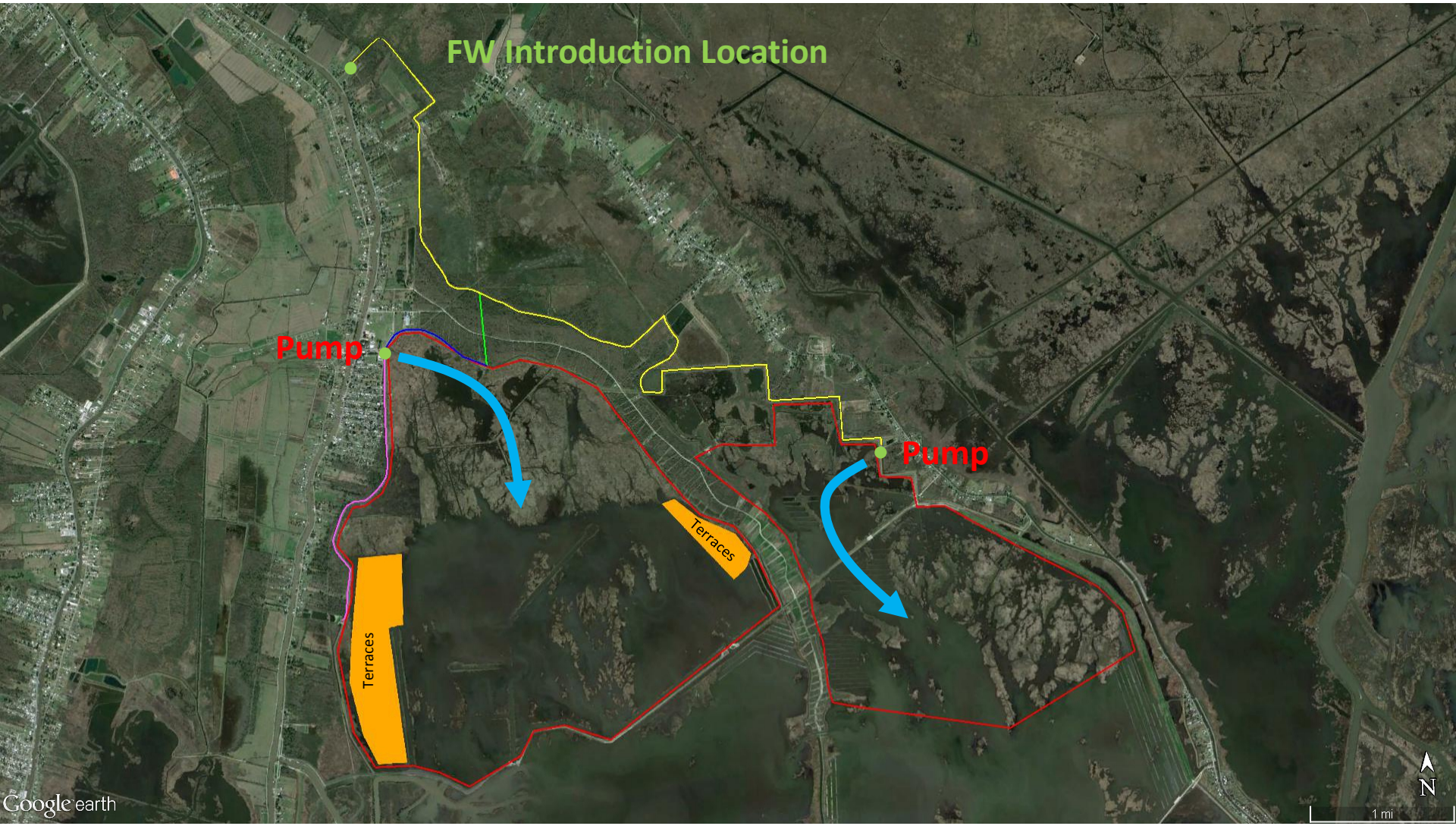
6) To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects? None identified

Identification of Potential Issues:
The proposed project has the following potential issues: None identified

Preliminary Construction Costs:
The estimated construction cost including 25% contingency is $10.4M.

Preparer(s) of Fact Sheet:
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PPL 26 - Bayou Terrebonne Freshwater Diversion Project



R3-TE-13

South Bayou Pointe aux Chenes Marsh Creation and Terraces

TE-13

PPL26 PROJECT FACT SHEET
January 27, 2016

Project Name
South Bayou Pointe aux Chenes Marsh Creation and Terraces

Project Location
Region 3, Terrebonne Basin, Terrebonne Parish, South Bayou Pointe aux Chenes near Lake Billiot

Problem
The eastern side of Terrebonne Basin is significantly isolated from the riverine influences of the Mississippi and Atchafalaya Rivers. Consequently, both subsidence and erosion of shorelines have occurred at some of the highest rates in Louisiana. The peripheral marshes surrounding Terrebonne Bay have experienced significant erosion and the interior marsh has also succumbed to several large ponds that tend to expand and accelerate erosion.

The State has identified this region as a priority in the master plan. Some locations within the State Master Plan marsh creation polygons consist of broad open water areas that are not feasible by conventional marsh creation approaches.

Goals
The goal of the project is to strategically create marsh and reduce interior erosion/subsidence by creating marsh and terraces to stabilize the area and prevent further expansion of large shallow open water area and loss of adjacent marshes.

Proposed Solution
Project would create approximately 231 acres of marsh in the form of a series of island cells surrounded by 25,967 linear feet of terraces. Total project area is about 1200 acres. This project will utilize an innovative solution to addressing larger open water areas by combining marsh creation and terraces to collectively stabilize the broader area. Placement of fill material in the form of islands optimizes the use of imported material toward marsh creation and provides an anchor to increase the effectiveness of the in-situ terrace construction. It also allows the restoration effort to impact a much broader area than conventional marsh creation designs.

Preliminary Project Benefits

1) *What is the total acreage benefited both directly and indirectly?* The total acreage benefited directly and indirectly would be approximately 1200 acres with 231acres of marsh creation and about 27.8 acres of terracres.

2) *How many acres of wetlands will be protected/created over the project life?* The net acres of wetlands created/protected over the project life is estimated at 240 acres with 218 acres marsh creation and 22 acres of terraces.

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 over the project life is 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 will provide protection to the Bayou Pointe aux Chenes ridge.

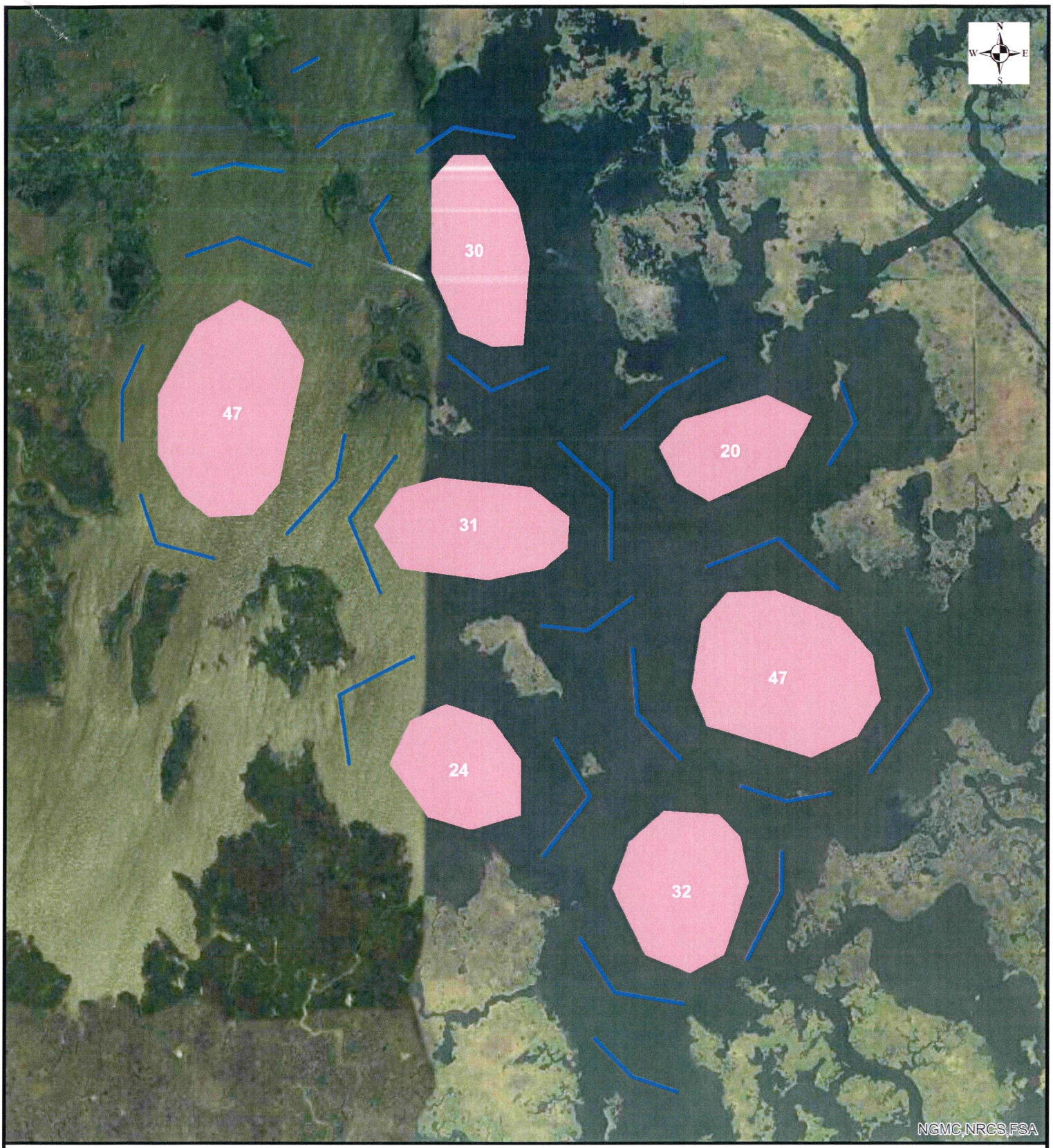
5) *What is the impact of the project on critical and non-critical infrastructure?* The project will reestablish marsh in a broad area of loss that has converted to shallow water.

6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?* There are no projects in the immediate area.

Identification of Potential Issues
The proposed project has the following potential issues: oyster leases

Preliminary Costs
The estimated construction cost including 25% contingency is $19.2 million.

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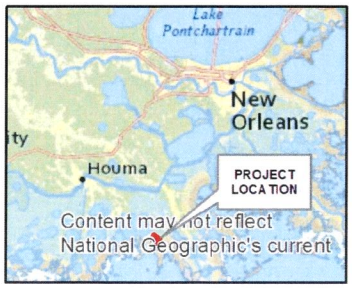


USDA

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

Data Source: NAIP 2013

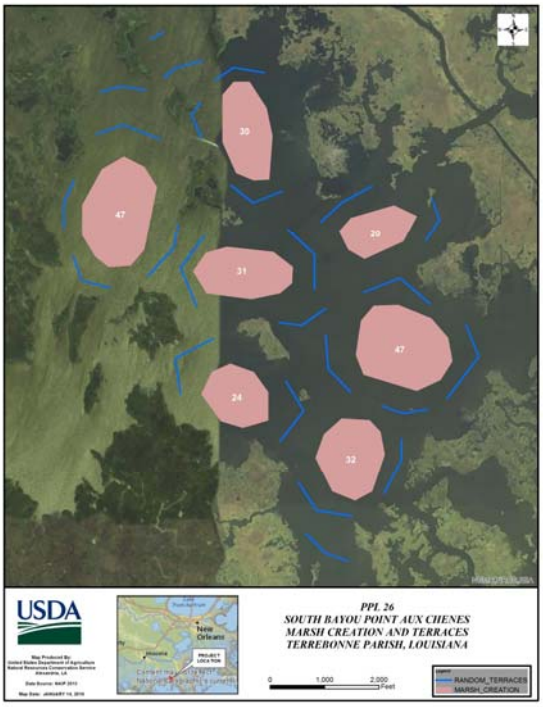
Map Date: JANUARY 14, 2016



PPL 26
SOUTH BAYOU POINT AUX CHENES
MARSH CREATION AND TERRACES
TERREBONNE PARISH, LOUISIANA

0 1,000 2,000 Feet

Legend
RANDOM_TERRACES
MARSH_CREATION



South Bayou Pointe aux Chenes Marsh Creation and Terraces

Project Objectives:
1) Create marsh
2) Reduce expansion/erosion
3) Improve habitat/edge
4) Good cost/benefit in terms total area of impact

Benefits:
231 acres of marsh creation
26,000 linear ft of terraces

Cost:
Construction + 25% = $19.2M

R3-TE-14

North Bayou DeCade Ridge Restoration

TE-H

North Bayou Decade Ridge and Marsh Creation

PPL-26 Region 3 RPT Meeting
January 27, 2016

State Master Plan Strategy
03a.Rc.01 Bayou DeCade Ridge Restoration

Project Location:
Region 3, Terrebonne Basin, Terrebonne Parish, North Bayou Decade

Problem:
The marshes along Bayou Decade have deteriorated dramatically over the past few decades. Coastal restoration actions have focused on improving hydrologic conditions in the area to reduce salinities and improved freshwater flows from the Atchafalaya River. Significant improvements have been made yet there are some areas of large open water that are slow to improve. Marsh creation would rapidly recover marshes along with protection afforded by elevation of ridge features on the north bank of the bayou.

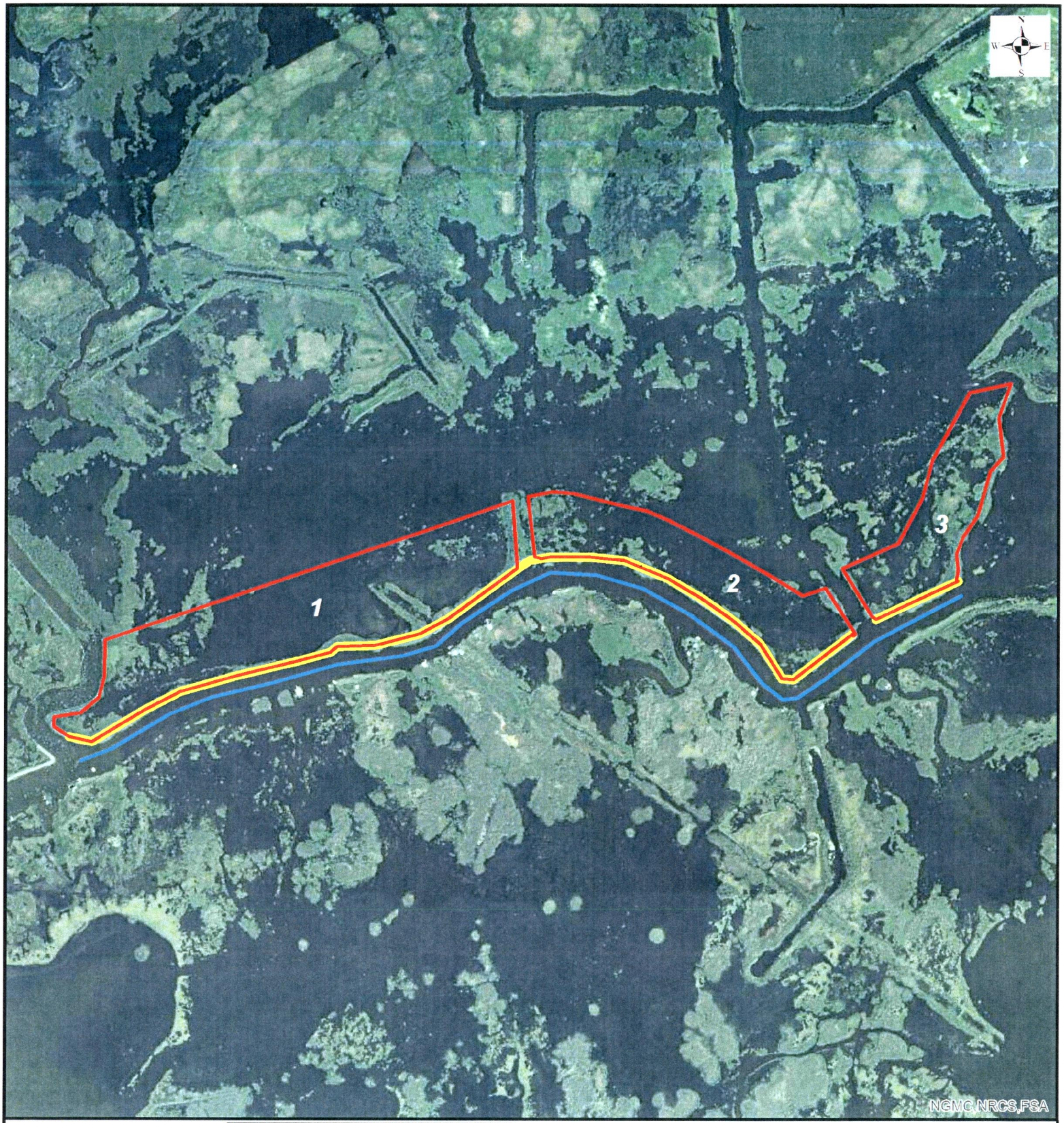
Goals:
The goal of the project is to create a ridge feature on the north bank of Bayou Decade and create marsh in a vast expanse of open water where marsh used to exist.

Proposed Solutions:
Sediments will be hydraulically dredged from Lake Mechant and pumped via pipeline to create approximately 247 acres of marsh habitat and in situ material will be excavated to create a ridge feature.

Project Benefits:
The project would result in approximately 247 acres marsh created and 12,000 linear feet of ridge habitat.

Project Costs:
Estimated construction cost is approximately $19 million.

Preparer(s) of Fact Sheet:
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Cody Colvin, NRCS, planning engineer, cody.colvin@la.usda.gov



USDA

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

Data Source: NAIP 2013

Map Date: JANUARY 19, 2016

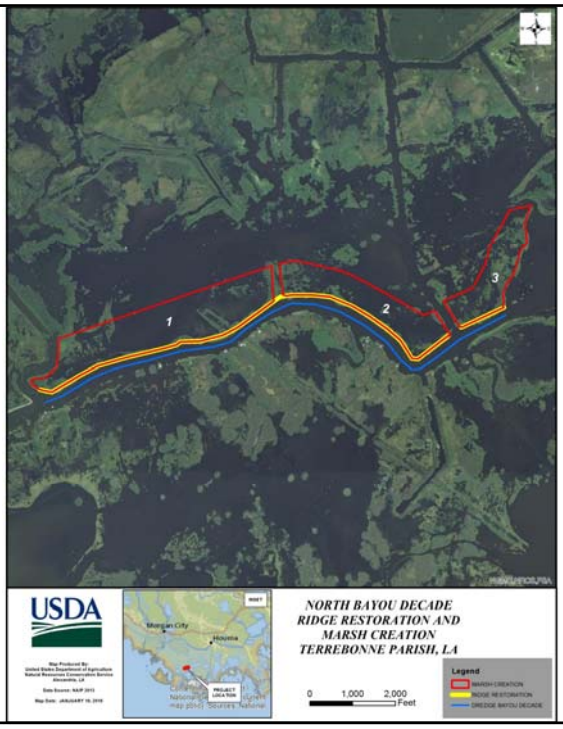


NORTH BAYOU DECADE RIDGE RESTORATION AND MARSH CREATION TERREBONNE PARISH, LA

0 1,000 2,000 Feet

Legend

- MARSH CREATION
- RIDGE RESTORATION
- DREDGE BAYOU DECADE



North Bayou Decade
Ridge and Marsh Creation

Project Objectives:
1) Create ridge feature along north bank of Bayou Decade
2) Create marsh in large open water area where deteriorated

Benefits:
247 acres of marsh creation
12,000 linear ft of ridge

Cost:
Construction Costs + 25% = $19 million

R3-TE-15

South Catfish Lake Marsh Creation

TE-15

South Catfish Lake Marsh Creation

PPL-26 Region 3 RPT Meeting
January 27, 2016

State Master Plan Strategy
03a.MC.09b Belle Pass-Golden Meadow Marsh Creation

Project Location:
Region 3, Terrebonne Basin, Lafourche Parish, South of Catfish Lake and south side of Twin Pipelines.

Problem:
Eastern Terrebonne Basin is significantly isolated from the riverine influences of the Mississippi and Atchafalaya Rivers. Consequently, both subsidence and erosion of shorelines have occurred at some of the highest rates in Louisiana. The southern half of the Catfish Lake shoreline has experienced significant erosion and the interior marsh has also succumbed to several large ponds that tend to expand and accelerate erosion. The State has identified this region as a priority in the master plan.

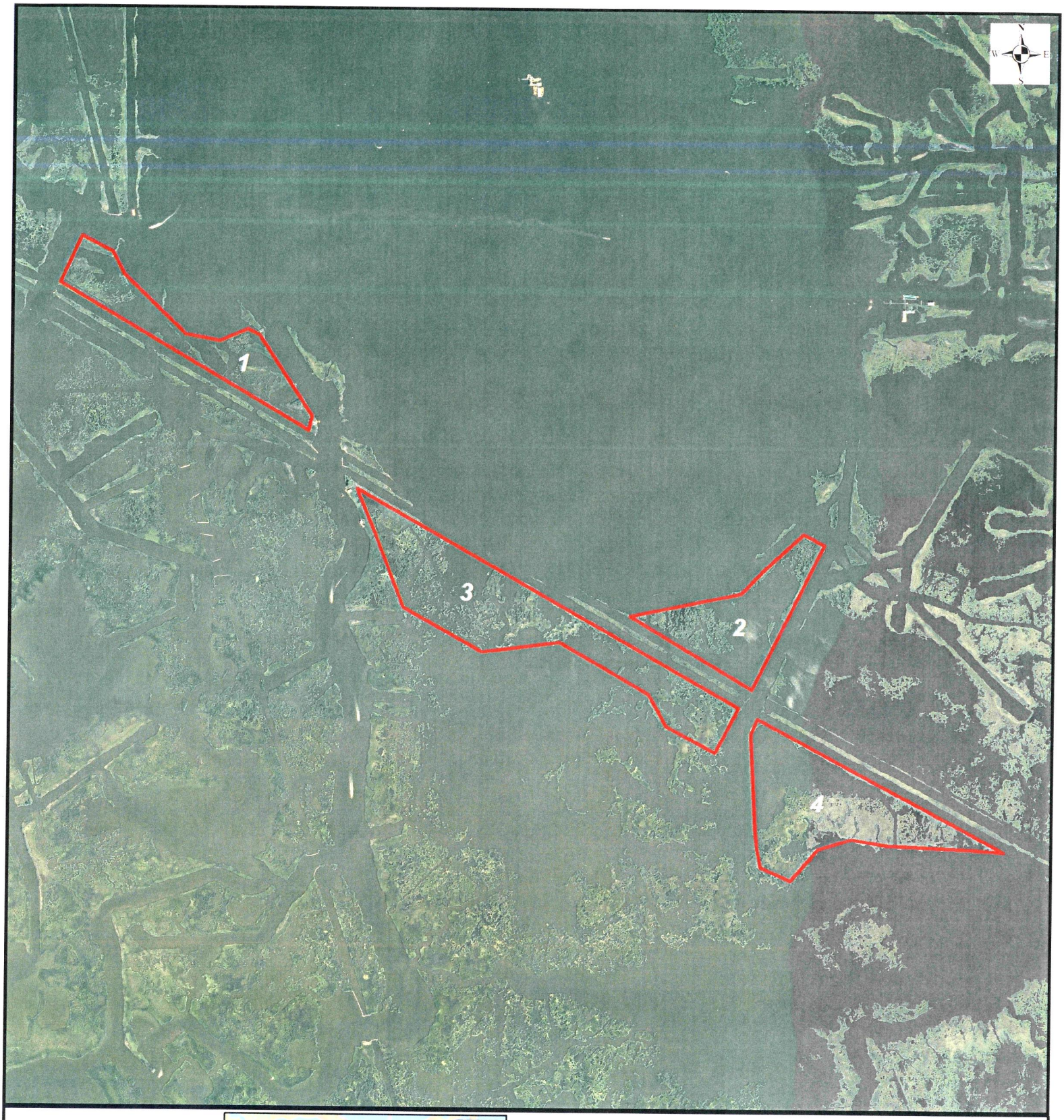
Goals:
The goal of the project is to strategically create marsh on the southern side of Catfish Lake to prevent further expansion into the adjacent marshes.

Proposed Solutions:
Sediments will be hydraulically dredged from Catfish Lake and pumped via pipeline to create approximately 225 acres of marsh habitat and nourish an additional 150 acres of marsh habitat.

Project Benefits:
The project would result in approximately 220 net acres over the 20 year project life.

Project Costs:
Estimated construction cost with 25% contingency is approximately $18 million.

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Cody Colvin, NRCS, planning engineer, cody.colvin@la.usda.gov

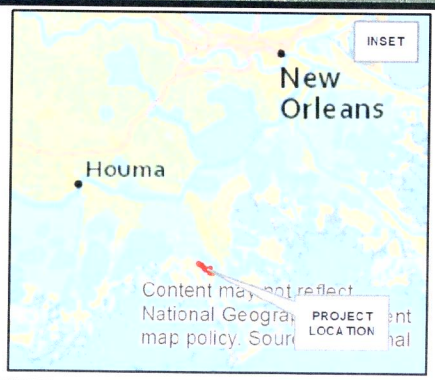


USDA

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

Data Source: NAIP 2013

Map Date: JANUARY 21, 2016



SOUTH CATFISH LAKE MARSH CREATION LAFOURCHE PARISH, LA

0 1,200 2,400 Feet

Legend

MARSH CREATION



South Catfish Lake
Marsh Creation

Project Objectives:
1) Create marsh along the southern periphery of Catfish Lake
2) Maintain the integrity of the lake rim and adjacent marshes

Benefits:
225 acres of marsh creation
150 acres of marsh nourishment

Cost:
Construction Costs + 25% =
$18 million

Note: borrow from Catfish Lake

R3-TE-16

Grand Bayou Freshwater Enhancement

TE-16

PPL26 PROJECT NOMINEE FACT SHEET
January 27, 2016

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 and a rock dike that prevents water from lowing to the west.

Goals
The primary goal of this project is to increase the flow of fresh water from the GIWW down Grand Bayou Canal. That increase in 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; and 2) redirect much of the freshwater from Grand Bayou Canal into the marshes east and west of Grand Bayou Canal.

Service goals include the creation of habitat or improvement of habitat for rare species, species of concern, and threatened and endangered species. The creation of and improvement of over 26,000 acres of intermediate and brackish intertidal marsh habitat would be beneficial to several species that are currently on the lists of rare species and species of concern. These include, but are not limited to Least Bittern, Black Rail, Mottled Duck, Brown Pelican, King Rail, Louisiana Eyed Silkmoth, Bald Eagle, Osprey, and Saltwater topminnow.

Proposed Solution
This project would increase the Grand Bayou cross-section and increase the flow of freshwater from an average of 628 cfs to 1,604 cfs with the use of a bucket dredge. Material dredged from the channel would be placed along the existing shoreline embankment. 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 over 26,000 ac.

2) *How many acres of wetlands will be protected/created over the project life?*
Approximately 568 acres of intertidal marsh habitat will be enhanced 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?* The artificial levee ridge along the Grand Bayou Canal and Bayou would be maintained.

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: Utility relocation.

Preliminary Construction Costs

The estimated construction cost including 25% contingency is $7.4 M.

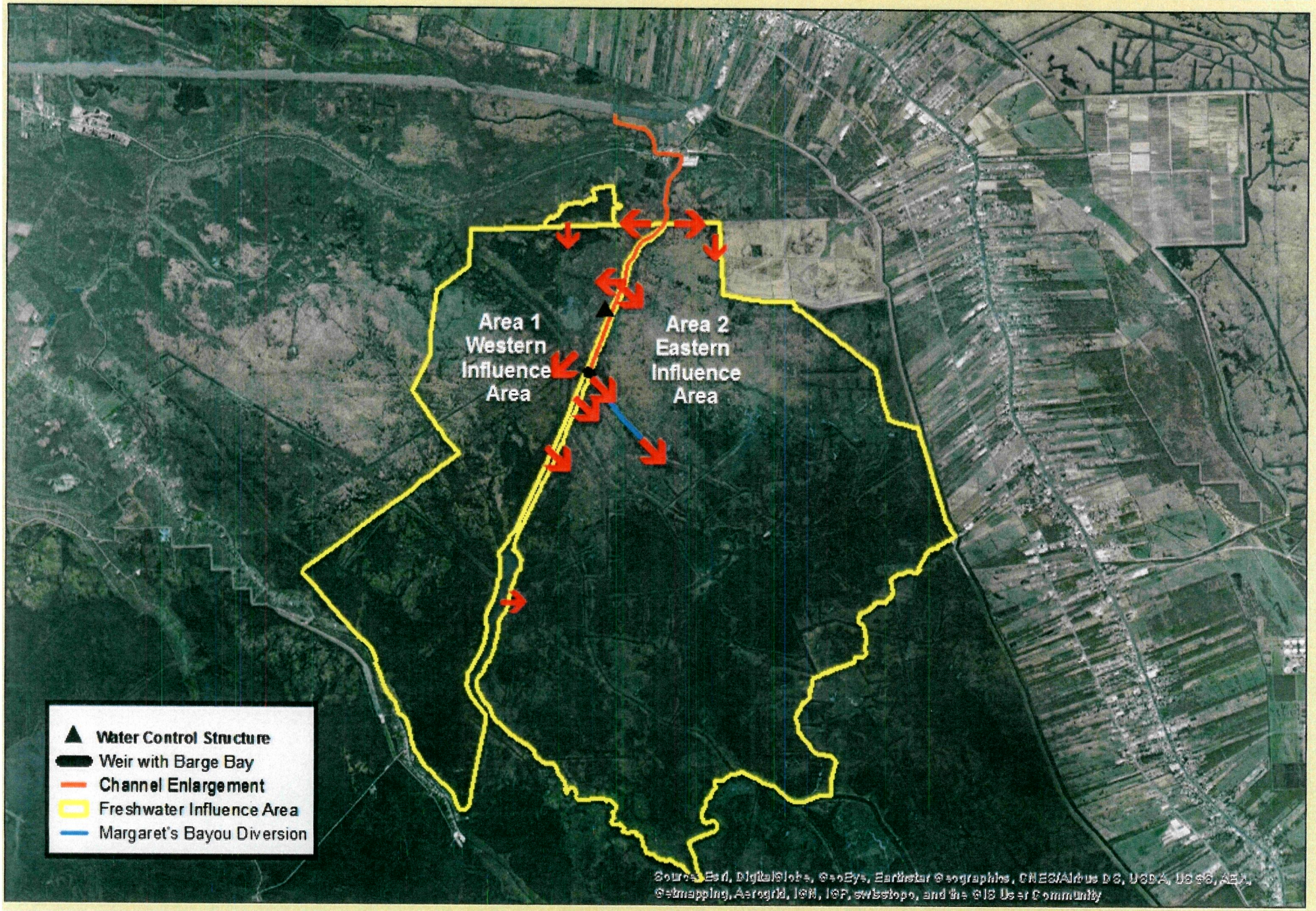
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U.S. Fish & Wildlife Service

Louisiana Ecological Services Field Office

Grand Bayou Freshwater Enhancement



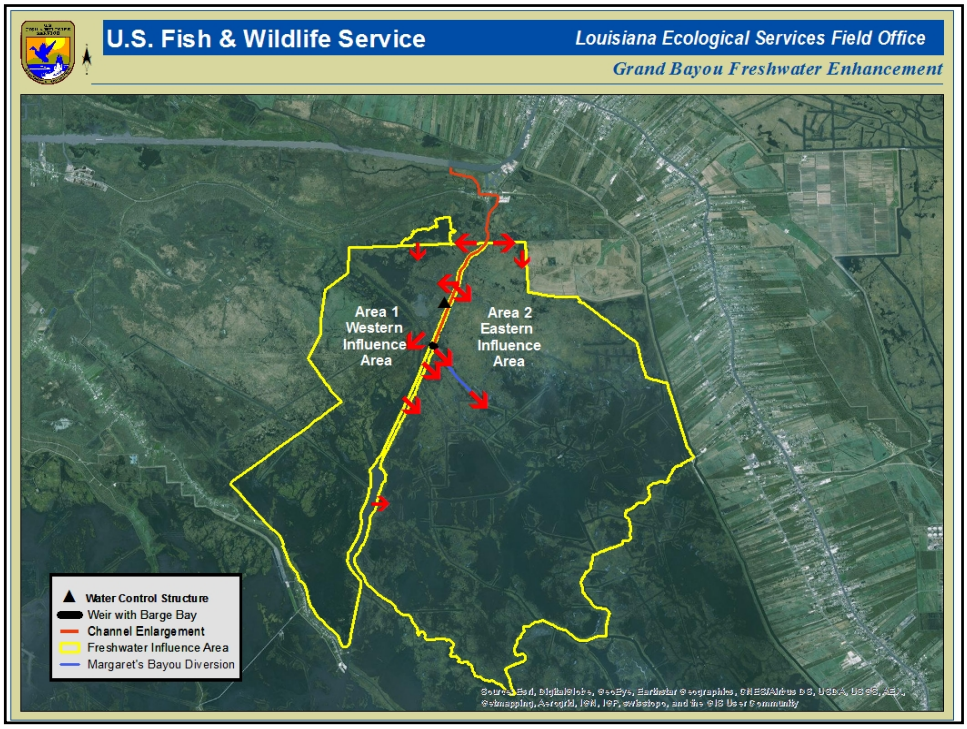
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Grand Bayou Freshwater Enhancement

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 which are restricted by a small channel cross-sections along the northern section of Grand Bayou Channel and its confluence with the GIWW- 5 ft. water depth at GIWW
- Freshwater flowing from GIWW is restricted to an average 668 cfs. with potential of +2,000 cfs. (Convey Atchafalaya)
- 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



GRAND BAYOU FRESHWATER ENHANCEMENT

Proposed Solution/Goals:

- Increase the GBC cross-section to increase freshwater flows from an average of 628 cfs to 1,604 cfs with the use of a bucket dredge (1,000 cfs increase)
- 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 of Grand Bayou (increase 385 cfs)
- Place fixed crest weir with barge bay below Margaret's Bayou (increase 449 cfs)
- Improve and/or create habitat for rare species and species of concern
- The project would result in approximately 568 net acres over the 20-year project life.

GRAND BAYOU FRESHWATER ENHANCEMENT

- **The construction cost plus 25% contingency is $7.4 M.**
- **Project is currently not part of the State's Convey Atchafalaya River Water East**
- **Does not include the construction of a new bridge.**

Species of Concern and Rare Species

- Least Bittern
- Black Rail
- Mottled Duck
- Saltmarsh topminnow
- Brown Pelican
- Louisiana Eyed Silkmoth
- King Rail
- Bald Eagle