REGION 3

Coastal Wetlands Planning Protection & Restoration Act

28th Priority Project List

Region 3

Regional Planning Team Meeting

January 31, 2018
Morgan City, LA

CWPPRA

1. Welcome and Introductions

- RPT Region 3 Leader: Ron Boustany - NRCS

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Announcements

- Copies of the PPL 28 Selection Process & Schedule available at the sign-in table.
- PPL 28 RPT meetings to accept project nominees:
  - Region IV, Rockefeller Wildlife Refuge, Jan. 30, 2018, 1:00 pm
  - **Region III, Port of Morgan City - Office, Jan. 31, 2018, 9:30 am**
  - Region II, USFWS SE LA Refuges Complex (Big Branch), Feb. 1, 2018, 10:00 am
  - Region I, USFWS SE LA Refuges Complex, Feb. 1, 2018, immediately following Region II
- For parishes that do not have a voting registration form filled out already - 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 2017 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.
- If similar projects are proposed within the same area:
  - RPT representatives (CWPPRA agencies and only the parishes located within the project's basin) will determine if those projects are sufficiently different
    - If sufficiently different:
      - Each project will move forward
    - If not sufficiently different:
      - Projects will be combined
      - Federal sponsor will be determined prior to coastwide vote (February 27th).
  - *This decision will be made at the meeting where the projects are proposed*

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RPT Meetings

- Presenters without factsheets **MUST** complete a PPL 28 Nomination Sign-Up Sheet for <u>each</u> project nominee (demo projects too).
- Presenters with factsheets, please give a factsheet each to Kaitlyn, Michelle & Lonnie <u>before</u> 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 20, 2018.
- Limit comments/questions during meeting to PPL 28 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 27, 2018.
- The Technical Committee may or may not select a coastwide project in April 2018.

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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 February 27th Coastwide Electronic Vote.
- The Technical Committee selects up to 3 demos in April 2018.
- Workgroups may recommend that no demos move forward to candidate stage
- Previous demo candidates must be ***re-nominated*** for PPL 28.

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Coastwide Electronic Vote (February. 27th) 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

- 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 February 20, 2018.

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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.

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

All votes must be received by 10:30 am on February 27, 2018.

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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 28 criteria.

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PPL 28 Candidate Project 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

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PPL 28 Timeline

- **Coastwide Electronic Vote, Feb. 27, 2018**
  - 21 basin-project nominees, 1 coastwide nominee, and 6 demos selected
- **Technical Committee Mtg, Apr. 12, 2018, Baton Rouge**
  - Selection of 10 candidates and up to 3 demos
- **Technical Committee Mtg, Dec. 6, 2018, Baton Rouge**
  - Typically recommend up to 4 projects for Phase 1 funding
- **Task Force Mtg, Jan. 2018, New Orleans**
  - Final Selection of projects for Phase 1 funding

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Written Comments

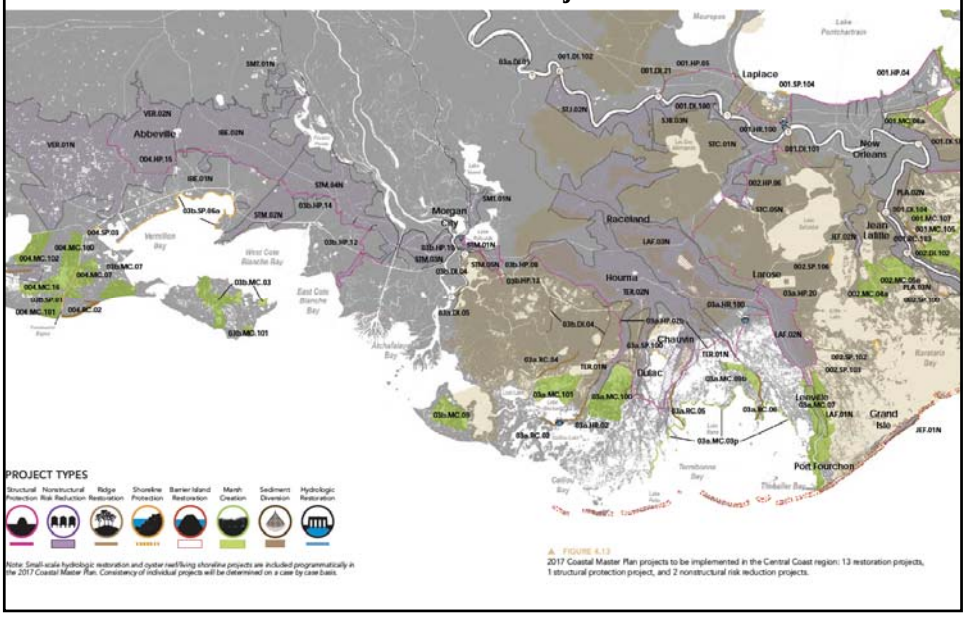
- Send written comments on projects & demos proposed today to the CWPPRA program manager
- **Deadline: February 20, 2018**

Brad Inman
CWPPRA Program Manager
U.S. Army Corps of Engineers
7400 Leake Avenue
New Orleans, Louisiana 70118

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

(this information is on the back of the agenda)

2017 State Master Plan
Central Coast Projects



Central Coast Projects

Project Type	Project No.	Project Description	Implementation Period	Project Costs
Hydrologic Restoration	03a.HR.02	Central Terrebonne Hydrologic Restoration: Construction of a rock plug in Grand Pass with a 150-foot by 15-foot navigable section to prevent saltwater intrusion from Caillou Lake into Lake Mechant.	Years 1-10	$19,000,000
Marsh Creation	03a.MC.03p	Terrebone Bay Rim Marsh Creation Study: Planning, engineering, and design of marsh creation features to provide benefits to communities in Terrebonne Parish and the Morganza to the Gulf protection system.	Years 1-10	$90,600,000
Ridge Restoration	03a.RC.04	Mauvais Bois Ridge Restoration: Restoration of approximately 43,400 feet of historic ridge to an elevation of 5 feet NAVD88 at Mauvais Bois to provide coastal upland habitat, restore natural hydrology, and provide wave and storm surge attenuation.	Years 1-10	$9,900,000
	03a.RC.06	Bayou Pointe Aux Chenes Ridge Restoration: Restoration of approximately 43,600 feet of historic ridge to an elevation of 5 feet NAVD88 to provide coastal upland habitat, restore natural hydrology, and provide wave and storm surge attenuation along the southern portions of Bayou Pointe Aux Chenes.	Years 1-10	$10,600,000
Sediment Diversion	03a.DI.01	Bayou Lafourche Diversion: Diversion of the Mississippi River into Bayou Lafourche to increase freshwater flow down Bayou Lafourche with 1,000 cfs capacity (modeled with continuous operation at 1,000 cfs, independent of Mississippi River flow).	Years 1-10	$196,100,000
Nonstructural Risk Reduction	TER.01N	Terrebonne - Lower Nonstructural Risk Reduction: Project includes floodproofing non-residential properties where 100-year flood depths are 1-3 feet, elevating residential properties where 100-year flood depths are 3-14 feet, and acquiring residential properties where 100-year flood depths are greater than 14 feet.	Years 1-30	$87,700,000
	TER.02N	Terrebonne - Houma Nonstructural Risk Reduction: Project includes floodproofing non-residential properties where 100-year flood depths are 1-3 feet, elevating residential properties where 100-year flood depths are 3-14 feet, and acquiring residential properties where 100-year flood depths are greater than 14 feet.	Years 1-30	$1,264,000,000
Structural Protection	03a.HP.02b	Morganza to the Gulf: Construction of a levee to an elevation between 15 and 26.5 feet NAVD88 around Houma and Terrebonne Ridge communities from Larose to Humphreys Canal. Project features 471,500 feet of earthen levee, 39,600 feet of T-wall, (22) 6-foot sluice gates, (1) 30-foot stop-log, (2) 20-foot stop-logs, (13) 56-foot sector gates, (1) 250-foot sector gate, (1) 175-foot sector gate, (1) 125-foot sector gate, (1) 110-foot sector gate, (1) 30-foot sector gate, (1) 110-foot lock gate, (1) 33-foot roller gate, (4) 40-foot roller gates, (1) 56-foot barge gate, (1) 30-foot barge gate, and (4) pump stations.	Years 1-30	$8,281,900,000
Hydrologic Restoration	03a.HR.100	Grand Bayou Hydrologic Restoration: Dredging of Margaret's Bayou and Grand Bayou in conjunction with the construction of a fixed crest structure at Grand Bayou and the installation of (5) 48-inch flap-gated culverts on the western bank of Grand Bayou.	Years 11-30	$8,700,000
Marsh Creation	03a.MC.07	Belle Pass-Golden Meadow Marsh Creation: Creation of approximately 23,200 acres of marsh from Belle Pass to Golden Meadow to create new wetland habitat and restore degraded marsh.	Years 11-30	$1,625,800,000
	03a.MC.09b	North Terrebonne Bay Marsh Creation - Component B: Creation of approximately 5,400 acres of marsh south of Montegut between Bayou St. Jean Charles and Bayou Pointe Aux Chenes to create new wetland habitat and restore degraded marsh.	Years 11-20	$299,200,000
	03a.MC.100	South Terrebonne Marsh Creation: Creation of approximately 23,600 acres of marsh south of Dulac between Bayou Dularge and Houma Navigation Canal to create new wetland habitat and restore degraded marsh.	Years 11-30	$1,813,300,000
Marsh Creation (continued)	03a.MC.101	North Lake Mechant Marsh Creation: Creation of approximately 12,100 acres of marsh between Lake Decade and Lake Mechant to create new wetland habitat and restore degraded marsh.	Years 11-30	$1,023,400,000
Ridge Restoration	03a.RC.02	Bayou Dularge Ridge Restoration: Restoration of approximately 53,200 feet of historic ridge to an elevation of 5 feet NAVD88 to provide coastal upland habitat, restore natural hydrology, and provide wave and storm surge attenuation along Bayou Dularge.	Years 11-30	$9,600,000
	03a.RC.05	Bayou Terrebonne Ridge Restoration: Restoration of approximately 40,700 feet of historic ridge to an elevation of 5 feet NAVD88 to provide coastal upland habitat, restore natural hydrology, and provide wave and storm surge attenuation along the southern portions of Bayou Terrebonne.	Years 11-30	$8,800,000
Shoreline Protection	03a.SP.100	North Lake Boudreaux Shoreline Protection: Shoreline protection through rock breakwaters designed to an elevation of 3.5 feet NAVD88 along approximately 15,400 feet of the northern shore of Lake Boudreaux east of Hog Point to preserve shoreline integrity and reduce wetland degradation from wave erosion.	Years 11-30	$29,300,000

ATTENDANCE RECORD

DATE	SPONSORING ORGANIZATION	LOCATION
January 3 2018 9:30 A.M.	COASTAL WETLANDS PLANNING, PROTECTION AND RESTORATION ACT	Port of Morgan City - Office 7327 Highway 182 Morgan City, LA

PURPOSE

MEETING OF THE REGIONAL PLANNING TEAM REGION III

PARTICIPANT REGISTER

NAME	JOB TITLE AND ORGANIZATION	PHONE NUMBER
Brad Crawford	USEPA	214 665 7253
Lonnie Fontenot	JESCO - (minute-taker)	337-802-7508
JOHN PETITBON	USACE	504-862-2732
Sharon Osowski	US EPA	214-665-7506
Jason Kroll	NOAA	2257575411
Donna Rogers	NOAA	2253168958
Jennifer Smith	NOAA / ERT	225-571-9030
Lance Campbell	LDWF	337-373-0032
BARRY HEBERT	LDWF	225 765 0233
PATRICK WILLIAMS	NOAA	225-389-0509
Darin Davis	NOAA	225-389-0508
Brandon Howard	NOAA	225 389-0508
Jay Merino	NOAA	337-291-2109
Robert Dubois	FWS	337-291-3127
LOLAND BROUSSARD	DU	337-443-4310
Ronny Paille	FWS	337-291-3117
Kevin Roy	FWS	337-291-3120
MACWADE	Port of Mc	9854664333
Toni Henry	" "	985 384 0850
Mirka Zapletal	CWPPRA	337-266-8623
ADRIENNE CARPER	CHEROKEE NATION/USGS CONTRACTOR	337-266-8626
Sinead Borchert	CWPPRA	337-266-8626

LMV FORM 583-R
JAN 88

ATTENDANCE RECORD

DATE	SPONSORING ORGANIZATION	LOCATION
January 31 2018 9:30 A.M.	COASTAL WETLANDS PLANNING, PROTECTION AND RESTORATION ACT	Port of Morgan City - Office 7327 Highway 182 Morgan City, LA

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MEETING OF THE REGIONAL PLANNING TEAM REGION III

PARTICIPANT REGISTER

NAME	JOB TITLE AND ORGANIZATION	PHONE NUMBER
Harold Schoeffler	Secretary Clerk	3574171550
Galen Logan		337-791-0532
Mike Colee	Greenwood Gator Farm	985-852-3257
Ray Fremin, JR	Iberia Parish Levee Dist	337-380-8458
Brent Logan		337-277-8899
Don Braussard	CPRA - Lafayette Regional Off.	337-482-0686
Alton James Jr	USDA - NRCS	
Mark Black	Director, TPCG Office & Coastal Rest.	985-873-6889
Chad J Comeaux	Miami Corporation	337.264.1695
Amanda Voisin	Lafourche Parish Gov't	985-493-6616
Susan Testroet Bergeron	Barataria-Terrebonne National Estuary Program	985-447-0868
Devyani Kar	EDF Scientist.	225 620 4453
Ron Boustany	NRCS	337 791-3067
John Boatman	NRCS	985-331-9084
Charles Jasso	LSU	225 578 6375
Gregg Fell	NRP, LLC	225-928-5333
Cindy Cutrera	Port of Morgan City	985-384-0850
Rene Escuriex	Fenstermaker Bus. Dev.	337-654-9584
Leslie Comeaux	GIS PM, CET	225 892 3246
Randy Moertle	Rainey Conservation Alliance, Point au Fer Island	985-856-3630
Charlotte Randolph	Louisiana Shoreline Solutions	9856656451
Kent Bollfrass	CPRA	225 342 4733

LMV FORM 583-R
JAN 88

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MEETING OF THE REGIONAL PLANNING TEAM REGION III

PARTICIPANT REGISTER

NAME	JOB TITLE AND ORGANIZATION	PHONE NUMBER
Dustin Renther	Tulane University	386-748-7191
Simone Maloz	Executive Director, Restore or Retreat	(985) 448-4485
Henry "Bo" Lagarde	CPRA, STMARY PARISH GOVT	337-828-4100 x50
FRANCES FERGUS	AMERICAN LA MINERALS LLC	985-879-3528
Greg Mattson	CPRA	225-342-4496
Dan Meden	USACE	504-862-1014
TIM ALLEN	APACHE CORPORATION	985-879-3528

LMV FORM 583-R
JAN 88

REGION 3 – TERREBONNE BASIN

Project Number	Project Proposals
R3-TE-01	Bayou Rambio Marsh Restoration
R3-TE-02	Bay Raccourci Marsh Creation and Ridge Restoration *Project revised due to overlap with R3-TE-06*
R3-TE-03	Point au Fer Marsh Creation and Terracing
R3-TE-04	Bayou Barre Marsh Creation and Terracing
R3-TE-05	North Lake Boudreaux
~~R3-TE-06~~	~~Central Bayou De Cade Marsh Creation~~ *Withdrawn due to overlap with R3-TE-02*
R3-TE-07	Lake Chapeau 2 Marsh Creation
R3-TE-08	Point au Fer Island Marsh Creation Using Permanent Pipeline
R3-TE-09	East Catfish Lake Marsh Creation and Shoreline Protection
R3-TE-10	Small Bayou LaPointe Marsh Creation
R3-TE-11	West Raccourci Bay Marsh Creation
R3-TE-12	Pointe aux Chenes Ridge Restoration and Marsh Creation
R3-TE-13	West Louisiana Hwy 1 Marsh Creation
R3-TE-14	Bayou Pierre et Lee Marsh Creation and Nourishment
R3-TE-15	Hackberry Marsh Creation and Nourishment
R3-TE-16	North Bayou Decade Ridge and Marsh Restoration
R3-TE-17	Timbalier Island Nourishment and Marsh Creation
R3-TE-18	Trinity Island Back Barrier Island Marsh Restoration Project

R3-TE-01

Bayou Rambio Marsh Creation

TE-01

PPL28 PROJECT NOMINEE FACT SHEET
January 2018

Project Name
Bayou Rambio Marsh Protection Project

Louisiana's 2017 Coastal Master Plan
Marsh Creation – 03a.MC.100

Project Location
Region 3, Terrebonne Basin, Terrebonne Parish

Problem
Interior marshes between Bayou Grand Caillou and Bayou DuLarge have experienced recent rapid degradation and loss. Numerous north-south and east-west trenasses bisect this area. As the interior marshes degrade and convert to open water, the increased tidal prism has caused these trenasses to enlarge as they carry increasing volumes of water. As a result, the fragile interior marshes experience increased tidal exchange. This in turn causes more salinity flux which stresses the remaining marsh and the increased tidal exchange causes export of eroded soils.

Goals
The project goal is to construct marsh in open water areas to break up the fetch and to reduce tidal exchange across these expanding open water areas.

Proposed Solution
Using borrow material from Bayou Grand Caillou, three linear strips of marsh totaling 370 acres would be created in open water areas to impede north-south water exchange and wave fetch.

Preliminary Project Benefits

1) *What is the total acreage benefited both directly and indirectly?*
Approximately 370 acres of marsh would be benefitted directly (342 ac from marsh creation, 28 acres from marsh nourishment). Indirect benefits may occur in adjoining open water areas due to reduced fetch, restoration of SAV beds, and reduced shoreline erosion of nearby marshes.

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 323 acres.

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 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?*
NO.

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

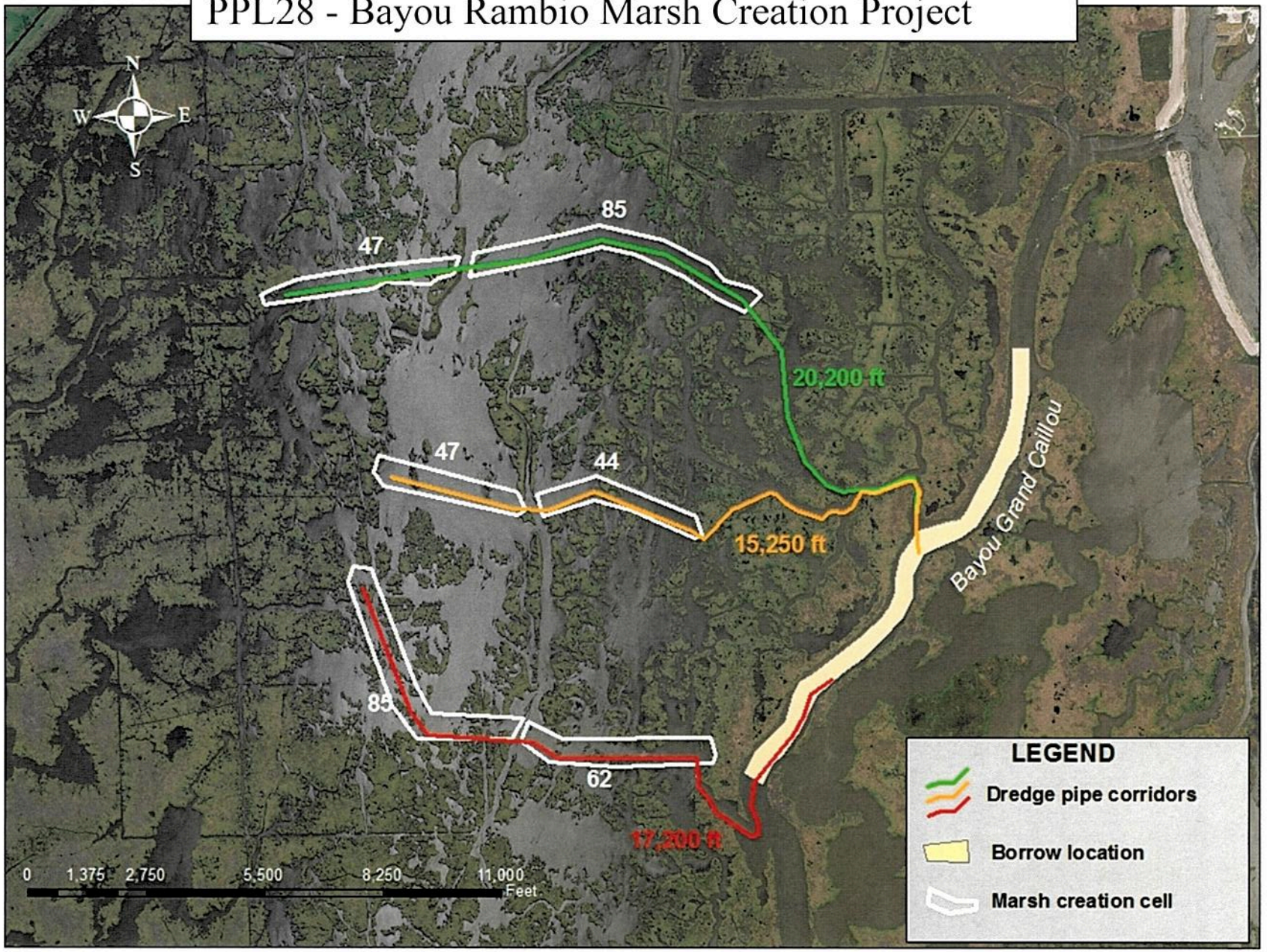
6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?* This project would be synergistic with the freshwater introduction features that are part of the hurricane protection levee along Falgout Canal between Bayou DuLarge and the HNC.

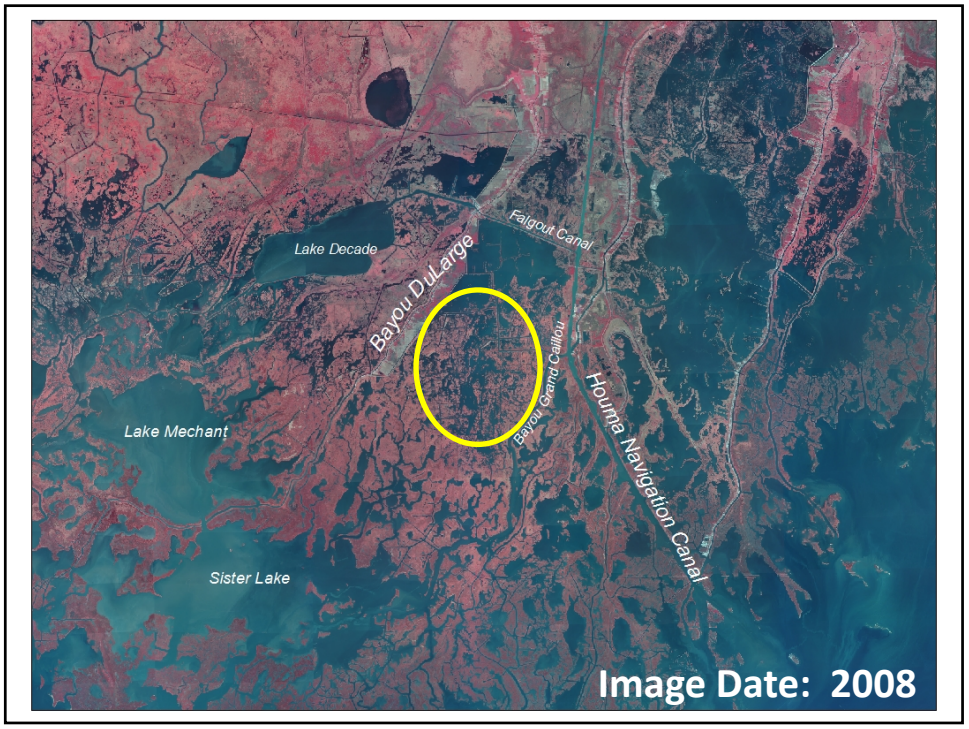
Other Considerations
Borrow access without impeding navigation needs to be determined. No oyster leases are located in the borrow area.

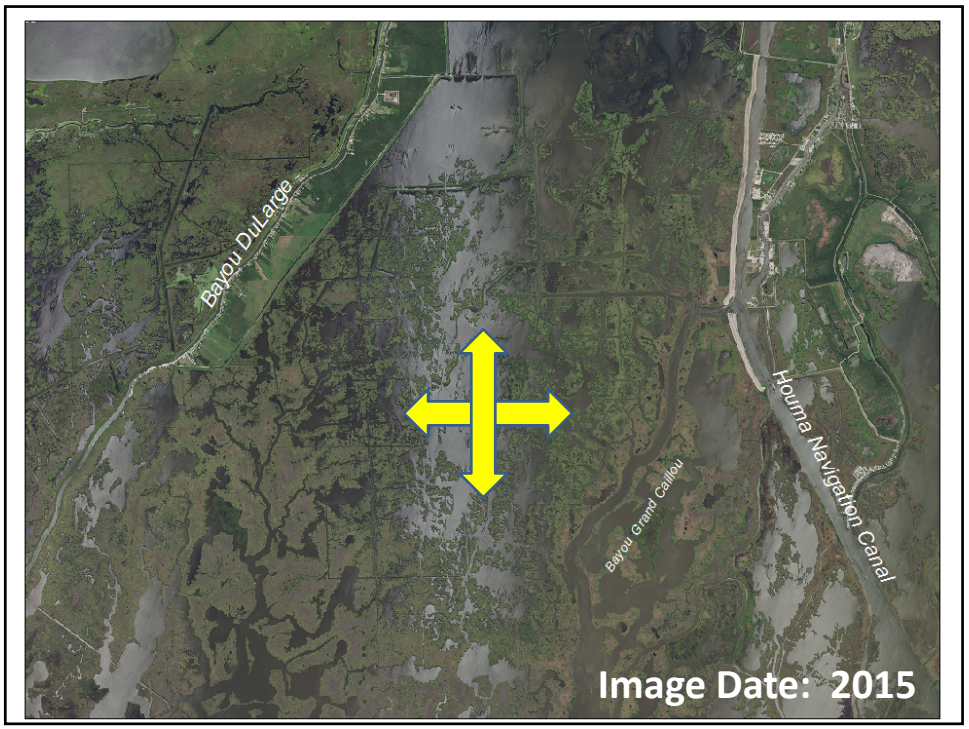
Preliminary Construction Costs:
The estimated construction cost including 25% contingency is $30 to 35M.

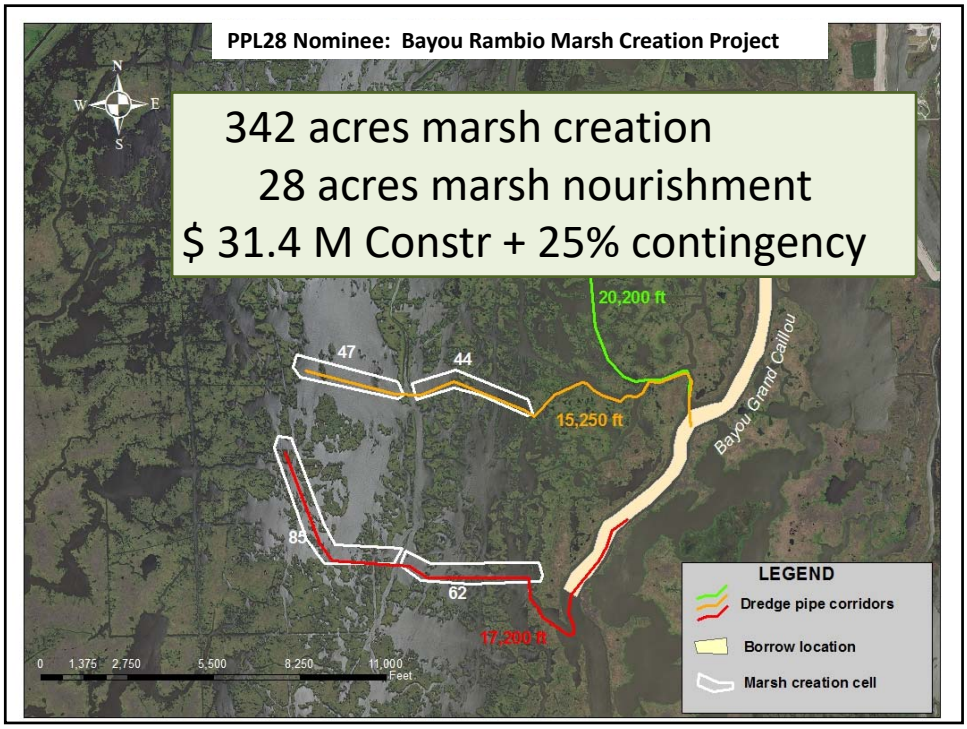
Preparer(s) of Fact Sheet:
Ronny Paille: U.S. Fish and Wildlife Service; 337-291-3117; Ronald_Paille@fws.gov

PPL28 - Bayou Rambio Marsh Creation Project




Lake Decade
Falgout Canal
Bayou DuLarge
Bayou Grand Caillou
Houma Navigation Canal
Lake Mechant
Sister Lake
Image Date: 2008


Bayou DuLarge
Houma Navigation Canal
Bayou Grand Caillou
Image Date: 2015


PPL28 Nominee: Bayou Rambio Marsh Creation Project
342 acres marsh creation
28 acres marsh nourishment
$ 31.4 M Constr + 25% contingency
20,200 ft
47
44
15,250 ft
Bayou Grand Caillou
85
62
17,200 ft
0 1,375 2,750 5,500 8,250 11,000 Feet
LEGEND
Dredge pipe corridors
Borrow location
Marsh creation cell

R3-TE-02

Bay Raccourci Marsh Creation and Ridge Restoration

PPL28 PROJECT NOMINEE FACT SHEET
January 31, 2018

Project Name
Bay Raccourci Marsh Creation and Ridge Restoration

Project Location
Region 3, Mechant/de Cade Basin, Terrebonne Parish. This project is located north of Lake Mechant and south of Bayou Decade.

Problem
High saline waters from Lake Mechant have directly contributed to the loss and/or conversion of much of the historically intermediate marshes to low salinity brackish marshes north of Lake Mechant. Subsidence, canal dredging and storm damage have also contributed significantly to the loss of marsh in the area. The zone of intermediate marsh (transition zone between fresh and brackish marshes) is located just north of Lake Mechant. High salinity water entering Bay Raccourci via Bayou Raccourci/Lake Mechant effectively short circuits the TE-44 project and flows unimpeded into lower salinity marshes surrounding Bay Raccourci. USGS calculated a 19984-2011 loss rate of -0.995% per year for the TE-72 Lost Lake Marsh Creation.

Goals
The goal of this project is to slow the northern movement of high salinity water surrounding Bay Raccourci and to retain the zone of intermediate marsh that historically ran north and west of Bay Raccourci.

Specific goals: 1) Create approximately 350 acres and nourish approximately 85 acres of low salinity marsh around the perimeter of Bay Raccourci. 2) Create 6,500 linear feet of ridge along Bayou Decade. 3) Plant 20,000 ft. of newly constructed shoreline surrounding Bay Raccourci and Bayou Decade.

Proposed Features

1. Hydraulically dredge material from Lake Mechant to create/nourish 435 acres of marsh.
2. Earthen containment dikes would be constructed and gapped within 3 years of construction.
3. Create approximately 6,500 linear feet of ridge habitat along portions of Bayou Decade.
4. Plant approximately 13,000 linear feet of Bay Raccourcci shoreline with *S. alterniflora* to reduce shoreline erosion.

Preliminary Project Benefits

1) What is the total acreage benefited both directly and indirectly?
This total project area is 435 ac.

2) How many acres of wetlands will be protected/created over the project life?
Approximately 325 net acres of marsh would result after the 20-year project life (without ridge benefits).

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 is approximately 50% to 74% over the project life.

4) *Do any project features maintain or restore structural components of the coastal ecosystem such as barrier islands, natural or artificial levee ridges, beach and lake rims, cheniers, etc?*
This project would help maintain portions of the Bay Raccourci shoreline and restore a portion of Bayou Decade shoreline and ridge habitat.

5) *What is the net impact of the project on critical and non-critical infrastructure?*
This project would protect many small camps along Bayou Decade and also help protect some oil and gas infrastructure in the area.

6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?*
This project would work synergistically with the constructed TE-44, TE-39, and TE-34 projects as well as the TE-72 which is currently under construction.

Preliminary Cost
The construction cost range plus 25% contingency is estimated to be $25-$30M.

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

Fish and Wildlife Service - Louisiana Ecological Sevices Field Office

PPL28 - Bay Raccourci Marsh Creation and Ridge Restoration

BAY RACCOURCI MARSH CREATION AND RIDGE RESTORATION

BAY RACCOURCI MARSH CREATION AND RIDGE RESTORATION

Problem:

- **Subsidence, canal dredging, saltwater intrusion, wind and wave induced shoreline erosion and altered hydrology**
- **Saltwater short circuits the TE-44 project: Lake Mechant to Bayou Raccourci to Bay Raccourci**

BAY RACCOURCI MARSH CREATION AND RIDGE RESTORATION

Solution:

- **Hydraulically dredge material from Lake Mechant to create intertidal marsh north and west of Bay Raccourci.**
- **Utilize material dredged from Bayou Decade (bucket dredge) to create a ridge along Bayou Decade.**
- **Plant the ridge habitat with appropriate vegetation and plant containment dikes along Bay Raccourci shoreline.**

BAY RACCOURCI MARSH CREATION AND RIDGE RESTORATION

Goals:

- Create 405 acres of marsh.
- Nourish 130 acres of marsh.
- Restore 6,500 LF of ridge habitat (8 acres) along Bayou Decade southern shoreline.
- Plant 13,000 LF of Bay Raccourci shoreline.

Net Acres:

- Total net acres = 339 acres marsh and 8 acres ridge

Potential Issues:

- There are two existing borrow site that could be utilized if needed.

Preliminary Construction Costs

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

Species of Concern and Rare Species

- Least Bittern
- Black Rail
- Mottled Duck
- Brown Pelican
- King Rail

R3-TE-03

Point au Fer Marsh Creation and Terracing

TE-08

PPL28 PROJECT NOMINEE FACT SHEET
January 31, 2018

Project Name: Point au Fer Marsh Creation and Terracing

Project Location:
Region 3, Terrebonne Basin, Terrebonne Parish, Point au Fer Island, South of Locust Bayou

Problem:
Historic project area land loss includes subsidence, altered hydrology (from numerous canals), and wind and wave erosion. This area receives fresh to low salinity water from the Atchafalaya River via Four League Bay and higher saline water from the Gulf of Mexico via Locust Bayou. USGS calculated a 1985-2016 area loss rate of -1.80% per year.

Goals:
The goals of the project are to 1) create approximately 377 acres of marsh and nourish an additional 35 acres of marsh with dredged material from Four League Bay, 2) create 52,500 lf of Terraces (23 acres of marsh) and 3) close 4 openings into the interior marsh.

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 low salinity brackish and intermediate intertidal marsh habitat would benefit 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, and King Rail.

Proposed Solutions:
The current proposed project would include the creation of 377 acres of brackish marsh and nourish 35 additional acres of marsh. The marsh would be created with material dredged from Four League Bay and contained with earthen dikes and existing spoil banks. Containment dikes would be degraded and/or gapped as necessary to reestablish hydrologic connectivity with adjacent wetlands. The current proposal would also create 52,500 LF of terraces (23 acres of marsh) in the open water area north of the created marsh with long reach excavators. These terraces would capture sediment and reduce wind induced erosion.

Preliminary Project Benefits:
1) What is the total acreage benefited both directly and indirectly? Approximately 1,162 acres would be benefited.

2) How many acres of wetlands will be protected/created over the project life? The total net acres protected/created over the project life are approximately 339 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%). Loss rate reduction should be 50>74%.

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

5) What is the net impact of the project on critical and non-critical infrastructure? There several oil and gas facilities that would be protected.

6) To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects? This project would work synergistically with TE-26 Lake Chapau sediment Input and Hydrologic Restoration project and TE-22 Point au Fer Canal Plugs project.

Identification of Potential Issues:
There are oil and gas facilities and pipeline in the area.

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

Preparer(s) of Fact Sheet:
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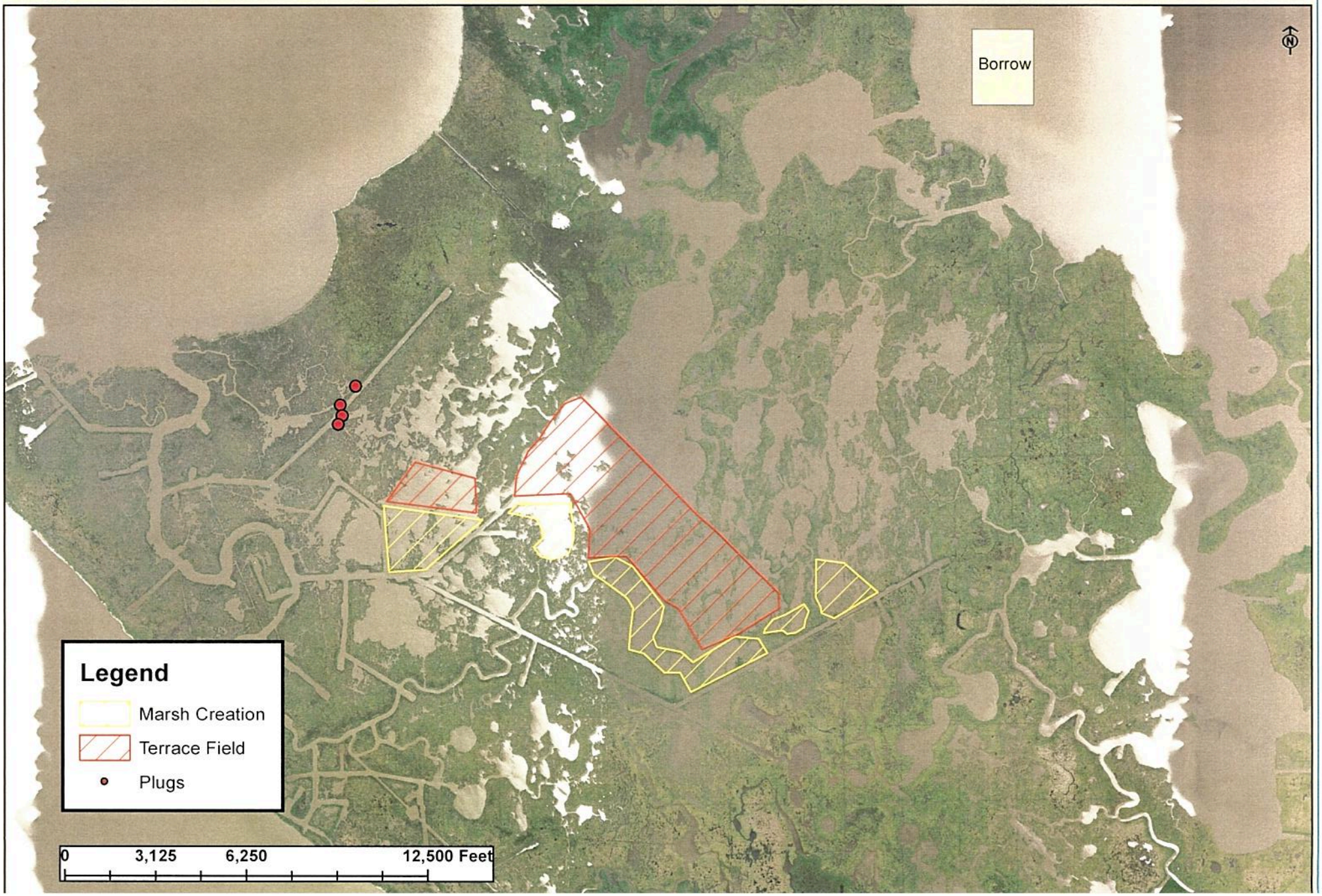
Fish & Wildlife Service

Louisiana Ecological Services

PPL 28 Point au Fer Marsh Creation and Terracing

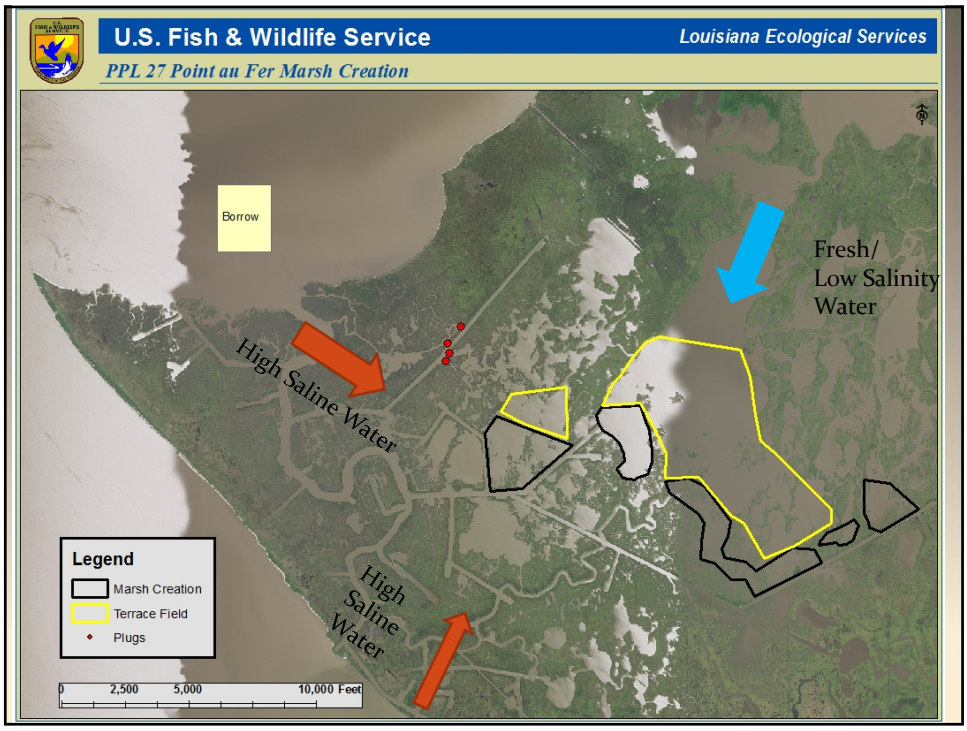


POINT AU FER MARSH CREATION AND TERRACING

POINT AU FER MARSH CREATION AND TERRACING

Problem:

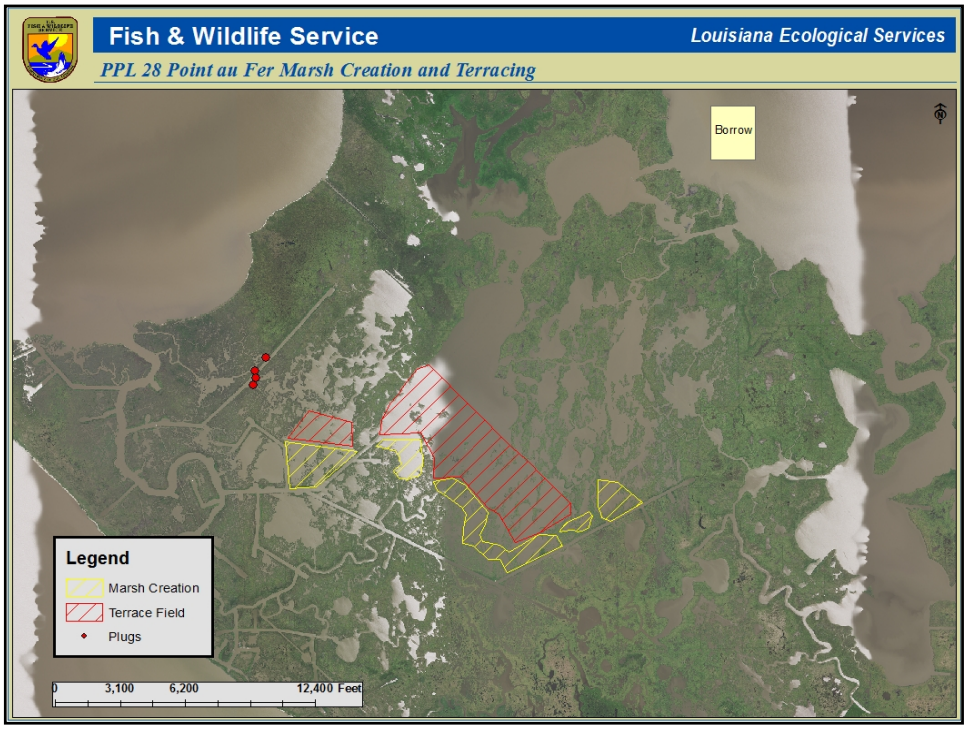
- **Subsidence, canal dredging, saltwater intrusion, wind and wave induced shoreline erosion and altered hydrology**



POINT AU FER
MARSH CREATION AND TERRACING

Solution:

- **Hydraulically dredge material from Four League Bay to strategically create emergent intertidal marsh**
- **Create a terrace field in open water areas between the area of higher salinities and lower salinities.**
- **Close several openings into the interior marsh**
- **These measures will should slow the rate at which the higher saline waters reach intermediate marshes.**



POINT AU FER
MARSH CREATION AND TERRACING

Goals:

- Create 377 acres of marsh.
- Nourish 35 acres of marsh.
- Create 52,500 LF of terraces (23 acres of marsh).

Net Acres:

- Total net acres = 339 acres

Preliminary Construction Costs

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

Species of Concern and Rare Species

- Least Bittern
- Black Rail
- Mottled Duck
- Brown Pelican
- King Rail

R3-TE-04

Bayou Barre Marsh Creation and Terracing

TE-04

PPL 28 PROJECT NOMINEE FACT SHEET
January 31, 2018

Project Name:
Bayou Barre Marsh Creation and Terracing

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

Problem:
The marshes near the Madison Bay area have experienced tremendous wetland loss due to a variety of factors, including subsidence, saltwater intrusion, a lack of sediment supply, and oil and gas activities. The loss of the marshes have exposed significant infrastructure to open water conditions and has made the area less suitable for various wildlife and fisheries. The 1985 to 2016 loss rate for the Wonder Lake area is 1.67%/yr. With high wetland loss in the vicinity, the Morganza Hurricane Protection Levee to the north of the project area has become extremely susceptible to high wave energies with the increase in fetch.

Goals :
This project would strategically tie together three ridges (Bayou Terrebonne Ridge, Bayou St. Jean Charles Ridge, and Point au Chene Ridge) and two other CWPPRA projects (Maddison Bay Marsh Creation and Terracing project and Island Road Marsh Creation project-Phase I).

Specific goals: 1) Create 440 acres of brackish intertidal marsh, 2) nourish 19 acres of brackish intertidal marsh, and 3) construct 21,000 LF of terraces.

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 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 and Saltwater topminnow. Keeping these species off the threatened and endangered list is a goal of FWS because at that point ALL Federal agencies must then address those species.

Proposed Solution:
This project would propose to create/nourish approximately 459 acres of emergent marsh by utilizing a small hydraulic dredge to pump material from Maddison Bay borrow area. That material would be placed in shallow open water areas between Wonder Lake and Maddison Bay. Utilizing a small dredge would reduce the height of the containment dikes needed to create marsh in open water areas. At this time there are remnant dikes that are still in tack surrounding most of the marsh creation cells. Dredge material would be placed to a height conducive for the creation of healthy intertidal marsh. All constructed containment dikes would be sufficiently gapped or degraded no later than 3 years post construction to allow for fisheries access.

Preliminary Project Benefits:
1) What is the total acreage benefited both directly and indirectly?
This total project area is 739 ac.

2) How many acres of wetlands will be protected/created over the project life?
Approximately 381 ac of brackish marsh will be protected/created over the 20 year project life.

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

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

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

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

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

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

Preparer(s) of Fact Sheet:
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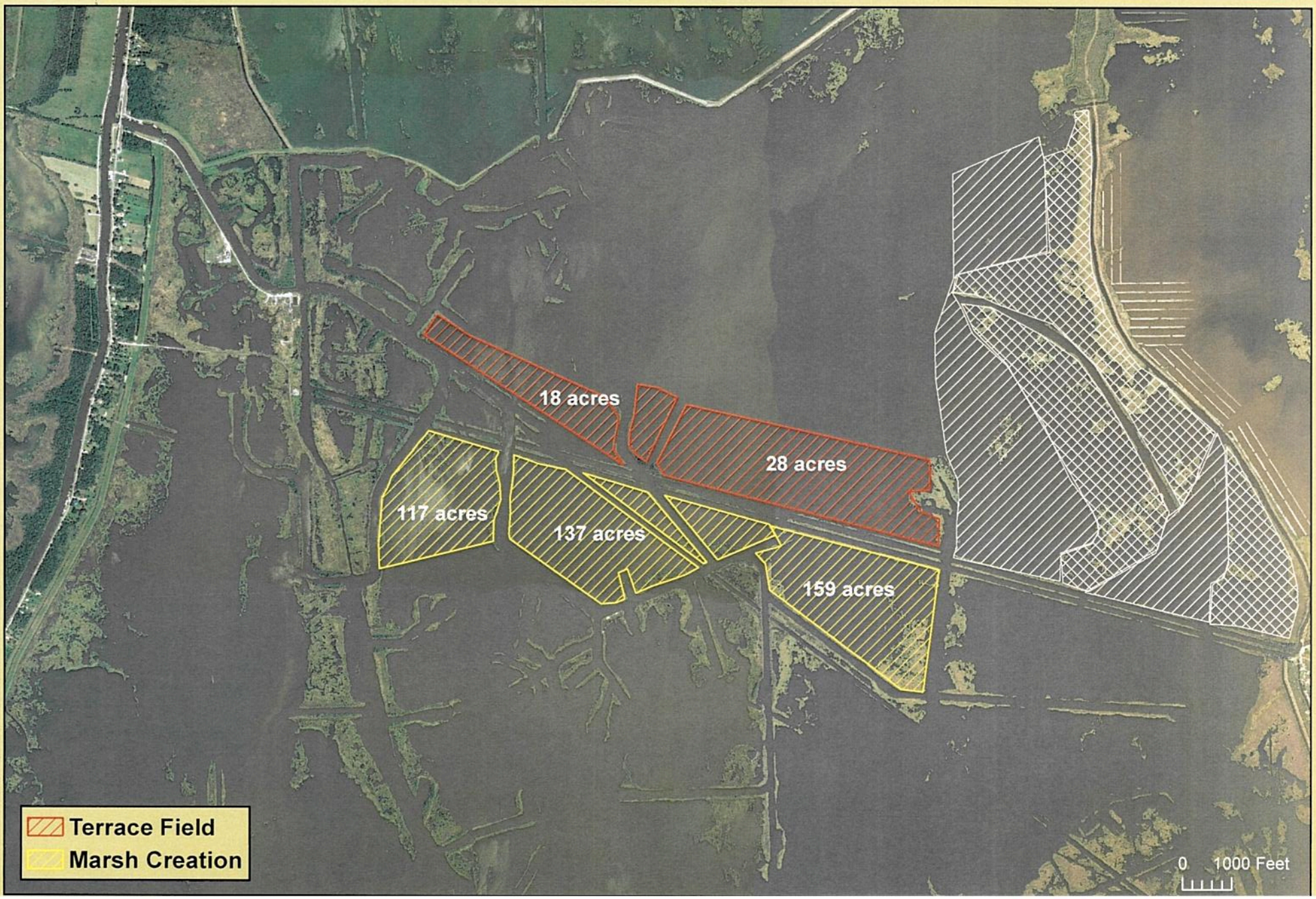
Fish & Wildlife Service

Louisiana Ecological Services Field Office

Bayou Barre Marsh Creation and Terracing

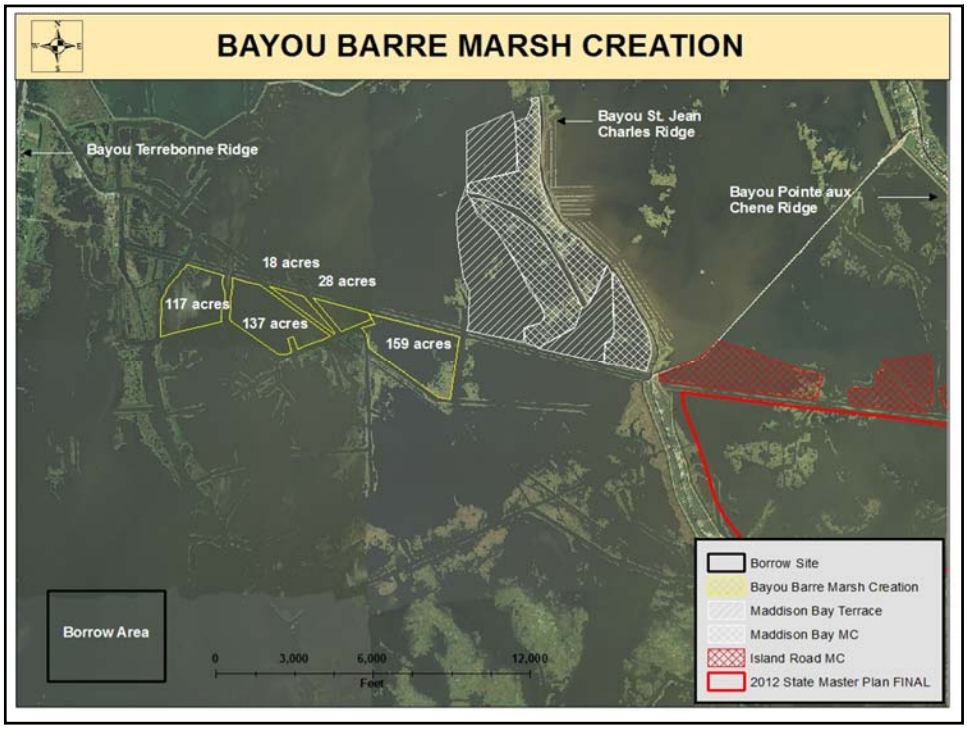


BAYOU BARRE MARSH CREATION AND TERRACING

BAYOU BARRE MARSH CREATION AND TERRACING

Problem:

- **Project area wetlands loss is due to subsidence, saltwater intrusion, a lack of sediment supply, and oil and gas activities.**
- **The 1985 to 2016 loss rate 1.67%/yr. (Wonder Lake)**
- **Losses have exposed infrastructure to open water conditions and has made habitats in the area less suitable for various fish and wildlife species.**

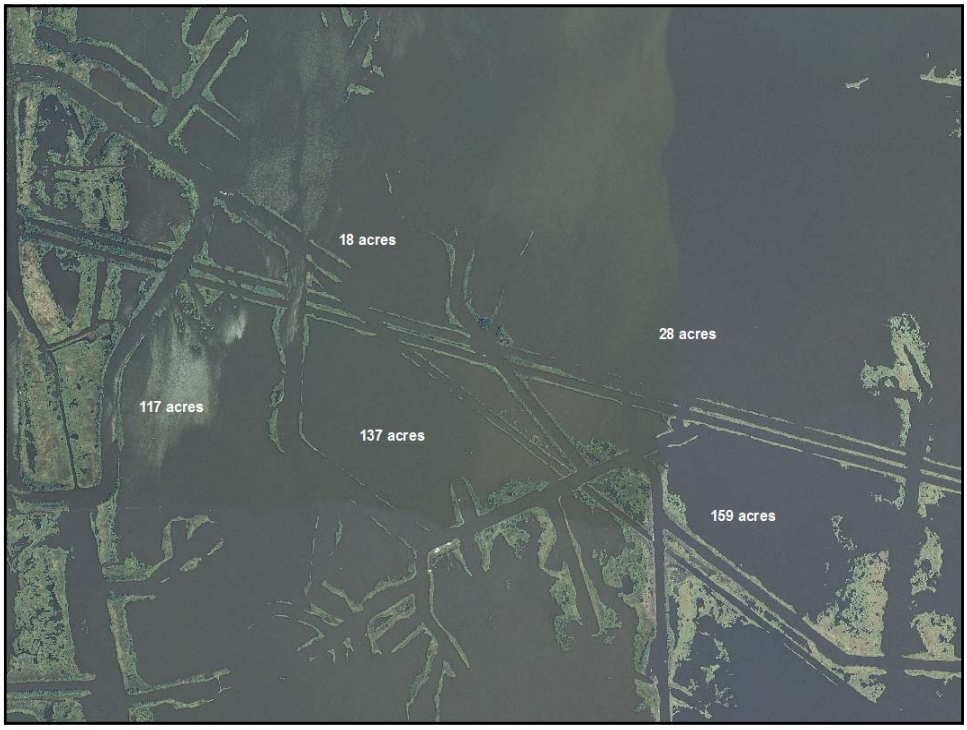


BAYOU BARRE MARSH CREATION AND TERRACING

Real Problem:
Maddison Bay CWPPRA project was placed on the Inactive list

1) Issues with crossing pipeline (CPRA)
- We have recently crossed pipeline with very little cover (Bayou Bonfouca)
- Private pipeline companies have said this would not be a problem in this area with the depth of water above the pipeline to float the disposal pipeline

2) Issues with poor soils and constructing containment dikes
- With the small dredge (18 inch dredge) overbuilt containment dikes are not needed with the medium to large marsh creation cells. There is not enough water and sediment being pumped to stack-up the water.
- The area we are looking at building marsh are almost completely surrounded by some type of levee or containment dike. We have a base for the containment dikes.



BAYOU BARRE MARSH CREATION AND TERRACING

- This area is an incredible area of need. No CWPPRA project has been constructed in the entire Eastern Terrebonne area.
- This project would strategically tie together three ridges (Bayou Terrebonne Ridge, Bayou St. Jean Charles Ridge, and Point au Chene Ridge)
- Tie synergistically with two other CWPPRA projects (Maddison Bay Marsh Creation and Terracing project-Inactive and Island Road Marsh Creation project-Phase *I*)

BAYOU BARRE MARSH CREATION AND TERRACING

Solution:

- Create 440 acres of marsh and nourish an additional 19 acres of marsh with material hydraulically dredge from Maddison Bay with a small dredge.
- Create 21,000 lf of terraces

BAYOU BARRE MARSH CREATION AND TERRACING

Goals:

- Create 440 acres of marsh.
- Nourish 19 acres of marsh.
- Restore 21,000 LF of terraces

Net Acres:

- Total net acres = 381 acres marsh and 8 acres ridge

Potential Issues:

- Multiple pipelines, poor soils, and mindset of "we can not build anything in that area because….."

Preliminary Construction Costs

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

Species of Concern and Rare Species

- Least Bittern
- Black Rail
- Mottled Duck
- Brown Pelican
- King Rail

R3-TE-05

North Lake Boudreaux Shoreline Protection and Marsh Creation

PPL28 PROJECT NOMINEE FACT SHEET
January 31, 2018

Project Name: North Lake Boudreaux Shoreline Protection and Marsh Creation

Project Location:
Region 3, Terrebonne Basin, Terrebonne Parish, South of Houma, Northern Shoreline of Lake Boudreaux

Problem:
Historic aerial photography indicates significant marsh loss in the project area north of Lake Boudreaux. Subsidence, canal dredging, saltwater intrusion, and altered hydrology (levees) are all important factors contributing to the loss of marsh habitat within and surrounding the project area. High saline waters enter Lake Boudreaux via Robinson and Boudreaux Canals impacting low salinity marshes north of Lake Boudreaux. USGS calculated a 1985-2016 area loss rate of -1.52% per year. Shoreline erosion rates in the areas without rock or a maintained earthen shoreline ranged from 60 ft./yr. to 9 ft./yr. Much of the lake shoreline has shoreline protection through the Corps and Parish Mitigation projects and CWPPRA West Lake Boudreaux TE-46 project. There are approximately 8,300 feet of shoreline between and adjacent to these existing projects that are in need of protection.

Goals:
The goals of the project are to 1) protect approximately 8,300 feet of critical shoreline, 2) protect approximately 55 acres of marsh habitat, 3) create approximately 300 acres of marsh and nourish an additional 115 acres of marsh with material dredged from Lake Boudreaux, and 4) create 56,000 LF of terraces (30 acres of marsh).

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 brackish intertidal marsh habitat would benefit 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 and Saltwater topminnow.

Proposed Solutions:
The current proposed project would include 8,300 ft. of rock foreshore dike built to a settled height of +3.0 NAVD 88 along Lake Boudreaux shoreline at the -2 ft. contour. The proposed project would also create 300 acres of marsh and nourish an additional 115 acres of marsh using sediment hydraulically dredged from Lake Boudreaux. Existing canal spoil banks, emergent marsh, and segments of containment dikes will be used to contain the dredge material. Containment dikes will be degraded and/or gapped as necessary to reestablish hydrologic connectivity with adjacent wetlands. The current proposal would also create 56,000 LF of terraces (30 acres of marsh) in the open water area north and east of the lake which would protect the Ward 7 levee.

Preliminary Project Benefits:
1) What is the total acreage benefited both directly and indirectly? Approximately 1,215 acres would be benefited.

2) How many acres of wetlands will be protected/created over the project life? The total net acres protected/created over the project life are approximately 308 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%). Loss rate reduction should be 50>74%.

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 contribute to protection of the Lake Boudreaux shoreline and the Ward 7 Levee.

5) What is the net impact of the project on critical and non-critical infrastructure? Oil and gas facilities would be protected along with the newly constructed Terrebonne Non-Federal Levee, and Ward 7 Levee. The project would also help protect the city of Houma, Chauvin, and Boudreaux.

6) To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects? This project would work synergistically with TE-46 and the Terrebonne Parish Ward 7 mitigation.

Identification of Potential Issues:
There are two nearby existing borrow site that are cleared for dredging.

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

Preparer(s) of Fact Sheet:
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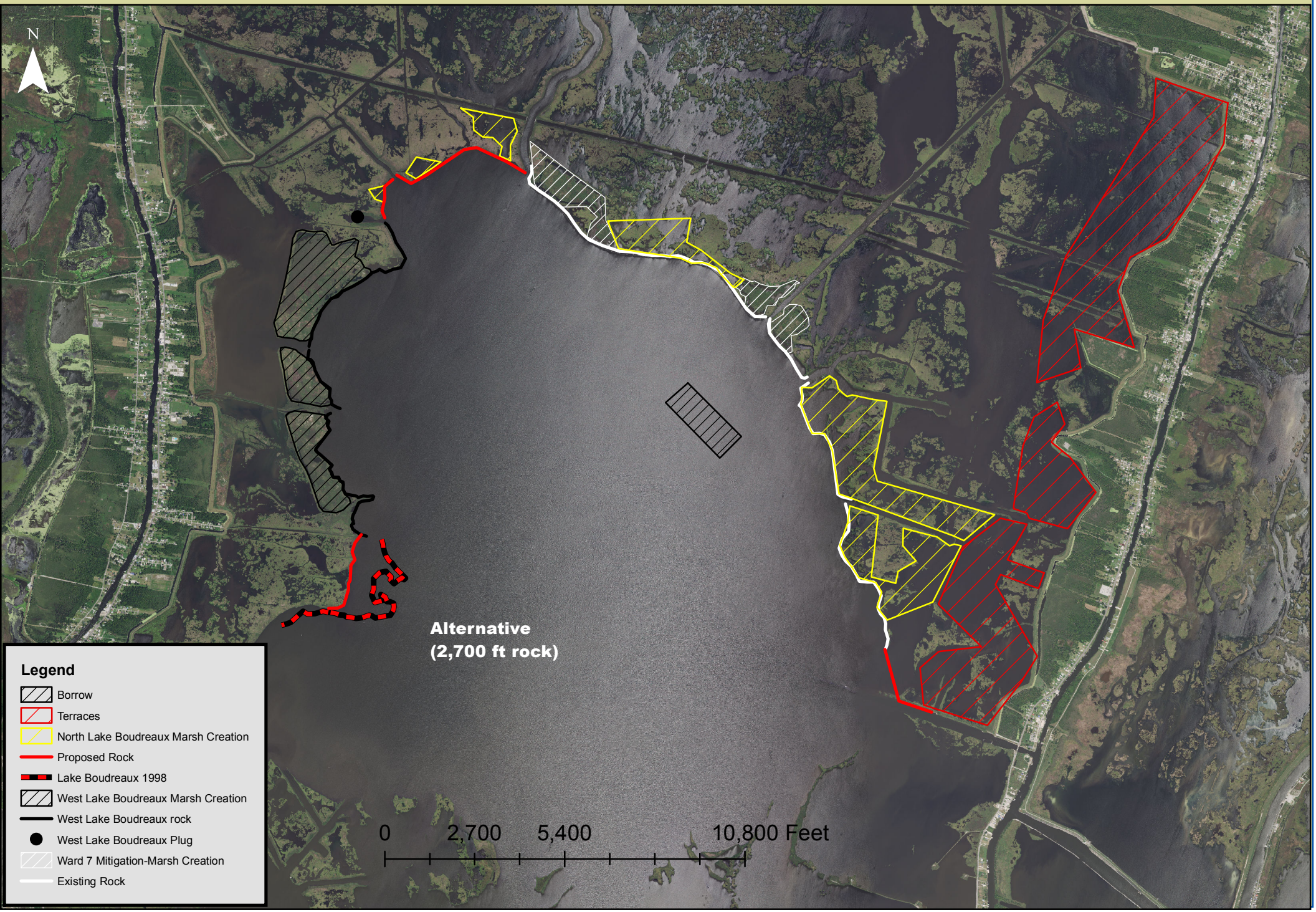
U.S Fish and Wildlife Service - Louisiana Ecological Sevices Field Office

PPL28 - North Lake Boudreaux Marsh Creation and Shoreline Protection

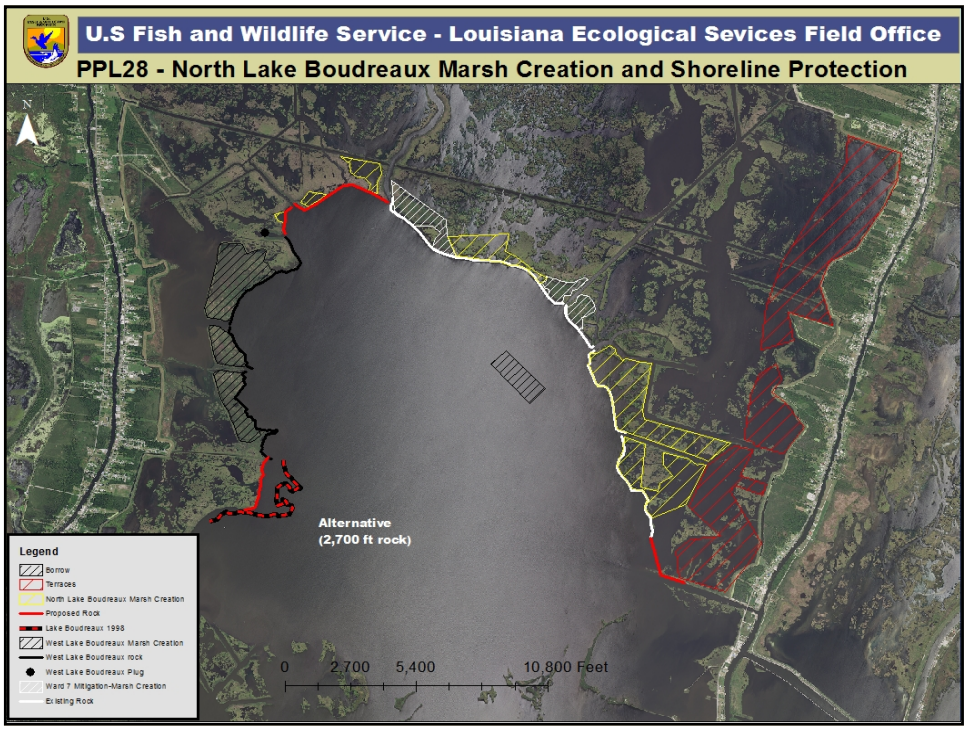


PPL28 NORTH LAKE BOUDREAUX MARSH CREATION AND SHORELINE PROTECTION

NORTH LAKE BOUDREAUX MARSH CREATION AND SHORELINE PROTECTION

Problem:

- **Subsidence, canal dredging, saltwater intrusion, and altered hydrology**
- **Shoreline Erosion**
- **Erosion rates between 9-60 ft./yr.**



NORTH LAKE BOUDREAUX MARSH CREATION AND SHORELINE PROTECTION

Solution:

- **Build 8,300 ft. of foreshore rock dike along the -2 ft. contour and built to a height of +3.0 ft.**
- **Hydraulically dredge material from Lake Boudreaux water bottom to create 300 acres and nourish 115 acres of marsh.**
- **Construct 56,000 lf of Terraces (30 acres of Marsh).**

NORTH LAKE BOUDREAUX MARSH CREATION AND SHORELINE PROTECTION

Goals:

- Protect +11,000 feet of critical shoreline and 75-100 acres of marsh.
- Create 300 acres of marsh.
- Nourish 115 acres of marsh.
- Create 56,000 lf of terraces (30 acres of marsh).

Net Acres:

- Total net acres = 308 acres marsh (not including shoreline protection)

Potential Issues:

- There are two existing borrow site that could be utilized if needed.

Preliminary Construction Costs

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

Species of Concern and Rare Species

- Least Bittern
- Black Rail
- Mottled Duck
- Brown Pelican
- Louisiana Eyed Silkmoth
- King Rail

~~**R3-TE-06**~~

~~**Central Bayou DeCade Marsh Creation**~~

Withdrawn due to project overlap with R3-TE-02

TE-06

PPL28 PROJECT NOMINEE FACT SHEET
January 31, 2018

Project Name
Central Bayou De Cade Marsh Creation

Project Location
Region 3, Terrebonne Basin, Terrebonne Parish

Problem

The Terrebonne Basin is an abandoned delta complex with a network of old distributary ridges extending southward from Houma. The area is characterized by a thick section of unconsolidated sediments that are undergoing dewatering and compaction, which contributes to high subsidence rates. Historically, subsidence and numerous oil and gas canals and pipelines in the area have contributed to wetland loss. Since 1932, the Terrebonne Basin has the greatest decrease in wetland area than any other Louisiana basin, losing 29% of its wetlands. The wetland loss rate for this area range from -0.79% to -0.92%/year based on USGS hyper-temporal data from 1984 to 2016 from two adjacent CWPPRA project and candidate, Bayou De Cade Ridge and Marsh Creation (TE-138), and North Bayou De Cade Ridge Restoration and Marsh Creation (PPL27).

Goals
The project goals are to create and nourish approximately 292 acres of intermediate marsh along the southern bank of Bayou De Cade and a portion of the northern shoreline of Raccourci Bay.

Proposed Solution
The proposed project's primary feature is to create approximately 258 acres and to nourish 34 acres of intermediate marsh adjacent to Bayou De Cade. Sediment for marsh creation will be hydraulically pumped from a borrow source in Lake Mechant. The borrow area in Lake Mechant will be located and designed in a manner to avoid and minimize environmental impacts to the maximum extent practicable. Containment dikes will be constructed around the marsh creation area to retain sediment during pumping. Containment dikes will be gapped within three years post construction.

Preliminary Project Benefits

1) *What is the total acreage benefited both directly and indirectly?*
   The total project area is approximately 292 acres.

2) *How many acres of wetlands will be protected/created over the project life?*
   The net acre benefit range is 200-250 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. (USGS hyper-temporal data from 1984 to 2016 shows an average of -0.86%/year from two adjacent CWPPRA project and candidate in the area)

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

5) *What is the net impact of the project on critical and non-critical infrastructure?*
Some of the marsh creation can provide protection from wave erosion to non-critical infrastructure such as nearby camps.

6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?*
The project would work synergistically with the (TE-39) South Lake De Cade Freshwater Introduction, (TE-44) North Lake Mechant Landbridge Restoration Projects, and the Bayou De Cade Ridge and Marsh Creation (TE-138).

Considerations
Pipelines/utilities and oysters are potential considerations with project design and implementation.

Preliminary Construction Costs
The estimated construction cost plus 25% contingency range is $20M - $25M.

Preparer(s) of Fact Sheet:
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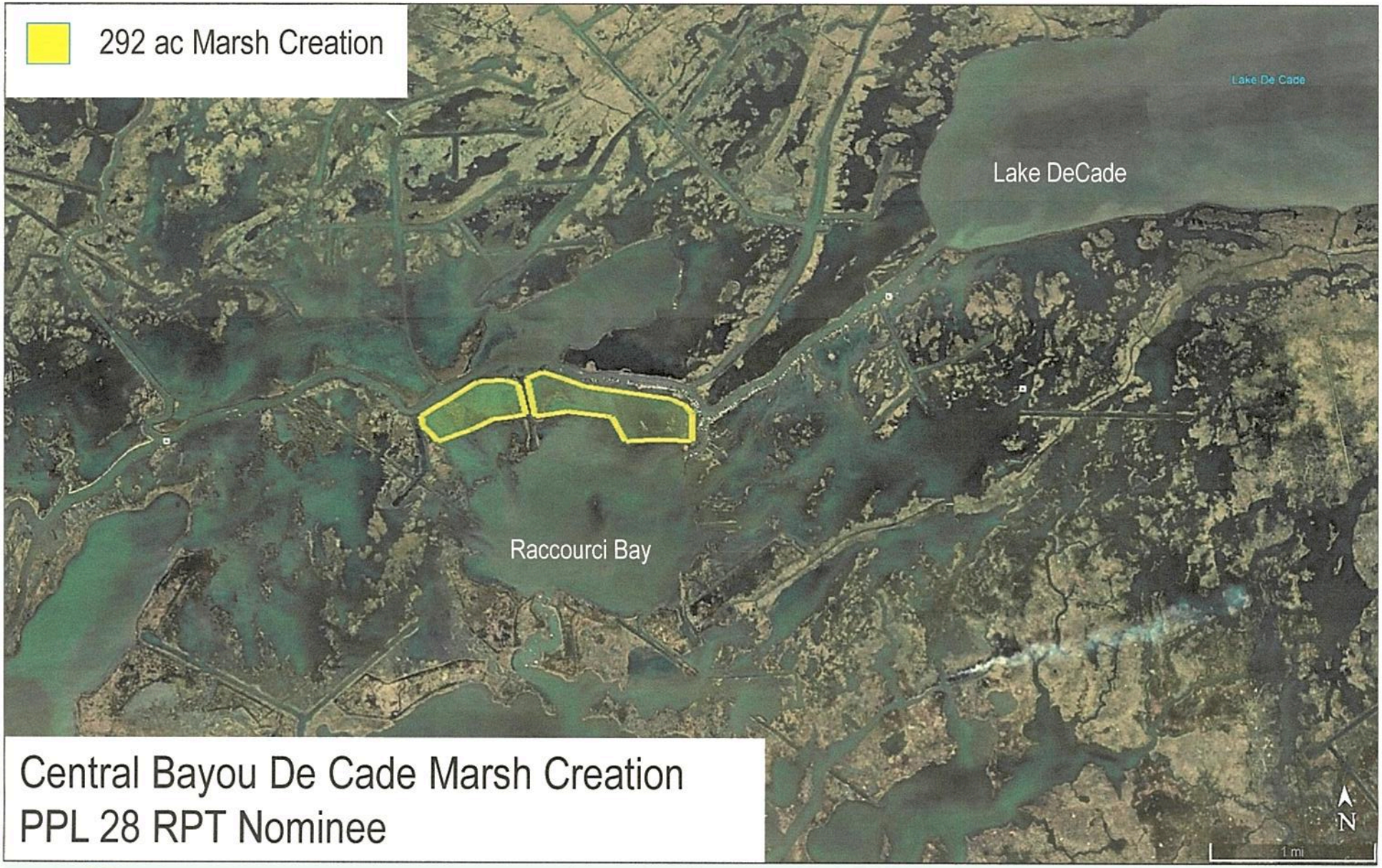
Jason Kroll, NOAA Fisheries, 225-757-5411, jason.kroll@noaa.gov



Central Bayou De Cade Marsh Creation
PPL 28 RPT Nominee

NOAA FISHERIES

Central Bayou De Cade Marsh Creation

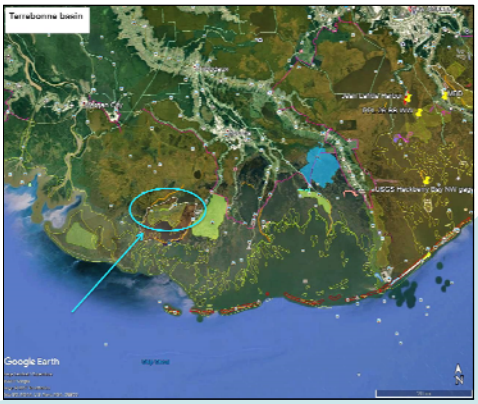
NOAA FISHERIES

Habitat Conservation Division

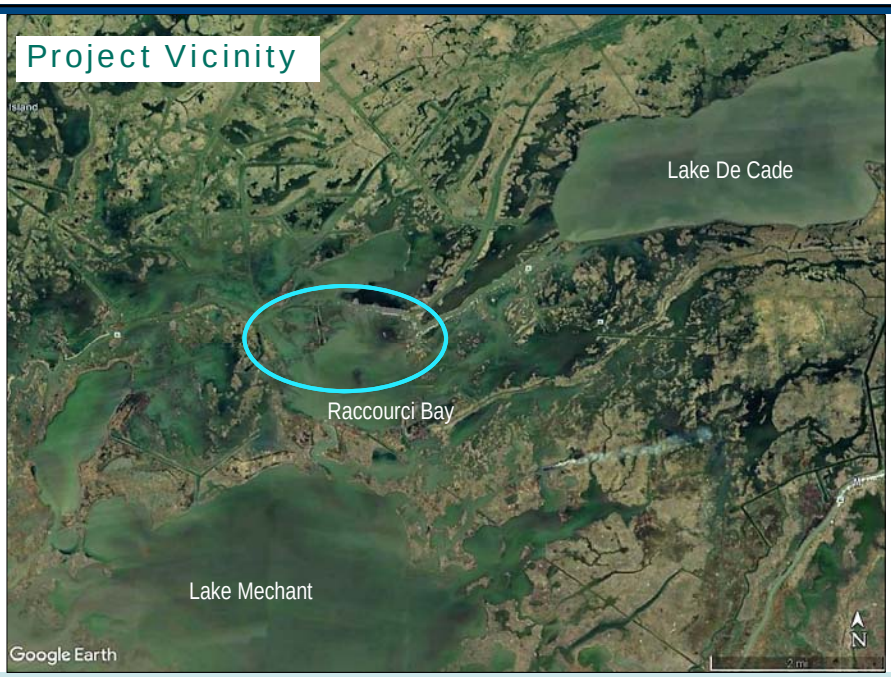
Region 3 - Terrebonne Basin

Presenter: Dawn Davis

PPL28 CWPPRA Regional Planning Team Meeting
Morgan City, LA
January 31, 2018



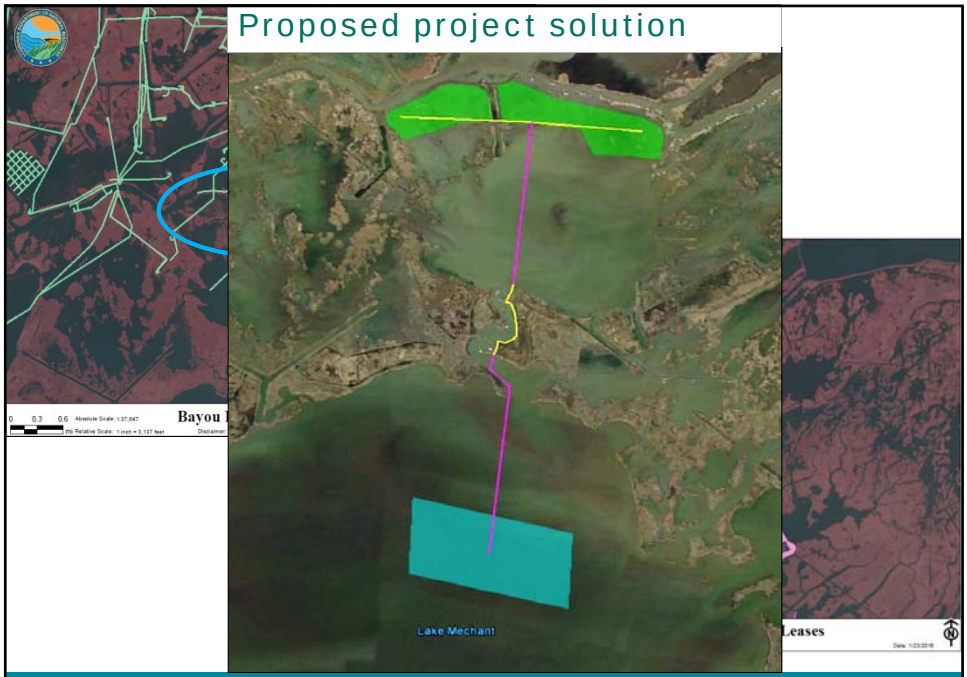
Project Vicinity



Project Area Problems

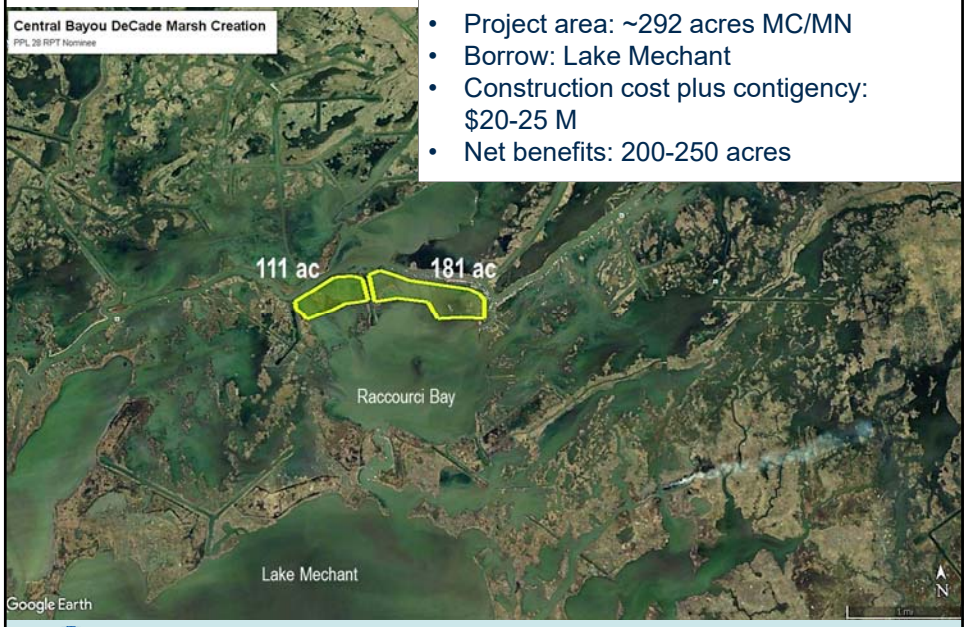
1990 2015

Proposed project solution



Project Features and Benefits

- Project area: ~292 acres MC/MN
- Borrow: Lake Mechant
- Construction cost plus contigency: $20-25 M
- Net benefits: 200-250 acres



Questions?

Contact information:

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R3-TE-07

Lake Chapeau 2 Marsh Creation

TE-07

PPL28 PROJECT NOMINEE FACT SHEET
February 31, 2018

Project Name
Lake Chapeau 2 Marsh Creation

Project Location
Region 3, Terrebonne Basin, Terrebonne Parish

Problem
The loss rate for Point au Fer Island is -0.06%/yr based on 1985 to 2016 USGS data from the Point au Fer mapping unit. Since 1973, Point au Fer has experienced freshening as a result of sediments and freshwater from the Atchafalaya River. Although there is a low marsh loss rate, this freshwater flow and sediment source has not been effective in restoring marsh. Lake Chapeau has increased in size as the shorelines fragmented and interior marsh loss occurred. A reach of Locust Bayou has coalesced with Lake Chapeau. As lake and bayou banks disappeared, tidal flows have increased and circumvented natural flow patterns.

Goals
The project goal is creating marsh in the project area to replace marsh lost, restore the west and southern shorelines of Lake Chapeau, and restore a reach of Locust Bayou. Specifically, the goal is to create and nourish approximately 514 acres of marsh (360 acres creation and 154 acres nourishment).

Proposed Solution
The proposed project would further restore the structural framework of Lake Chapeau and Locust Bayou by creating approximately 360 acres of marsh and nourish 154 acres of existing marsh utilizing dedicated dredging and confined disposal. Sediment would be mined from Atchafalaya Bay. The borrow area would be designed to avoid adverse impacts to the existing shorelines of Point au Fer Island. The created marsh would be planted with smooth cordgrass. During Phase 0 and Phase 1, opportunities would be explored to increase the amount of marsh creation to further complete restoration of Lake Chapeau.

Preliminary Project Benefits

1) *What is the total acreage benefited both directly and indirectly?*
This total project area is 514 ac.

2) *How many acres of wetlands will be protected/created over the project life?*
Approximately 364 acres of marsh will be protected/created over the project life.

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

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

The project would further restore the structural framework of Lake Chapeau.

5) *What is the net impact of the project on critical and non-critical infrastructure?*
The project would have minor net positive impact to non-critical oil and gas infrastructure.

6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?*
This project would provide a synergistic effect with the Lake Chapeau Sediment Input and Hydrologic Restoration Project (TE-26), Point au Fer Canal Plugs (TE-22), and the State Small Dredge Project.

Considerations
The proposed project has potential utility/pipeline considerations.

Preliminary Construction Costs
The construction + 25% contingency cost range is $20M-$25M.

Preparer(s) of Fact Sheet:
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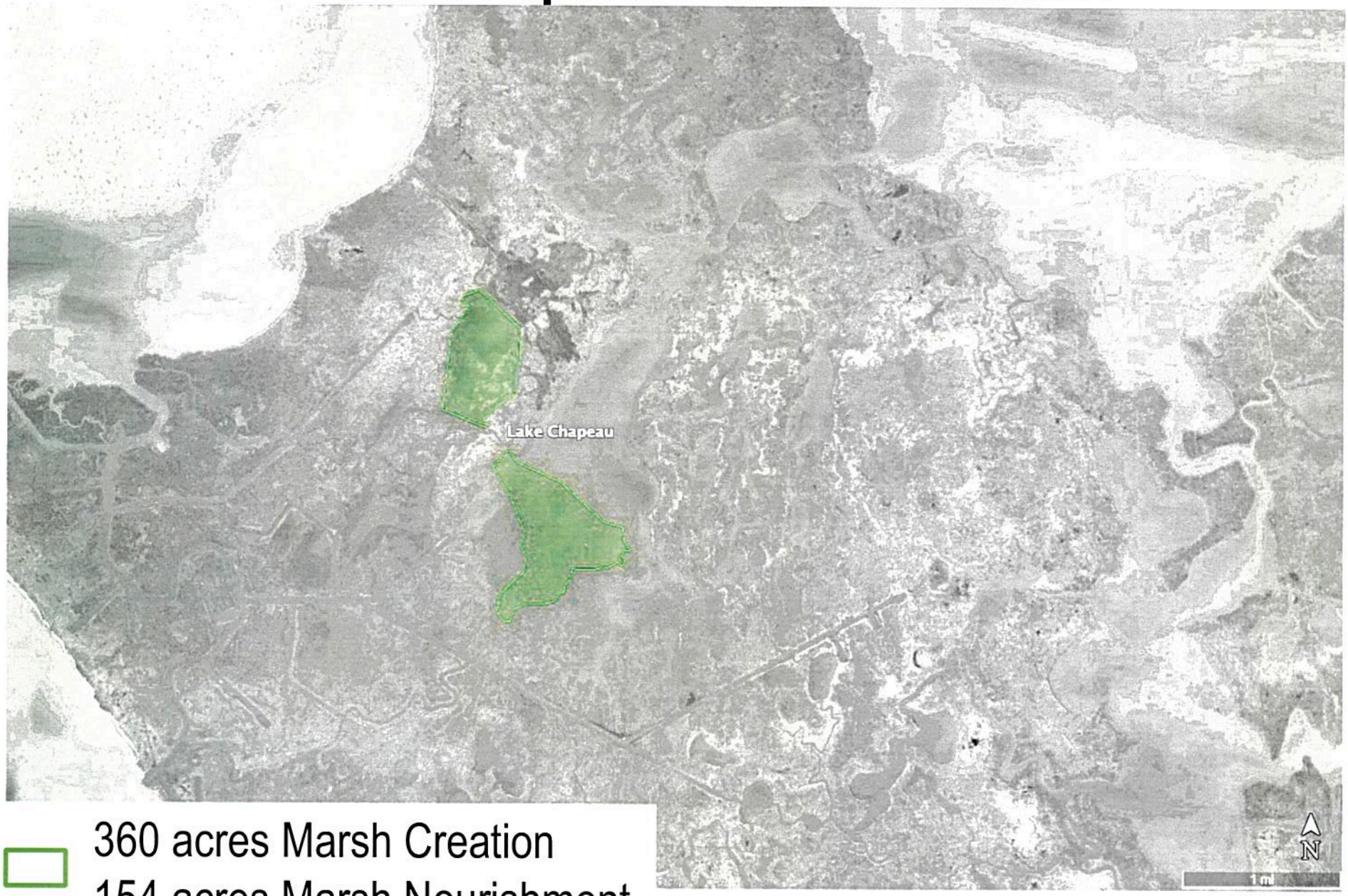
Joy Merino, NOAA Fisheries, 337-291-2109, joy.merino@noaa.gov

PPL28 Lake Chapeau 2 Marsh Creation

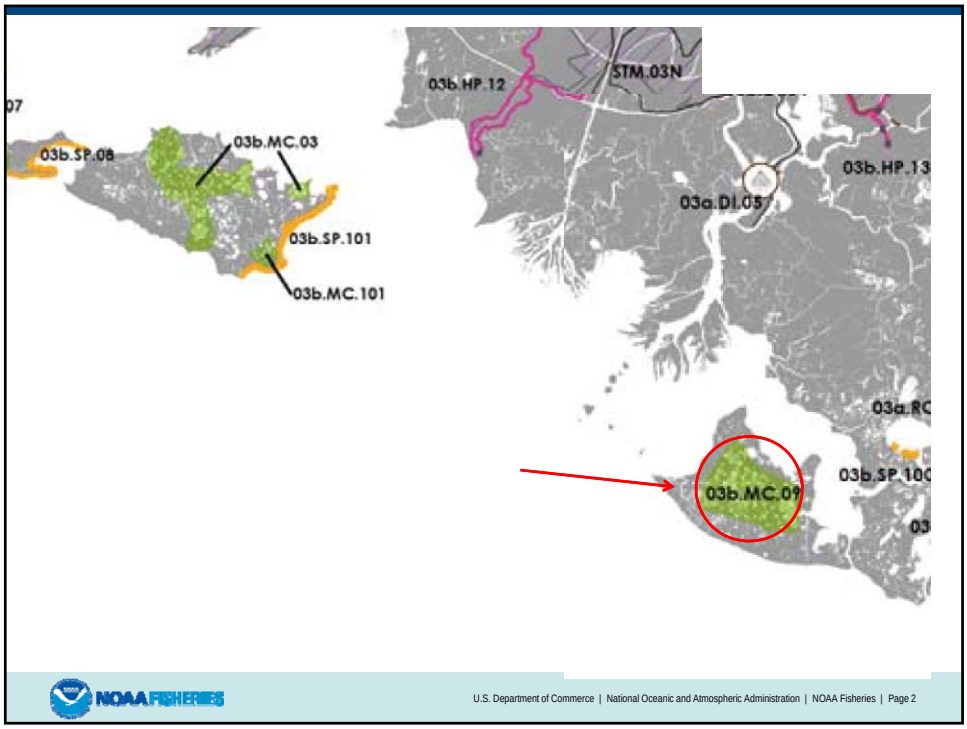


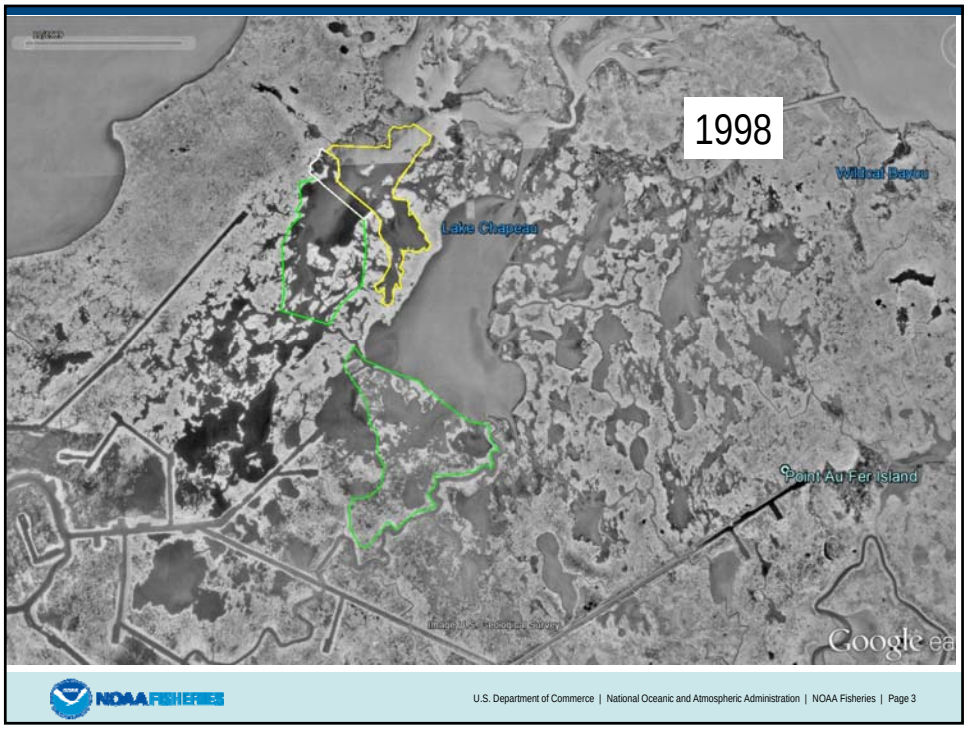
360 acres Marsh Creation
154 acres Marsh Nourishment

NOAA FISHERIES

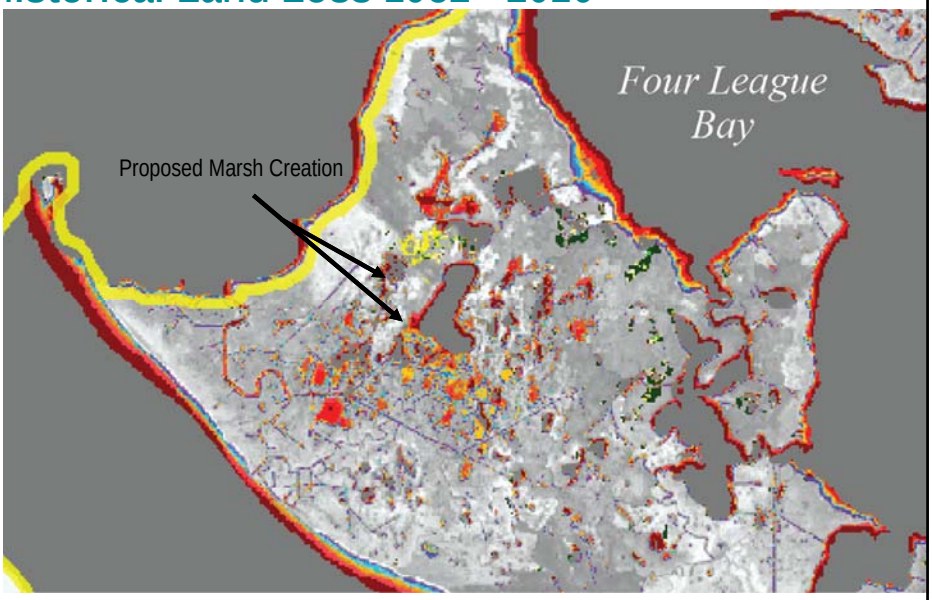
PPL28 Lake Chapeau 2 Marsh Creation

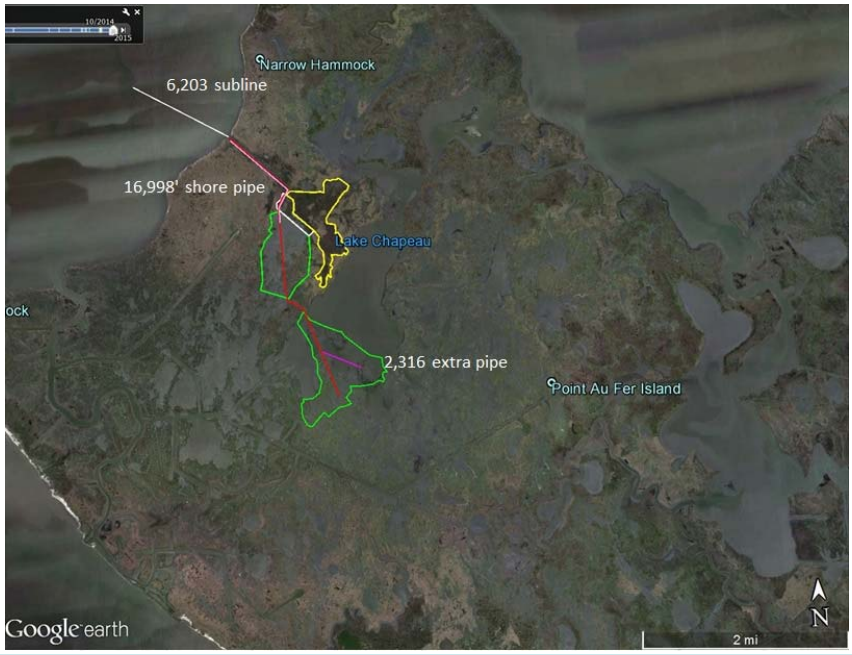
February 31, 2017





Historical Land Loss 1932 - 2016





PPL28 Lake Chapeau 2 Marsh Creation

360 acres Marsh Creation
154 acres Marsh Nourishment

Summary:

- Total: 514 ac
- Marsh Creation: 360 ac
- Marsh Nourishment: 154 ac
- Net Acres: 364 ac
- Atchafalaya Bay Borrow
- Construction +25% Range: $20M - $25M

R3-TE-08

Point Au Fer Island Marsh Creation Using Permanent Pipeline

PPL28 PROJECT NOMINEE FACT SHEET
February 2018

Point Au Fer Island Marsh Creation Using Permanent Pipeline

2017 Coastal Master Plan Strategy
Marsh Creation -03b.MC.09 Point Au Fer Island Marsh Creation: Creation of approximately 13,000 acres of marsh on Point Au Fer Island to create new wetland habitat and restore degraded marsh.

Project Location
Region 3, Terrebonne Basin, Terrebonne Parish
Point Au Fer Island, approximately 30 miles south of Morgan City, Louisiana.

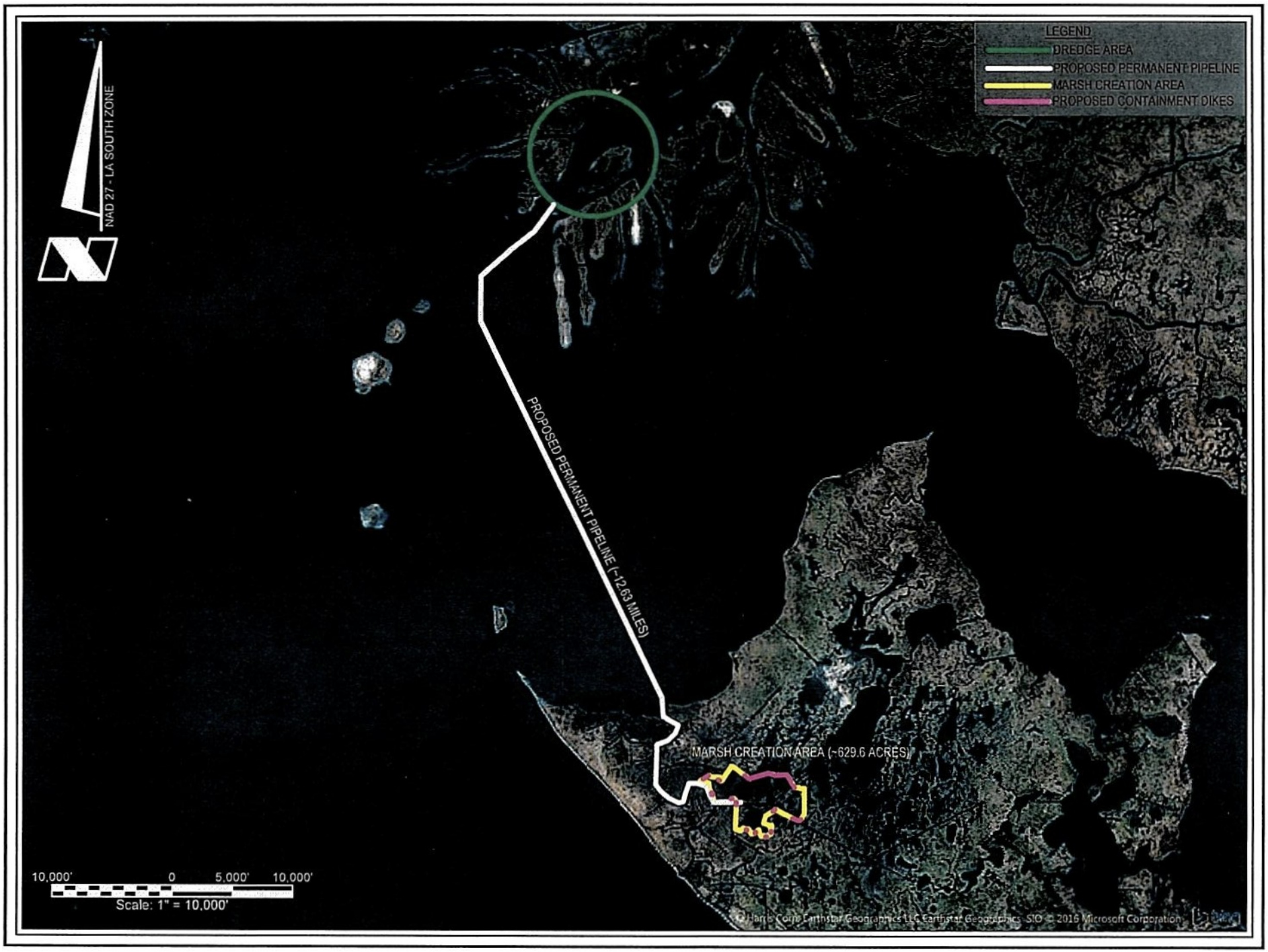
Problem
Pipelines, well locations, and access channels on Point Au Fer Island have contributed to saltwater intrusion into the island's interior marshes. During periods of low river flow in which the input of fresh water declines, the elevated salinity levels cause the breakup of the island's marshes. In addition, storm- induced breaches along sections of the gulf shoreline immediately adjacent to oilfield canals also allow salt water to penetrate the island's interior. In total, it has been estimated that over 30% of the island's interior marsh has been lost over the past 60-70 years.

Proposed Solution
The Port of Morgan City and Corps of Engineers maintains the channel depth of the lower Atchafalaya River. They have reported that on a regular basis, a sill forms and must be dredged and disposed of at an alternate location to maintain an open navigation channel. This action supplies this project with a renewable resource of dredge material. This project will construct a permanent dredged material disposal pipeline, approximately 58,000 feet in length, to reach Point Au Fer Island. The pipeline is to be used in conjunction with the Corps of Engineers' maintenance dredging of the Atchafalaya River Bay Channel. The initial dredging action, and each subsequent event, could remove up to approximately 2 million cubic yards of material per event from the Atchafalaya River, which will be pumped to Point Au Fer Island to create marsh.

Goals
The project goal is to establish permanent infrastructure that could be utilized to restore the degraded marshes on Point Au Fer Island. An estimated 4000 acres of shallow open water exists that could be returned to healthy wetland habitat, with additional opportunities to nourish the existing areas of subsided marsh platform.

Preliminary Construction Costs:
The estimated construction cost including 25% contingency is $35M-40M.

Preparer(s) of Fact Sheet:
C.H. Fenstermaker and Associates, LLC 337-237-2200
Cost estimate performed by USACE


LEGEND
DREDGE AREA
PROPOSED PERMANENT PIPELINE
MARSH CREATION AREA
PROPOSED CONTAINMENT DIKES
NAD 27 - LA SOUTH ZONE
PROPOSED PERMANENT PIPELINE (~12.63 MILES)
MARSH CREATION AREA (~629.6 ACRES)
10,000' 0 5,000' 10,000'
Scale: 1" = 10,000'
Harris Corp Earthstar Geographics LLC Earthstar Geographics SIO © 2016 Microsoft Corporation

R3-TE-09

East Catfish Lake Marsh Creation and Shoreline Protection

TE-09

PPL28 PROJECT NOMINEE FACT SHEET
January 31, 2018

Project Name
East Catfish Lake Marsh Creation and Shoreline Protection

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 1984-2016 loss rate of -1.11% per year for the PPL27 candidate project. Shoreline erosion rates (1998-2015) range from 10 ft/yr along the eastern lake shoreline to 23 ft/yr along the southern lake shoreline.

Goals
The primary goals of this project are; 1) restore marsh habitat in the open water areas east and south of Catfish Lake, and 2) restore and protect the eastern and southern Catfish Lake shoreline.

The specific goals of this project are; 1) create 231 acres of marsh, 2) nourish 75 acres of marsh, 3) protect the marsh creation cells from shoreline erosion.

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, saltmarsh topminnow, and Louisiana eyed silkmoth, which are petitioned for listing as threatened/endangered species.

Proposed Solution
Sediments from Catfish Lake will be hydraulically dredged and pumped via pipeline to create/nourish 306 acres of marsh (Figure 1). Dewatering and compaction of dredged sediments should produce elevations conducive to the establishment of emergent marsh and within the intertidal range. Containment dikes will be constructed around each marsh creation cell. Where practicable, material will be borrowed from perimeter oil/gas canals. Containment dikes will be gapped at the end of construction or by TY3. Approximately 2,566 linear feet of sheet pile wall will also be installed as a containment feature.

Approximately 12,479 linear feet of shoreline protection (gabion mattresses) will be installed along the lakeside boundary of the marsh creation cells on the constructed containment dikes.

Preliminary Project Benefits
1) *What is the total acreage benefited both directly and indirectly*? Approximately 306 acres would be benefited directly and indirectly. Direct benefits include 231 acres of marsh creation

and 75 acres of marsh nourishment. Indirect benefits could occur to surrounding marsh and open water areas.

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 243 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 interior loss rate reduction throughout the area of direct benefit is estimated to be 50%. The shoreline protection feature would prevent shoreline erosion along the eastern and southern lake shorelines.

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 protect and 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 and nearby oil/gas infrastructure.

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. Other projects in the area include marsh creation and terracing projects funded under the North American Wetlands Conservation Act (NAWCA).

Considerations
Considerations for this project include oyster leases, oil and gas infrastructure, and maintenance.

Preliminary Cost
The estimated construction cost plus contingency is $25M - $30M.

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

East Catfish Lake Marsh Creation and Shoreline Protection (PPL28 Nominee)

Shoreline Protection *

Marsh Creation *

Project Boundary

*** denotes proposed features**

0.25 0 0.25 0.5 Kilometers

0.25 0 0.25 0.5 Miles

Scale: 1:35,000

USGS science for a changing world

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

Image Source:
2016 DOQQ

Map ID:
Map Date: January 19, 2018

REGION III

REGIONAL PLANNING TEAM MEETING

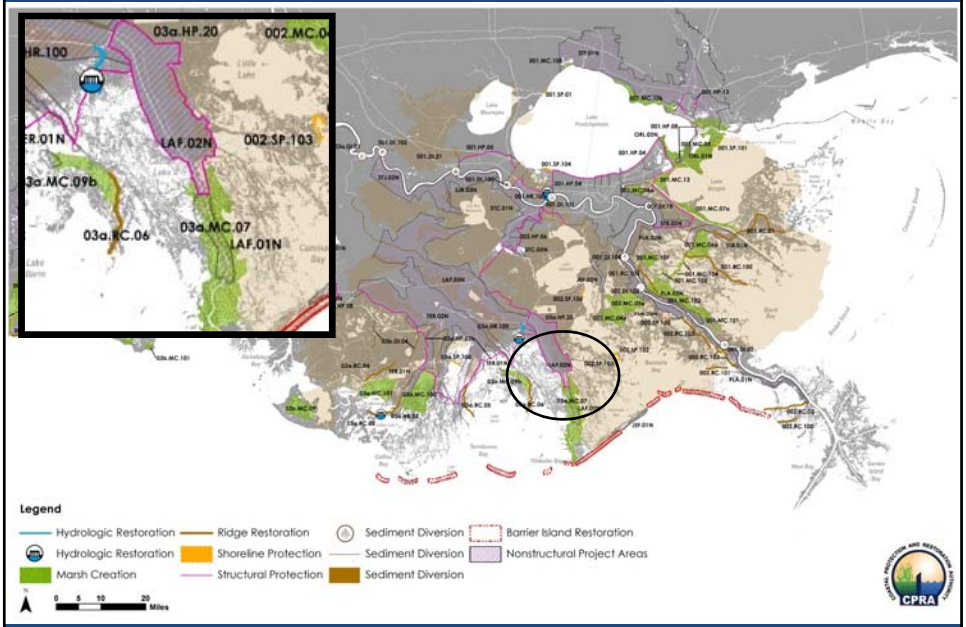
TERREBONNE BASIN

Morgan City, LA

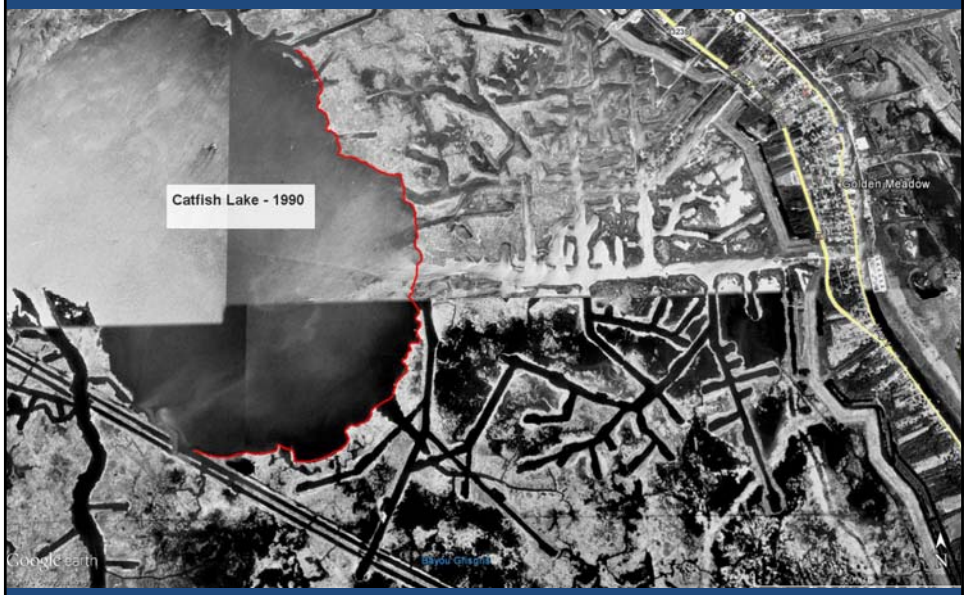
January 31, 2018

Kevin Roy
U.S. Fish and Wildlife Service
Lafayette, LA

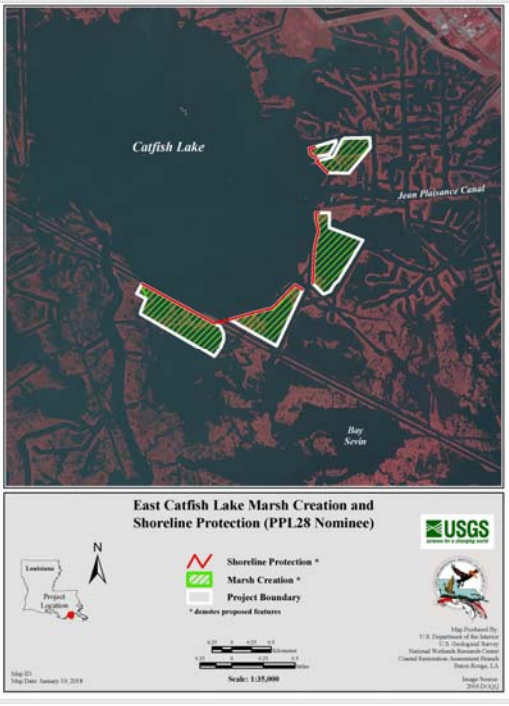
2017 Coastal Master Plan



Catfish Lake – Eastern Shoreline Erosion



Catfish Lake – Eastern Shoreline Erosion



231 acres of marsh creation

75 acres of marsh nourishment

Catfish Lake borrow site

12,479 feet of shoreline protection

East Catfish Lake Marsh Creation and Shoreline Protection

- Catfish Lake borrow site
- Pump distance of 9,100 feet
- 306 acres of marsh creation/nourishment
- 12,479 LF of shoreline protection
- Net acres = 243
- Construction plus contingency = $25M - $30M

R3-TE-10

Small Bayou LaPointe Marsh Creation

TE-10

PPL28 PROJECT NOMINEE FACT SHEET
January 31, 2018

Project Name
Small Bayou LaPointe Marsh Creation

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 1985-2016 loss rate of -0.53% per year for the Lake Mechant LCA polygon.

Goals
The goals are to: 1) Restore 380 acres of intermediate/brackish marsh habitat along the northern side of 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 which is petitioned for listing as a threatened/endangered species. The project could also benefit other at-risk species including the seaside sparrow. The mottled duck, a priority species for the Gulf Coast Joint Venture, would also be benefited by the restoration of intermediate/brackish marsh habitat.

Proposed Project Features
1. Sediments will be hydraulically dredged in Lake Mechant and pumped via pipeline to create/nourish approximately 380 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 33,000 feet.

Preliminary Project Benefits
1) *What is the total acreage benefited both directly and indirectly*? Approximately 380 acres of marsh would be benefited directly from marsh creation.

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 250-300 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 afford some protection to what remains of the Small Bayou LaPointe ridge.

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 a ridge/marsh landbridge along the intermediate zone between Lake Mechant and Bayou Decade.

Identification of Potential Issues
Oyster leases in Lake Mechant.

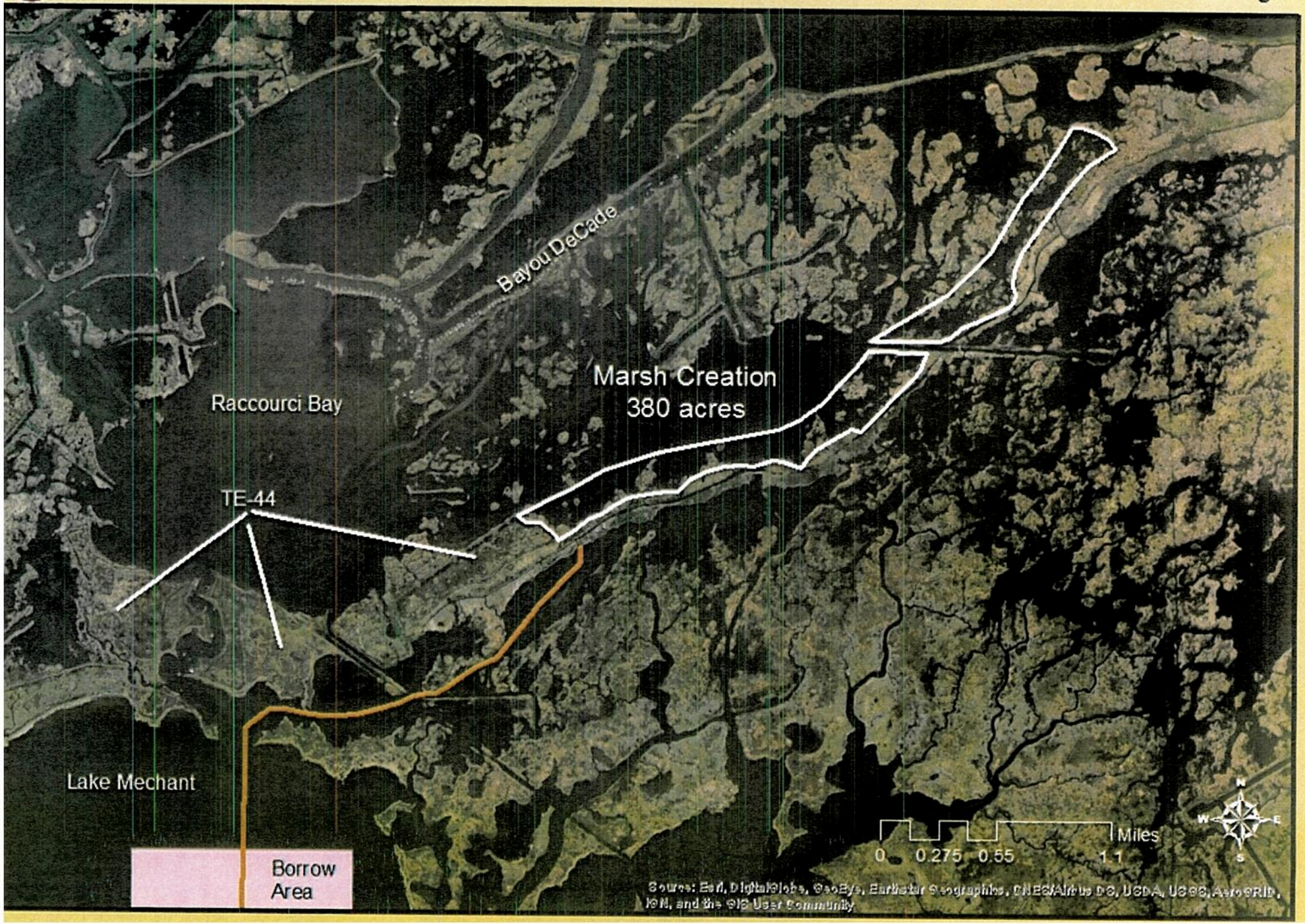
Preliminary Construction Costs
The estimated construction cost including 25% contingency is $20M - $25M.

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

U.S. Fish & Wildlife Service

Louisiana Ecological Services Field Office

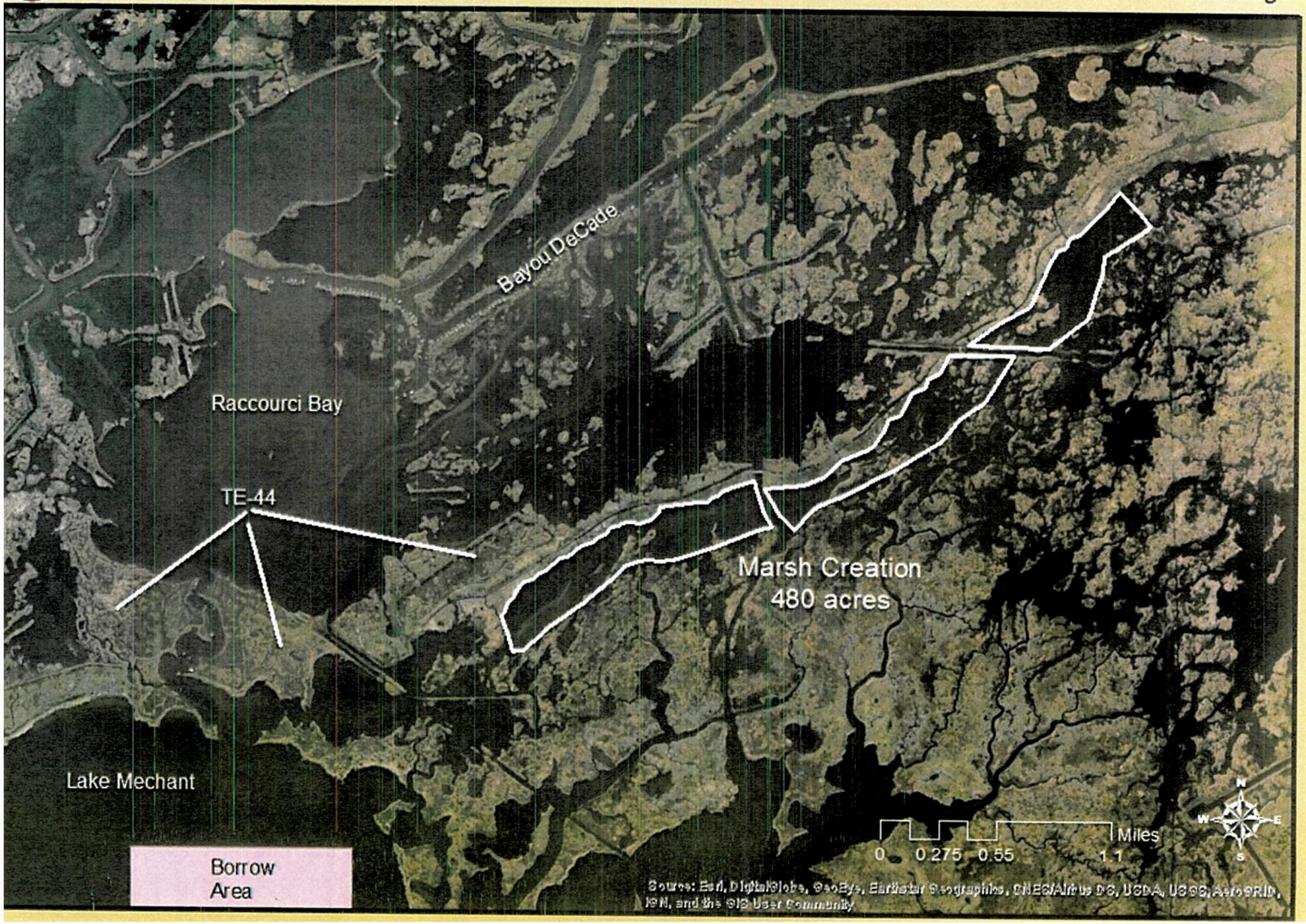
Small Bayou LaPointe Marsh Creation - North of Ridge



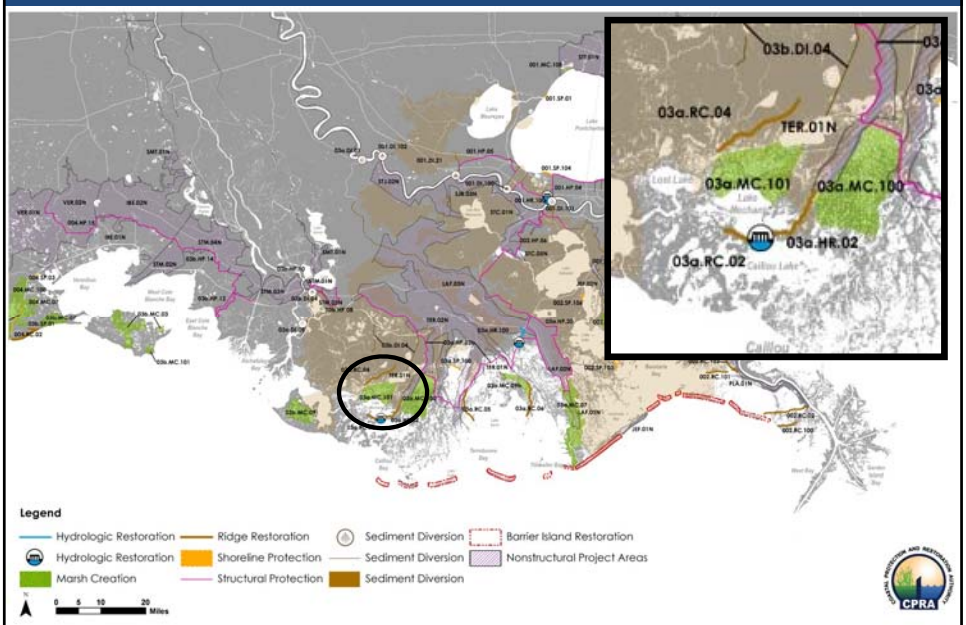
U.S. Fish & Wildlife Service

Louisiana Ecological Services Field Office

Small Bayou LaPointe Marsh Creation - South of Ridge



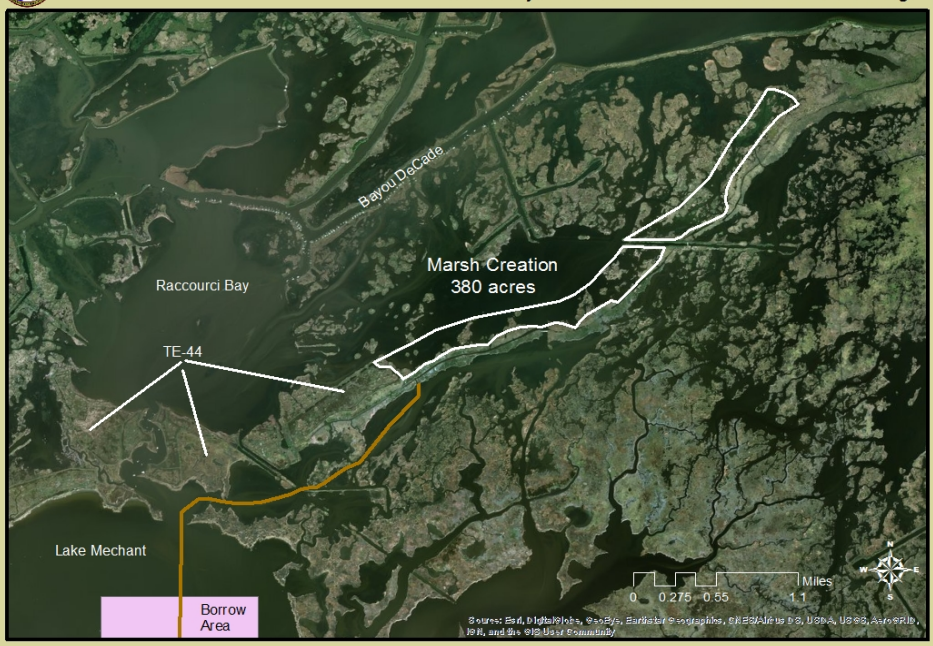
2017 Coastal Master Plan

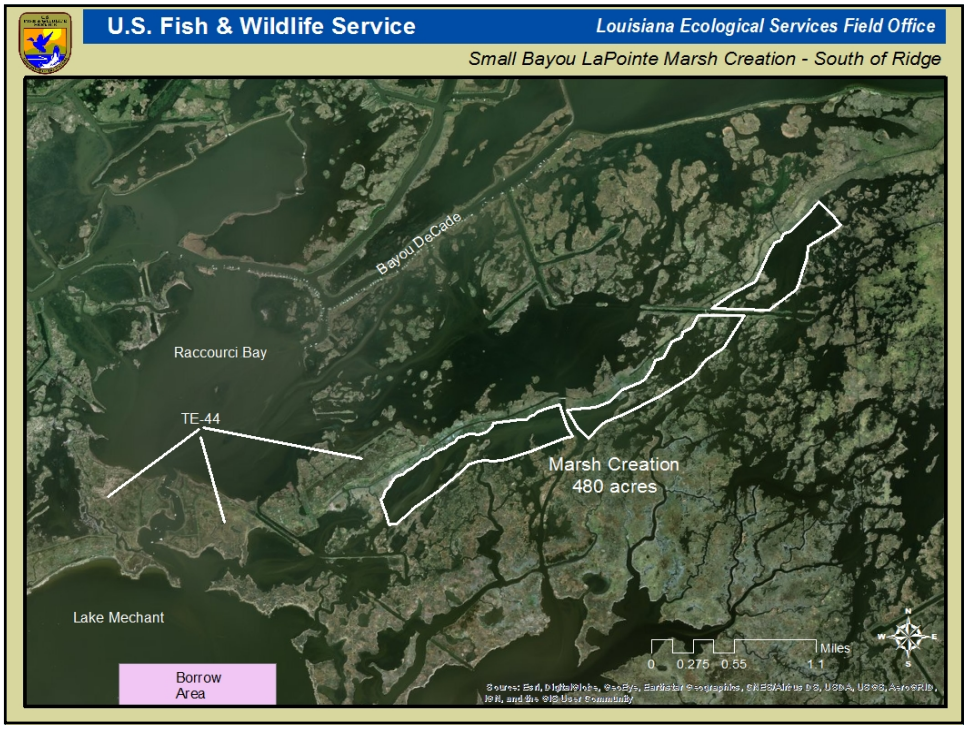


U.S. Fish & Wildlife Service

Louisiana Ecological Services Field Office

Small Bayou LaPointe Marsh Creation - North of Ridge





Small Bayou LaPointe Marsh Creation

- Lake Mechant borrow site
- 380 acres of marsh creation/nourishment
- Net acres = 250-300
- Construction plus contingency = $20M - $25M
- Project synergy – North Lake Mechant Landbridge Restoration (TE-44)

R3-TE-11

West Raccourci Bay Marsh Creation

PPL28 PROJECT NOMINEE FACT SHEET
January 31, 2018

Project Name
West Raccourci Bay Marsh Creation and Terracing

Project Location
Region 3, Terrebonne Basin, Terrebonne Parish, west of Raccourci Bay, north of Lake Mechant

Problem
Examination of historical aerial photography indicates significant marsh loss in the vicinity of the project area, particularly in the area between Raccourci Bay and Lake Pagie. Subsidence, canal dredging, storm damage, and altered hydrology are all important factors contributing to marsh loss in the area. USGS calculated a 1984-2011 loss rate of -0.995% per year for the TE-72 Lost Lake Marsh Creation and Hydrologic Restoration Project.

Goals
The primary goals of this project are; 1) restore marsh habitat in the open water areas via marsh creation and terracing and 2) reduce fetch and wave energy in open water areas via the construction of terraces. Specific goals of the project are: 1) Create approximately 550 acres of marsh with dredged material from Lost Lake and 2) create 18,200 linear feet (10 acres) of terraces.

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, which is petitioned for listing as a threatened/endangered species. The project could also benefit other at-risk species such as the seaside sparrow. The mottled duck, a priority species for the Gulf Coast Joint Venture, would also be benefited by the restoration of intermediate/brackish marsh habitat.

Proposed Project Features
1. Sediments will be hydraulically dredged in Lake Mechant and pumped via pipeline to create/nourish approximately 550 acres of marsh.
2. Containment dikes will be constructed as necessary and gapped upon project completion.
3. Approximately 18,200 ft (10 acres) of terraces will be constructed and planted with appropriate vegetation.

Preliminary Project Benefits
1) *What is the total acreage benefited both directly and indirectly*? Approximately 875 acres of marsh and open water habitat would be benefited by the project. Approximately 550 acres would benefit directly from marsh creation/nourishment. The terrace field encompasses 325 acres and would result in the creation of 10 acres of marsh.

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 400-450 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 a portion of the Raccourci Bay shoreline.

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

6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects*? The project would provide a synergistic effect with the North Lake Mechant Landbridge Restoration Project (TE-44) located to the south and east and the Lost Lake Marsh Creation and Hydrologic Restoration Project (TE-72) located to the west. All of these projects would work together to maintain a marsh land bridge along the intermediate zone between Lost Lake and Lake Decade.

Identification of Potential Issues
Oyster leases in Lake Mechant.

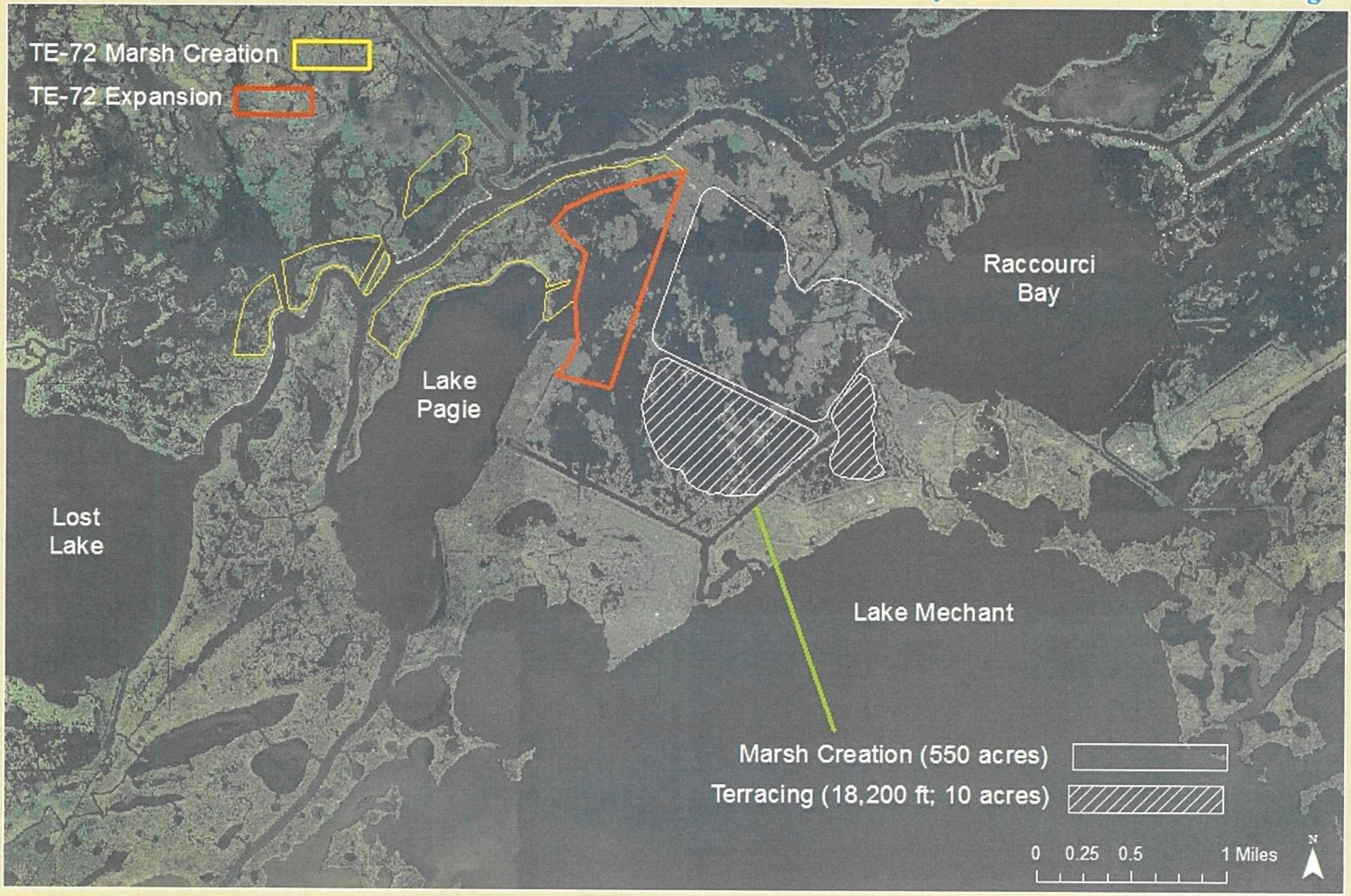
Preliminary Construction Costs
The estimated construction cost including 25% contingency is $25M - $30M.

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

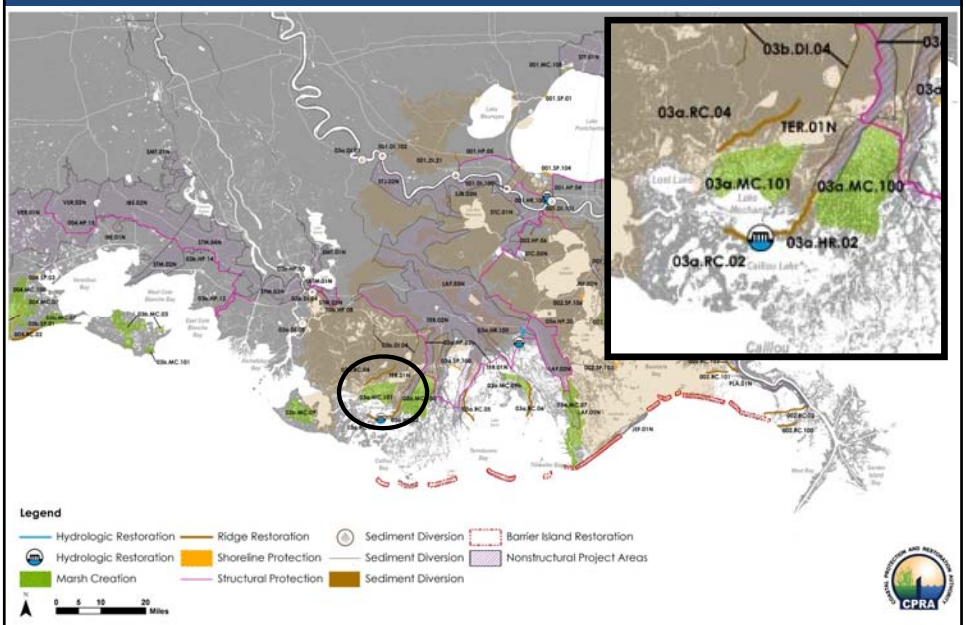
U.S. Fish & Wildlife Service

Louisiana Ecological Services Field Office

West Raccourci Bay Marsh Creation and Terracing



2017 Coastal Master Plan



West Raccourci Bay Marsh Creation and Terracing

- Lake Mechant borrow site
- 550 acres of marsh creation/nourishment
- 18,200 ft of terraces (10 ac)
- Net acres = 400 - 450
- Construction plus contingency = $25M - $30M
  (barely over $25M)
- Project synergy – Lost Lake Marsh Creation and Hydrologic Restoration (TE-72); North Lake Mechant Landbridge Restoration (TE-44)

R3-TE-12

Point aux Chenes Ridge Restoration and Marsh Creation

TE-12

PPL28 PROJECT NOMINEE FACT SHEET
January 31, 2018

Project Name
Pointe aux Chenes Ridge Restoration and Marsh Creation

Master Plan Strategy
Bayou Pointe aux Chenes Ridge Restoration (2017 Master Plan 03a.RC.06). Restoration of approximately 43,600 feet of historic ridge to an elevation of 5 feet NAVD88 to provide coastal upland habitat, restore natural hydrology, and provide wave and storm surge attenuation along the southern portions of Bayou Pointe Aux Chenes.

North Terrebonne Bay Marsh Creation–Component B (2017 Master Plan 03a.MC.09b). Creation of approximately 5,400 acres of marsh south of Montegut between Bayou St. Jean Charles and Bayou Pointe Aux Chenes to create new wetland habitat and restore degraded marsh.

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

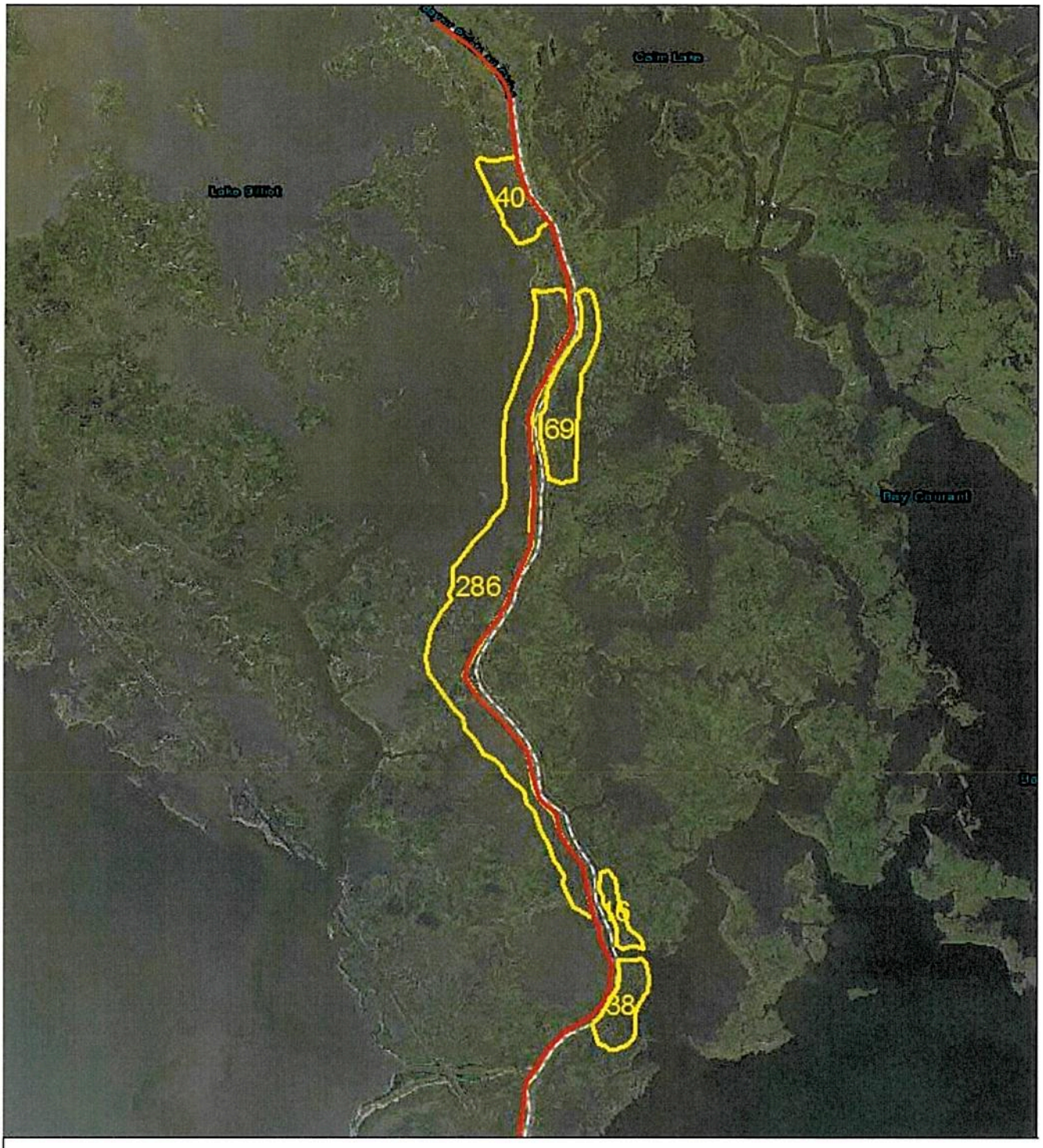
Problem
Ridges only build up when they are being formed along the banks of active distributaries or as active gulf beaches. Surface elevations of all relict natural levee ridges, chenier ridges, artificial ridges, embankments, levees, and uplands become lower through time in response to subsidence. As a result, both the Deltaic and Chenier Plain systems are badly degraded (Coast 2050: Toward a Sustainable Coastal Louisiana).

Proposed Solution
The proposed project would create and fortify 31,907 linear feet of ridge. The proposed project will create/nourish 449 acres of marsh by dredging sediment from designated borrow sources in Lake Raccourci. Containment features would be degraded or gapped as needed to promote tidal exchange after consolidation of the fill material. 50% of the newly created area will include vegetative plantings.

Project Benefits
This project would create 31,907 linear feet of ridge along southern portions of Bayou Terrebonne. It would also create/nourish 449 acres (create 219 acres and nourish 230 acres) of emergent marsh with sediment from Lake Raccourci.

Preliminary Cost
The estimated construction cost including 25% contingency is $20M - $25M.

Preparer(s) of Fact Sheet:
Adrian Chavarria, EPA; (214) 665-3103, chavarria.adrian@epa.gov
Sharon L. Osowski, Ph.D., EPA; (214) 665-7506, osowski.sharon@epa.gov
Leslie Suazo, Ducks Unlimited; (985)853-3020; lsuazo@ducks.org



Point aux Chenes Ridge Restoration & Marsh Creation

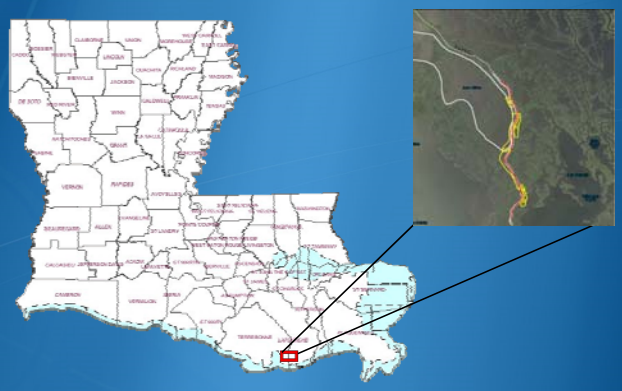
Point aux Chenes Ridge Feature 31,907ft
Point aux Chenes Marsh Creation Cells 449ac

N

Basemap: 2017 NAIP DOQQ - LaFourche Parish
Produced by: EPA Region 6, Dallas, TX

0 0.325 0.65 1.3 1.95 Miles

Pointe aux Chenes Ridge Restoration & Marsh Creation

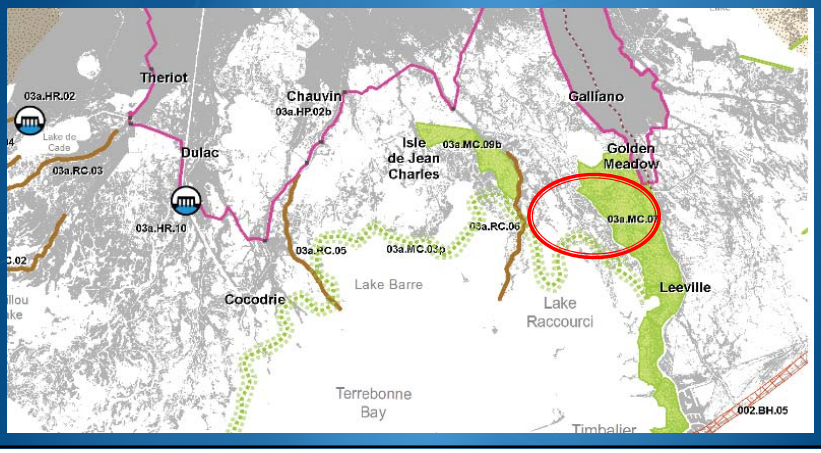


Coastal Wetlands Planning, Protection and Restoration Act

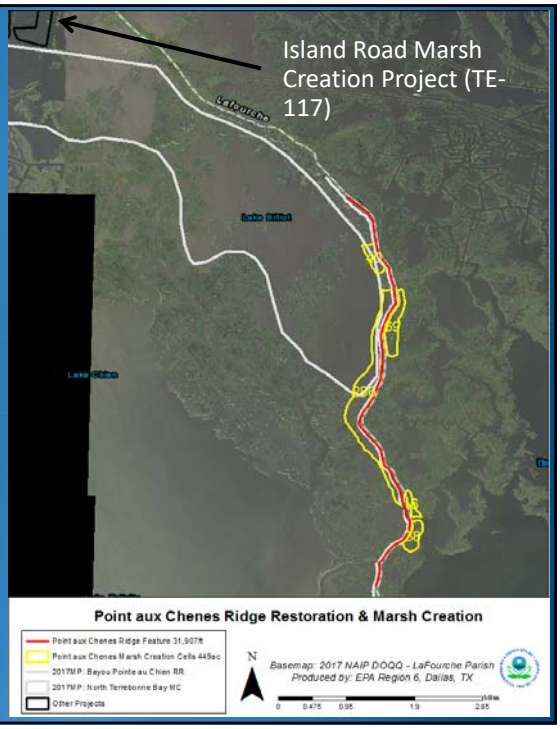
2017 Master Plan Solution

03a.RC.06 Bayou Pointe aux Chenes Ridge Restoration: Restoration of approximately 43,600 feet of historic ridge to an elevation of 5 feet NAVD88 to provide coastal upland habitat, restore natural hydrology, and provide wave and storm surge attenuation along the southern portions of Bayou Pointe Aux Chenes.

03a.MC.09b North Terrebonne Bay Marsh Creation–Component B: Creation of approximately 5,400 acres of marsh south of Montegut between Bayou St. Jean Charles and Bayou Pointe Aux Chenes to create new wetland habitat and restore degraded marsh.



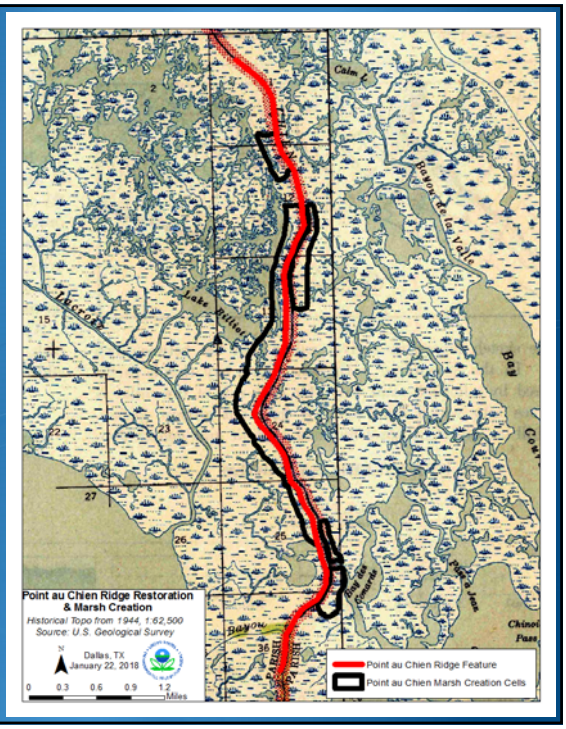
2017 Master Plan Consistency & Project Synergy



Problems

- 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 due to storm surge and erosion
- Natural hydrologic patterns have been affected by the lack of historic ridge features
- Terrebonne Parish could experience the second highest land loss of any parish (2017 MP)
- LaFourche Parish faces severely increased wetland loss in the next 50 years (2017 MP)

Historical Reference



Project Features

Species & Habitats Protected or Restored

T & E Species

- Piping Plover
- Red Knot
- Sea Turtles
- Sturgeon
- Manatee

Migratory Birds

- American Golden-plover
- Am Oystercatcher (Breeding)
- Black Skimmer (Breeding)
- Many shorebirds

Project Goals

- Restore 31,907 linear feet of historical ridge
- Create/nourish 449 acres (create 219 acres and nourish 230 acres) of marsh with sediment from Lake Raccourci as additional support for the ridge feature
- Restore wetland habitat
- Attenuate storm surge impacting the area
- The estimated construction cost + 25% contingency is $20M - $25M

R3-TE-13

West Louisiana Hwy 1 Marsh Creation

TE-13

PPL28 PROJECT NOMINEE FACT SHEET
January 31, 2018

Project Name
West Louisiana Highway 1 Marsh Creation

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 project area is -1.05%/year based on USGS hyper temporal data from 1984 to 2016.

Goals
The project goals are to create and/or nourish up to 346 acres of emergent brackish marsh

Proposed Solution
The proposed project's primary feature is to create and/or nourish approximately 346 acres of emergent brackish marsh (292 marsh creation and 54 marsh nourishment). In order to achieve this, sediment will be hydraulically pumped from a borrow source in Catfish Lake. Containment dikes will be constructed around the marsh creation area to retain sediment during pumping. The containment dikes will be degraded and/or gapped no later than three years post construction. The project will include planting smooth cordgrass plugs installed in strategic locations based on 10% of the acreage. A robust engineering and design cost is included to investigate additive or alternate marsh creation features to the west and possibly north of the proposed project.

Preliminary Project Benefits

1) *What is the total acreage benefited both directly and indirectly?*
   This total project area is approximately 346 acres (292 acres of marsh creation and 54 acres of marsh nourishment).

2) *How many acres of wetlands will be protected/created over the project life?*
   The net acre benefit range is 250-300 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 nourishment.

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.

Considerations
The proposed project has potential utility/pipeline issues along with oyster leases along the dredge pipeline path.

Preliminary Construction Costs
The estimated construction cost plus contingency is $20M - $25M.

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

West Louisiana Highway 1 Marsh Creation

PPL 28 Nominee

USGS
science for a changing world

N

Marsh Creation *

Project Boundary

* denotes proposed features

0.5 0 0.5
Kilometers
0.5 0 0.5
Miles

Scale 1:35,000

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

Image Source:
2012 DOQQ

Map ID: USGS-NWRC 2016-11-0032
Map Date: July 01, 2016

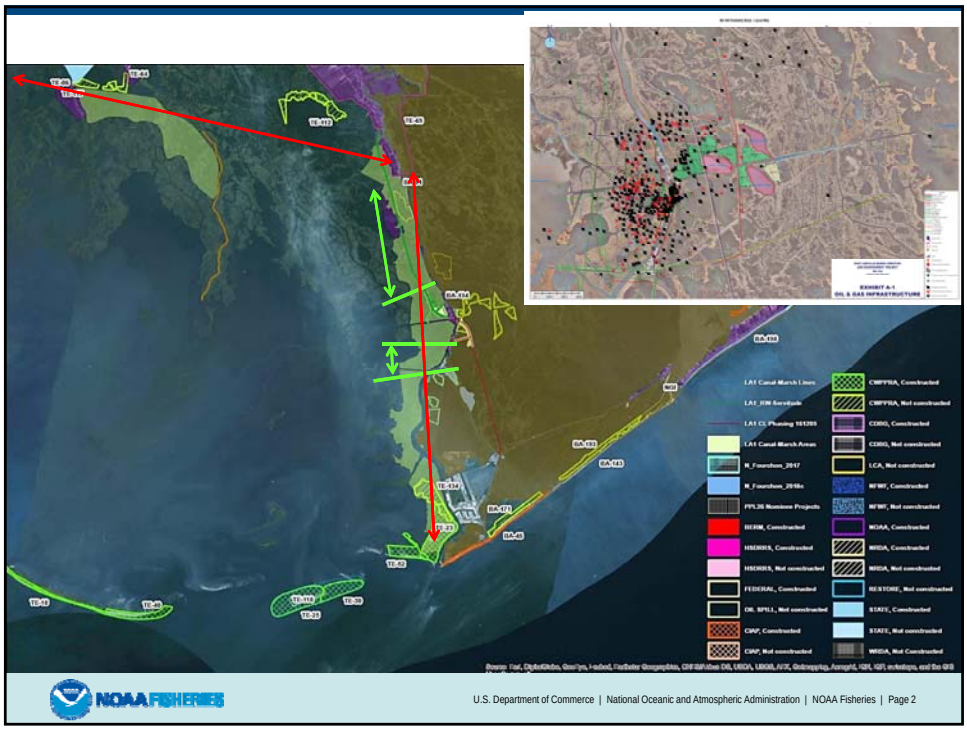
NOAA FISHERIES

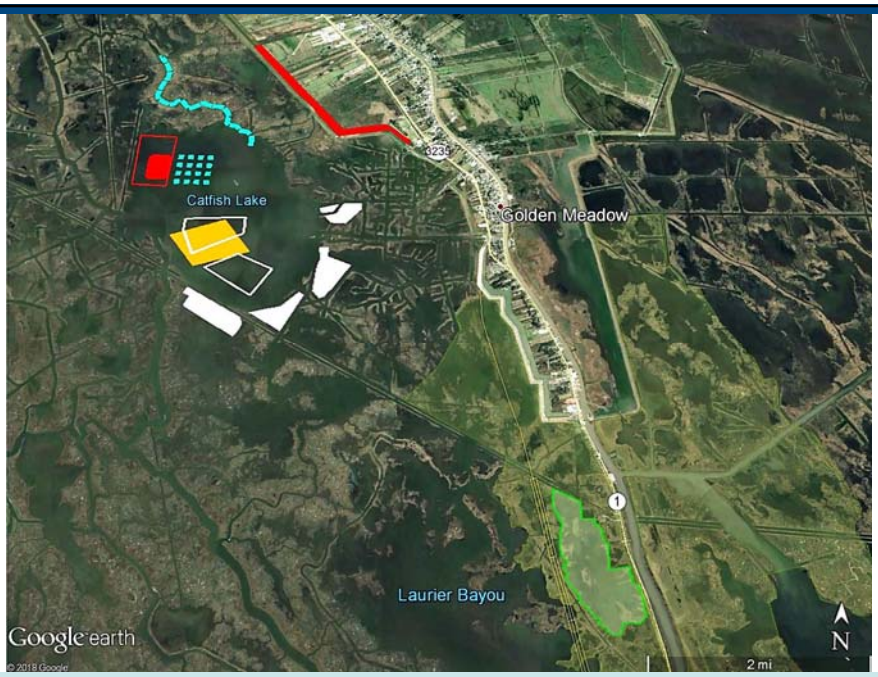
Habitat Conservation Division

PPL28 Golden Meadow to Fourchon

West La 1 Bayou Pierre et Lee & Hackberry Bay Marsh Creation and Nourishment Nominees

January 31, 2018




Catfish Lake
Golden Meadow
Laurier Bayou
Google earth
© 2018 Google
2 mi
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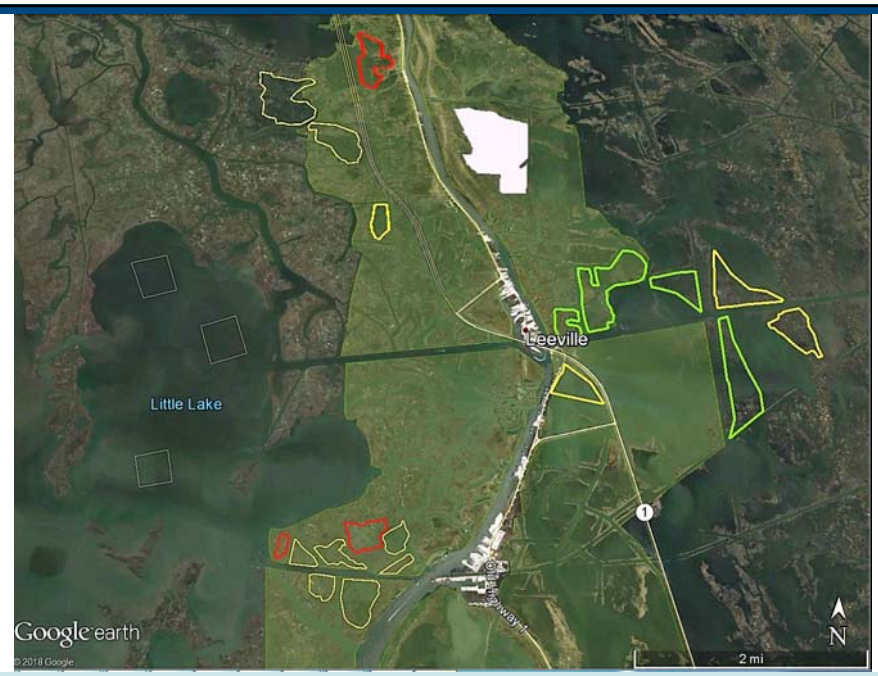
Leeville
Little Lake
Google earth
© 2018 Google
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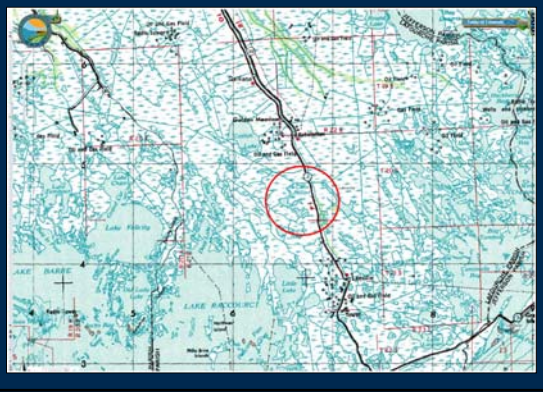
Science, Service, Stewardship

West Louisiana Highway 1 Marsh Creation

Region 3 – Terrebonne Basin
PPL28 RPT



NOAA FISHERIES SERVICE

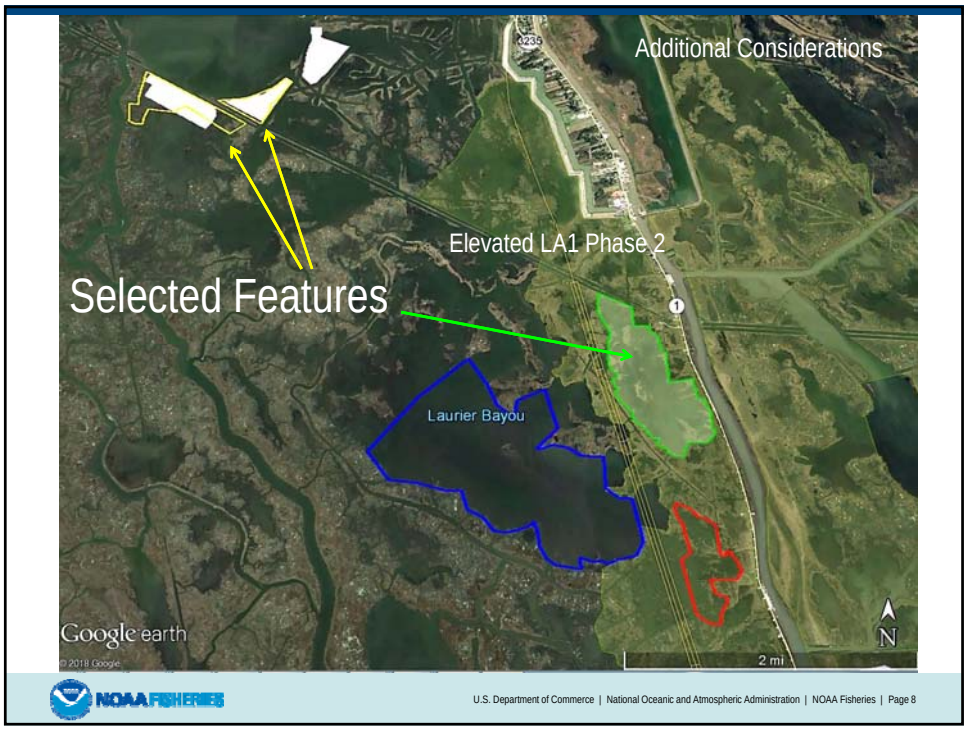
January 31, 2018

Problems Along Western side of Bayou Lafourche

- High land loss rates in Terrebonne Basin, 20% since 1932 and currently 4,500-6,500 acres lost per year
- High subsidence in the area, 0.5 ft/20 yr, 2017 Coastal Master Plan (mod 8.8 mm/yr rate)
- Limited protection to either side of LA Hwy 1
- Wetland loss rate for the project area is -1.05%/year based on USGS hyper temporal data from 1984 to 2016

NOAA FISHERIES


200 feet
Google earth
900 ft
N


Additional Considerations
Elevated LA1 Phase 2
Selected Features
Laurier Bayou
Google earth
2 mi
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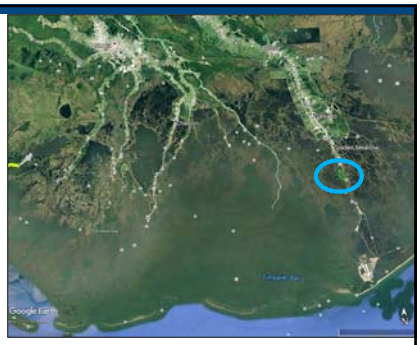
NOAA FISHERIES
U.S. Department of Commerce | National Oceanic and Atmospheric Administration | NOAA Fisheries | Page 8

NOAA FISHERIES

Summary



- Total: 346 ac
- Marsh Creation: 292 ac
- Marsh Nourishment: 54 ac
- Catfish Lake Borrow
- Estimated net acres: 250-300 ac
- Estimated construction cost plus contingency: $20M - $25M

NOAA FISHERIES

R3-TE-14

Bayou Pierre et Lee Marsh Creation and Nourishment

TE-14

PPL28 PROJECT NOMINEE FACT SHEET
January 31, 2018

Project Name
Bayou Pierre et Lee Marsh Creation and Nourishment

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 project area is -1.05%/year based on the Timbalier Bay subunit from 1985 to 2016.

Goals
The project goal is to create and nourish approximately 375 acres (ac) of brackish emergent marsh (326 ac creation, 49 ac nourishment). The project would work synergistically with the West LA Highway 1 Marsh Creation project. The Golden Meadow to Fourchon polygon holistic concept is to restore and bolster the structural framework of the marsh and provide synergy with adjacent infrastructure, flood protection, and communities limited to areas that remain unaddressed (by CWPPRA and other programs) while considering regional sediment management and infrastructure.

Proposed Solution
The proposed project goals are to create approximately 326 ac and nourish 49 ac of marsh. Sediment would be hydraulically dredged from Little Lake via pipeline. The borrow area would be designed to avoid adverse impacts to the existing shorelines of Little Lake. Containment dikes will be constructed around the marsh creation area to retain sediment during pumping. The containment dikes will be degraded and/or gapped no later than three years post construction. The project will include planting smooth cordgrass plugs installed in strategic locations based on 10% of the acreage. During both Phase 0 and Phase 1, opportunities would be explored to increase the amount of marsh creation.

Preliminary Project Benefits

1) *What is the total acreage benefited both directly and indirectly?*
   This total project area is 375 ac.

2) *How many acres of wetlands will be protected/created over the project life?*
   Approximately 250-300 ac of marsh will be protected/created over the project life.

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

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

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. The project will have synergy with the existing and planned mitigation for the elevated Louisiana Highway 1 project.

Considerations
The proposed project has potential utility/pipeline considerations.

Preliminary Construction Costs
The estimated construction cost +25% contingency is S15M-S20M.

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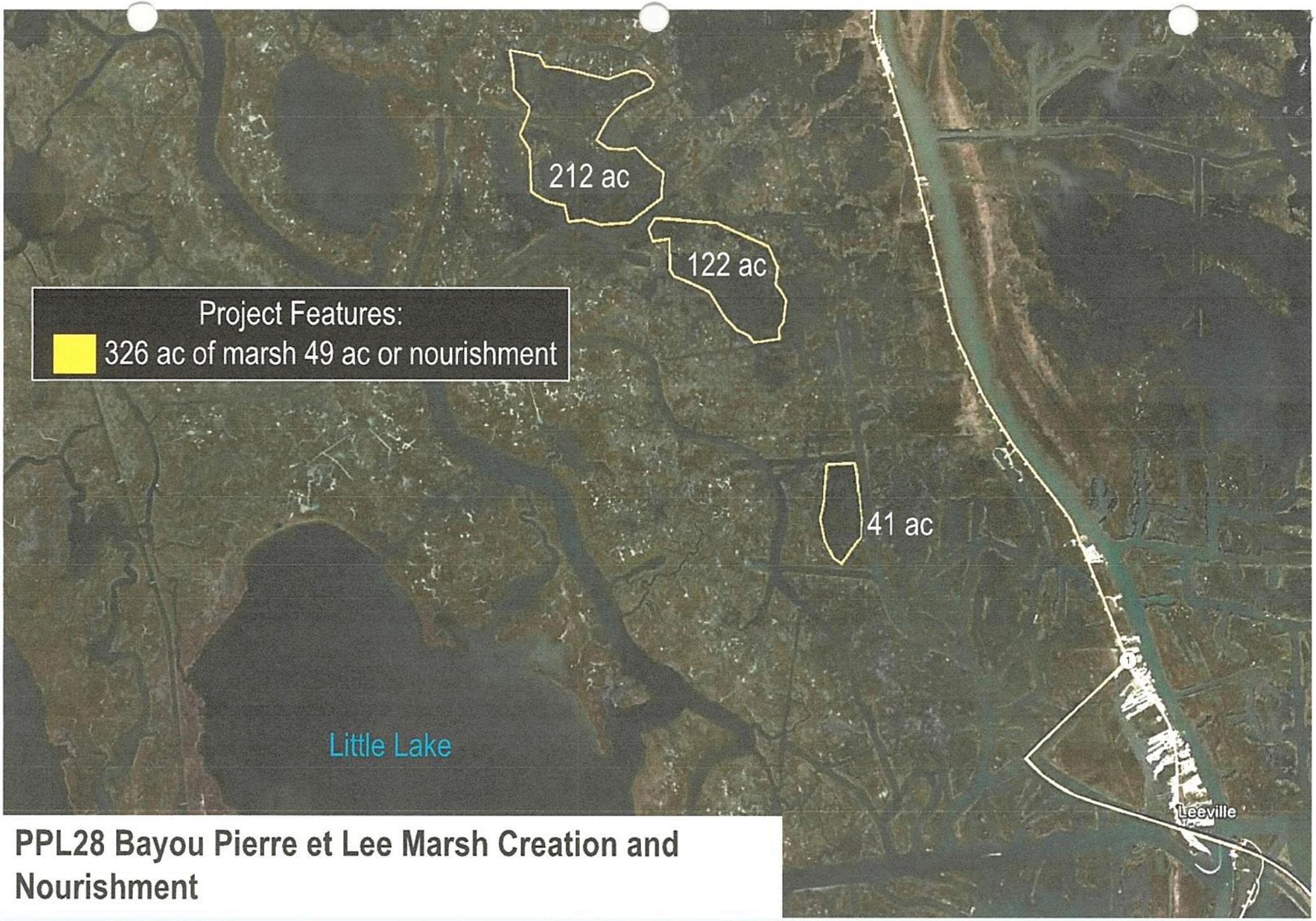
Patrick Williams, NOAA Fisheries, 225-389-0508, ext 208, patrick.williams@noaa.gov

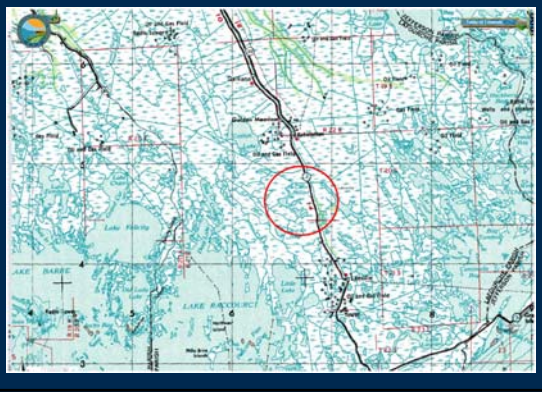


PPL28 Bayou Pierre et Lee Marsh Creation and Nourishment

Science, Service, Stewardship

Bayou Pierre et Lee Marsh Creation and Nourishment

Region 3 – Terrebonne Basin
PPL28 RPT



NOAA FISHERIES SERVICE

January 31, 2018

PPL28 Bayou Pierre et Lee Marsh Creation and Nourishment

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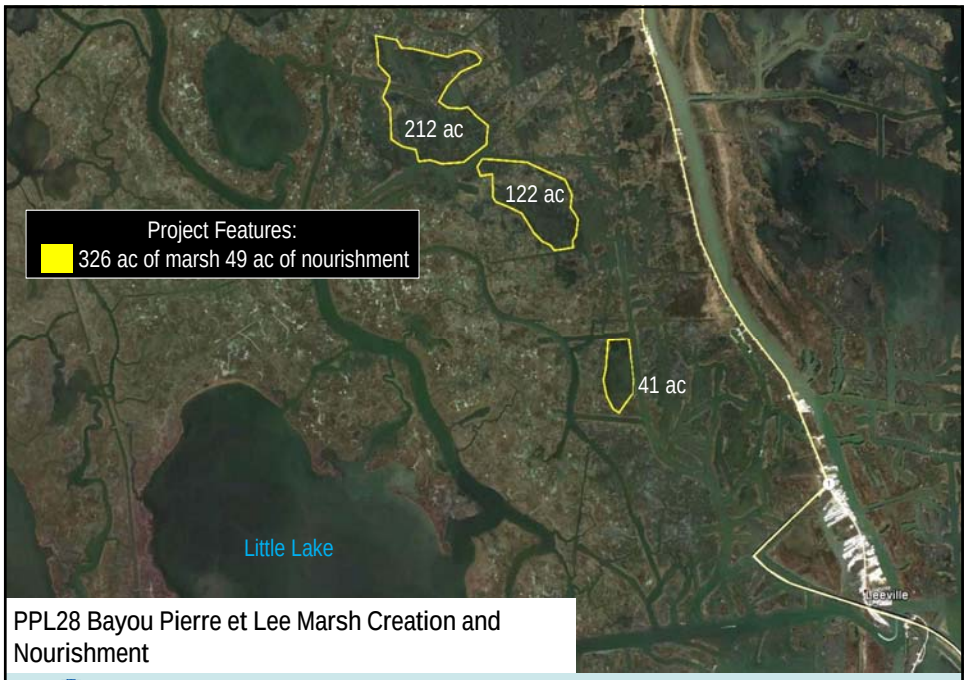

PPL28 Bayou Pierre et Lee Marsh Creation and Nourishment

Summary

- Total: 375 ac
- Marsh Creation: 326 ac
- Marsh Nourishment: 49 ac
- Little Lake Borrow
- Estimated net acre: 250-300 ac
- Estimated Construction Cost with Contingency: $15M - $20M

R3-TE-15

Hackberry Marsh Creation and Nourishment

TE-15

PPL28 PROJECT NOMINEE FACT SHEET
January 31, 2018

Project Name
Hackberry Marsh Creation and Nourishment

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 project area is -1.05%/year based on the Timbalier Bay subunit from 1985 to 2016.

Goals
The project goal is to create and nourish approximately 187 acres (ac) of brackish emergent marsh (165 ac creation, 22 ac nourishment). The Golden Meadow to Fourchon polygon holistic concept is restore and bolster the structural framework of the marsh and provide synergy with adjacent infrastructure, flood protection, and communities limited to areas that remain unaddressed (by CWPPRA and other programs) while considering regional sediment management and infrastructure.

Proposed Solution
The proposed project goals are to create approximately 165 ac and nourish 22 ac of marsh. Sediment would be hydraulically dredged using a small barge from Little Lake via pipeline. The borrow area would be designed to avoid adverse impacts to the existing shorelines of Little Lake. Containment dikes will be constructed around the marsh creation area to retain sediment during pumping. The containment dikes will be degraded and/or gapped no later than three years post construction. The need to include plantings along the edge of the disposal areas adjacent to open water will be assessed. During both Phase 0 and Phase 1, opportunities would be explored to increase the amount of marsh creation.

Preliminary Project Benefits

1) *What is the total acreage benefited both directly and indirectly?*
   This total project area is 187 ac.

2) *How many acres of wetlands will be protected/created over the project life?*
   Approximately 150 – 200 ac of marsh will be protected/created over the project life.

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

The anticipated land loss rate reduction throughout the area of direct benefits will be 50% over the projects life.

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

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.

Considerations
The proposed project has potential utility/pipeline considerations.

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

Preparer(s) of Fact Sheet:
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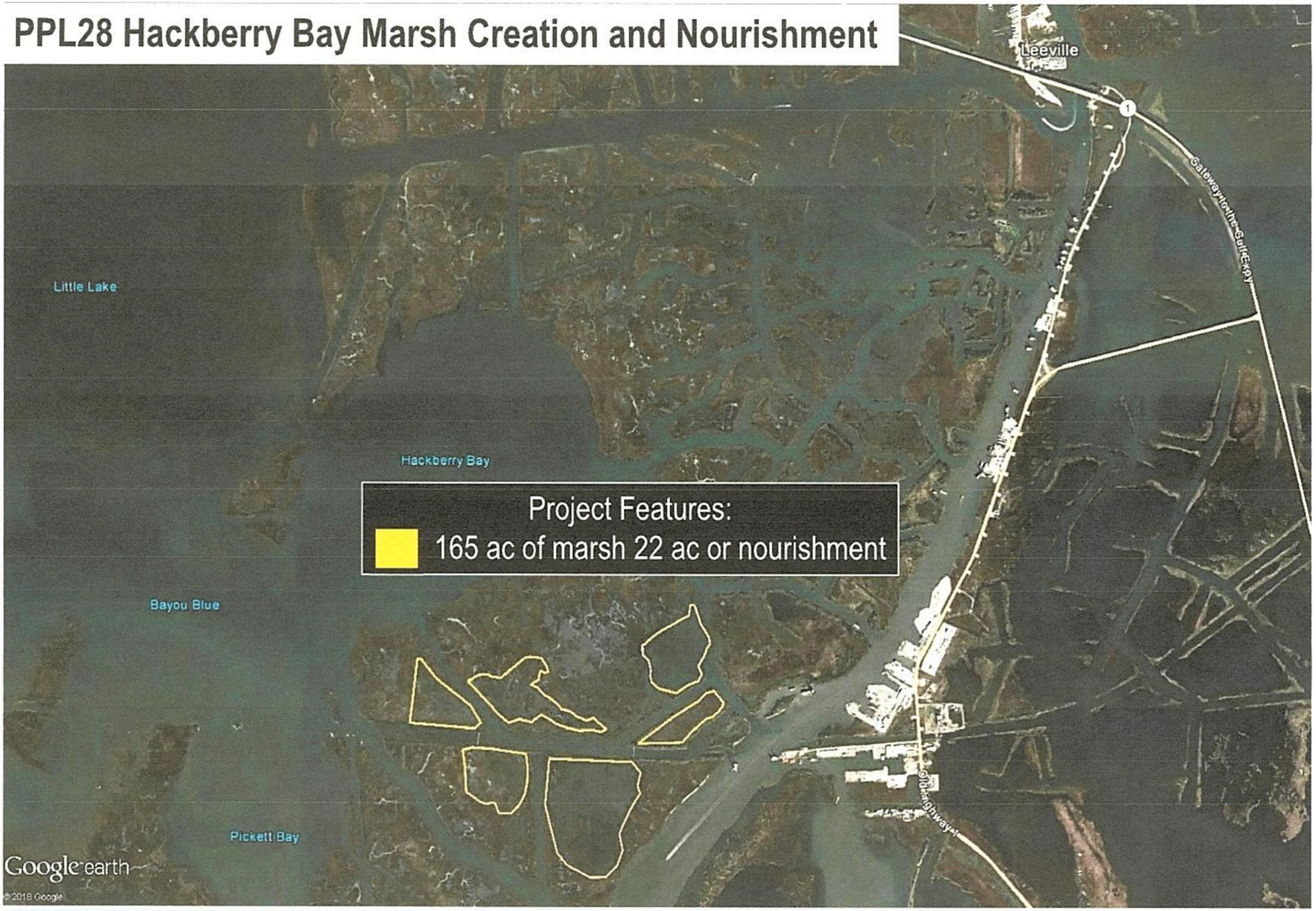
PPL28 Hackberry Bay Marsh Creation and Nourishment

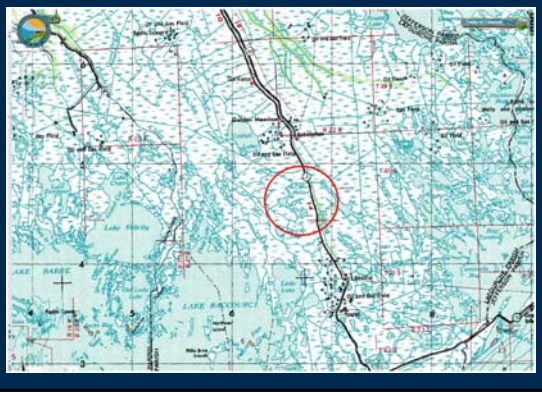


NOAA FISHERIES

Science, Service, Stewardship

Hackberry Marsh Creation and Nourishment

Region 3 – Terrebonne Basin
PPL28 RPT



NOAA FISHERIES SERVICE

January 31, 2018

PPL28 Hackberry Bay Marsh Creation and Nourishment

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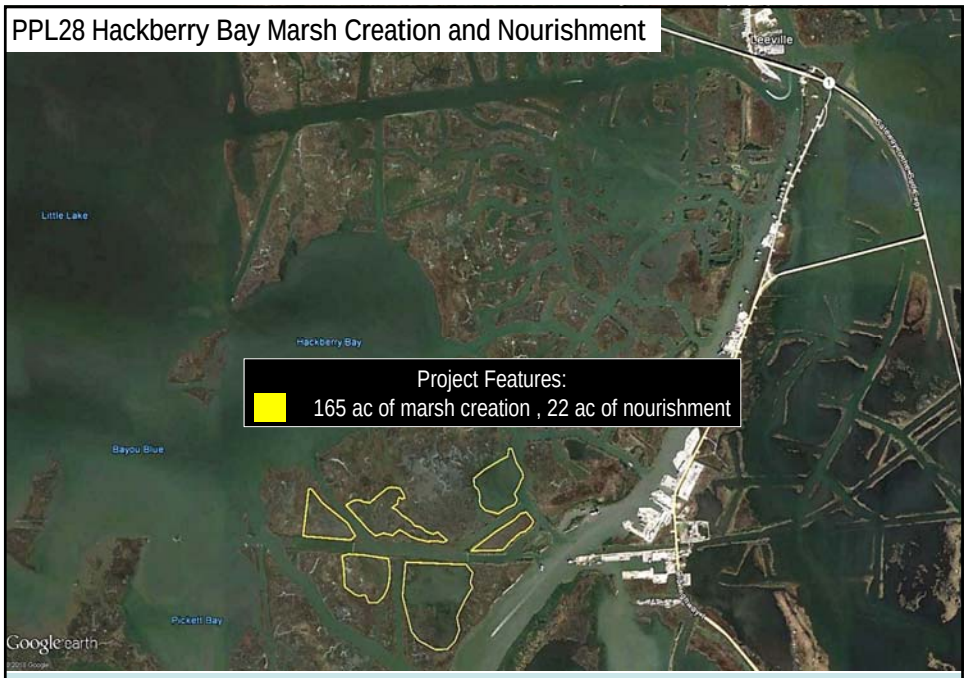
U.S. Department of Commerce | National Oceanic and Atmospheric Administration | NOAA Fisheries

PPL28 Hackberry Bay Marsh Creation and Nourishment



Summary

- Total: 187 ac
- Marsh Creation: 165 ac
- Marsh Nourishment: 22 ac
- Little Lake Borrow
- Estimated net acre: 150-200 ac
- Estimated Construction Costs plus Contingency: $15 M - $20M

R3-TE-16

North Bayou Decade Ridge and Marsh Restoration

TE-16

PPL28 PROJECT NOMINEE FACT SHEET
January 31, 2018

Project Name
North Bayou Decade Ridge and Marsh Restoration

Project Location
Region 3, Terrebonne Basin, Terrebonne Parish, North of 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. Land loss in the project area is estimated to be -0.79%/y. Marsh creation would rapidly recover marshes along with protection afforded by elevation of ridge features on the north bank of the bayou.

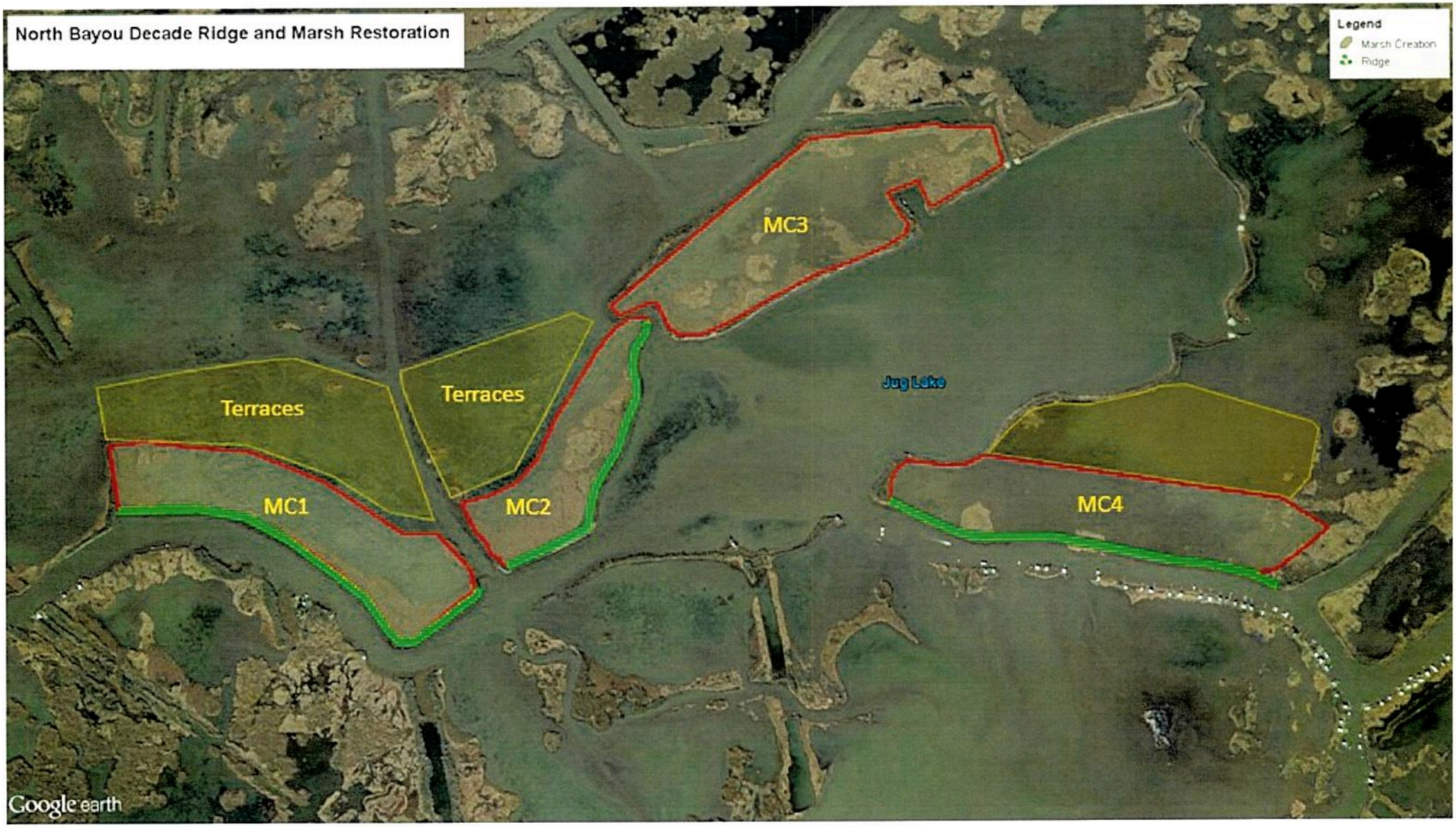
Proposed Solution
Sediments will be hydraulically dredged from Lake Mechant and pumped via pipeline to create and nourish approximately 334 acres of marsh habitat and in situ material will be excavated to create 18,000 linear feet of terraces and a 12,800 linear foot ridge feature along the north bank of Bayou Decade.

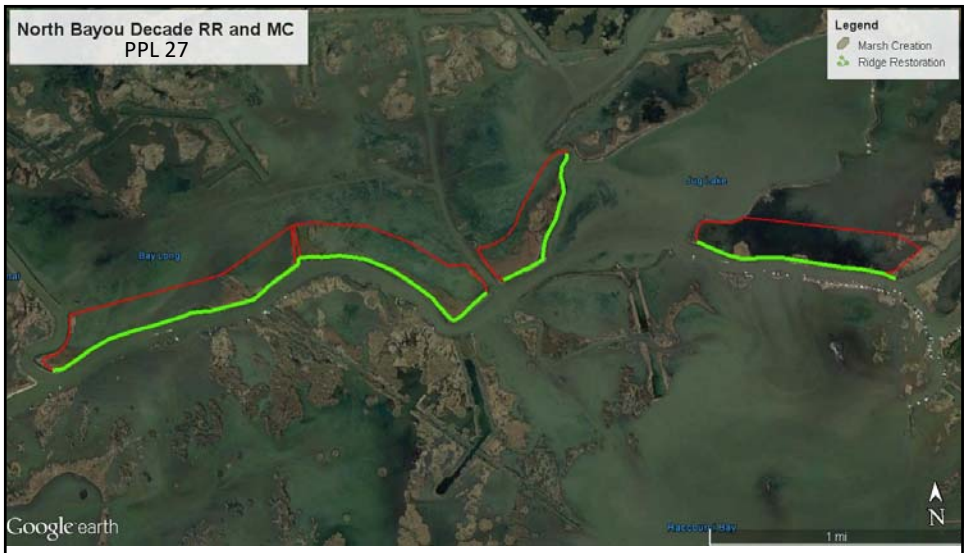
Goals
The goal of the project is to create a ridge feature on the north bank of Bayou Decade and create adjacent marsh in a vast expanse of open water where marsh used to exist.

Preliminary Project Benefits
The project will create and nourish approximately 334 acres of marsh, create 18.5 acres of terraces and 12,819 feet of ridge habitat.

Preliminary Cost
The construction cost + 25% contingency is $20-25M.

Preparer(s) of Fact Sheet:
Ron Boustany, NRCS, 337-291-3067, ron.boustany@la.usda.gov

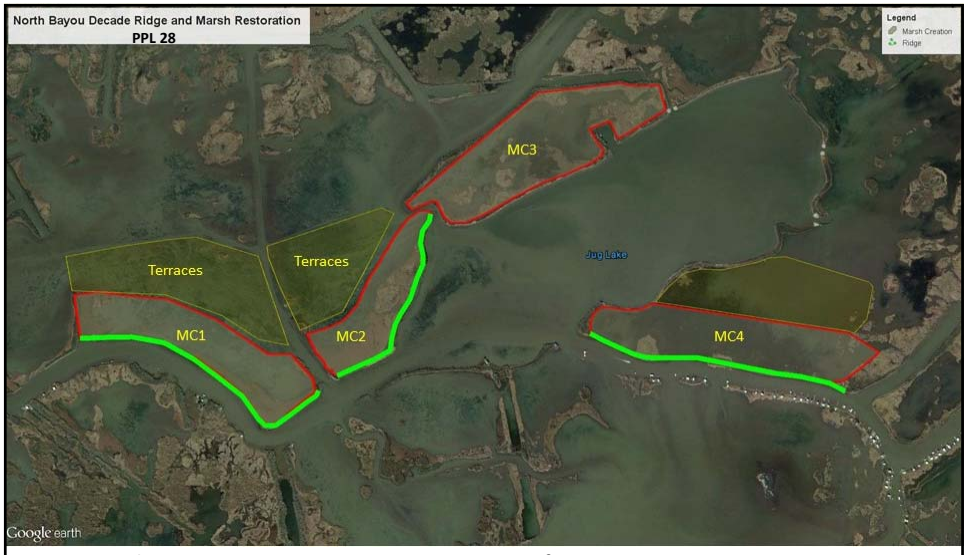

North Bayou Decade Ridge and Marsh Restoration
Legend
Marsh Creation
Ridge
MC3
Terraces
Terraces
Jug Lake
MC1
MC2
MC4
Google earth



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

Benefits:
310 acres of marsh creation
18,700 linear ft of ridge

Cost: Construction + 25% = $23.8 million



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

Benefits:
334 acres of marsh creation/nourishment
12,800 linear ft of ridge
18.5 acres of terraces

Cost: Construction + 25% = $21.2 million

R3-TE-17

Timbalier Island Nourishment and Marsh Creation

TE-17

PPL28 PROJECT FACT SHEET
January 31, 2018

Project Name
Timbalier Island Nourishment and Marsh Creation

Master Plan Strategy
The 2017 Coastal Master Plan recommends funding Louisiana's Barrier Island Program, which CPRA is currently developing. Rather than recommending specific barrier island and shoreline projects and assigning them to a certain implementation period, CPRA intends to restore barrier islands and shorelines as part of a regular rebuilding program. This will allow monitoring and assessment of these critical features to drive project investment and for CPRA to be able to react when catastrophic events like future hurricanes impact these areas.

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

Problem
The Lafourche Delta headland and barrier island system, including Timbalier Island, plays an important role in protecting the Terrebonne estuary and its surrounding wetlands from the destructive forces of high wave energy, storm surges and salt water intrusion (van Heerden and DeRouen 1997). Habitats provided by barrier islands are highly valuable, particularly for colonial nesting birds, shorebirds, and nekton. Four hurricanes within a 3-year period have exacerbated breaches in the island and narrowed the width. Timbalier Island lacks a sufficient backbarrier marsh platform to withstand bay side erosion, accommodate the natural and dynamic processes, and retain sediment in this sediment-starved environment. If the breaches are not addressed, Timbalier Island may become two separate islands as experienced by Trinity Island.

Proposed Solution
The proposed project would fill in the breached areas at the mid-point of the island and develop/extend a back marsh platform of approximately 664 acres of beach, dune and marsh habitat. The areal extent of the project area will be adjusted based upon further assessment of field conditions. This project will use offshore sediments dredged from the Gulf of Mexico. Additional borrow sources may be investigated and used if determined to be suitable and cost effective. The dredged material would be contained as needed. The dune and back marsh would be planted and sand fencing installed as needed. This project aids in restoring the structural integrity of the island works synergistically with the TE-40 (Timbalier Island Dune & Marsh Creation) and the TE-18 (Timbalier Island Planting Demonstration).

Project Benefits
Restore and/or nourish approximately 664 acres of beach, dune and back marsh.

Project Costs
The estimated construction cost including 25% contingency is $30M - $35M.

Preparer(s) of Fact Sheet
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Timbalier Island Nourishment and Marsh Creation

- Marsh Creation & Nourishment 452 acres
- Dune Fill 123 acres
- Beach Fill 89 acres

N

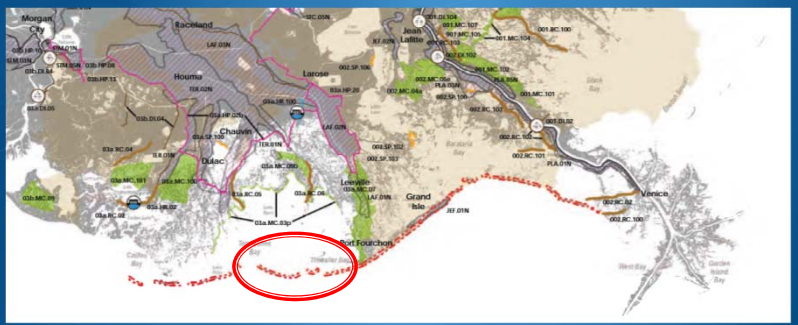
Basemap: 2017 NAIP DOQQ Terrebonne Parish
Produced by: EPA REgion 6, Dallas, TX

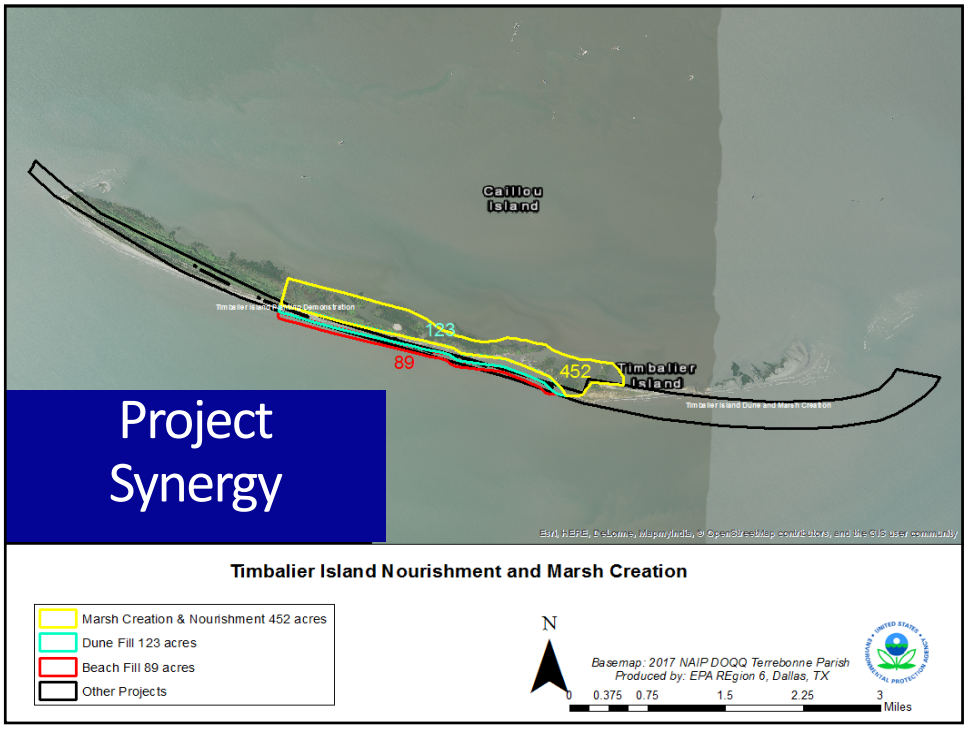
0 0.125 0.25 0.5 0.75 1 Miles

Timbalier Island Nourishment & Marsh Creation

2017 Master Plan Solution

The 2017 Coastal Master Plan recommends funding Louisiana's Barrier Island Program, which CPRA is currently developing. Rather than recommending specific barrier island and shoreline projects and assigning them to a certain implementation period, CPRA intends to restore the Terrebonne, Timbalier, and Barataria barrier islands and shorelines as part of a regular rebuilding program.

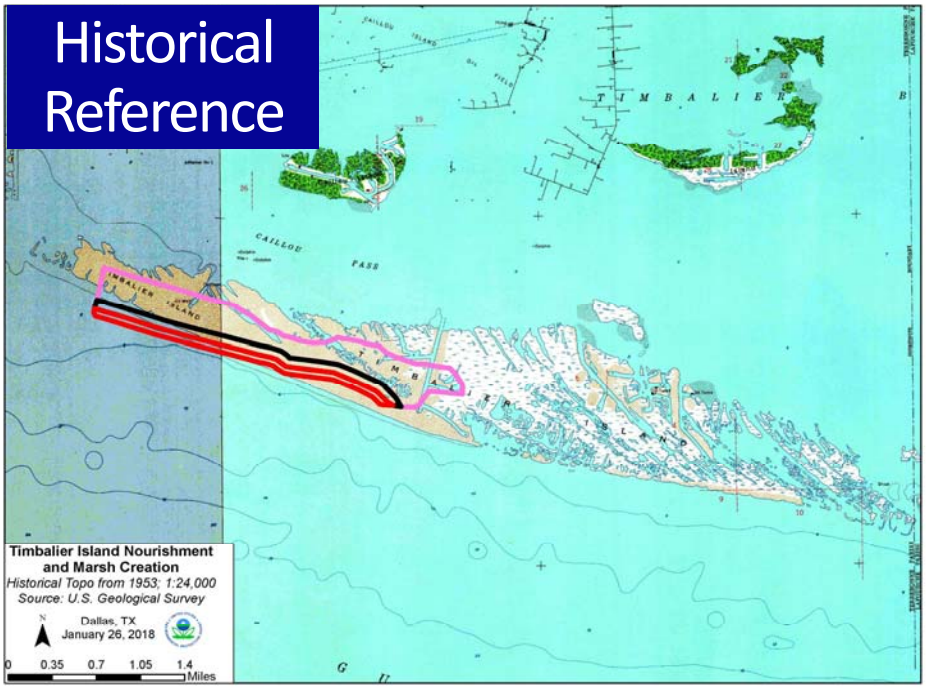


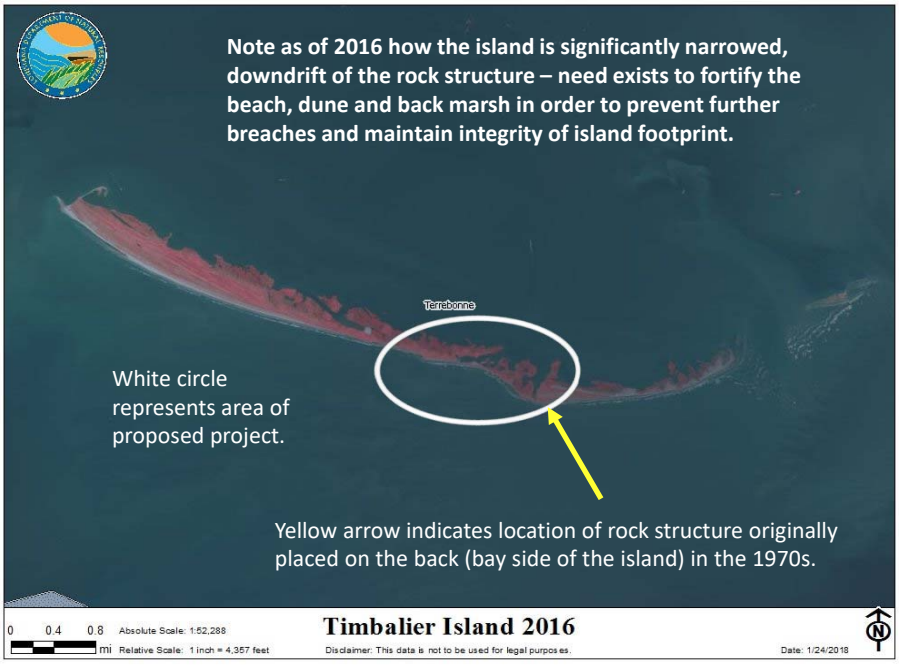


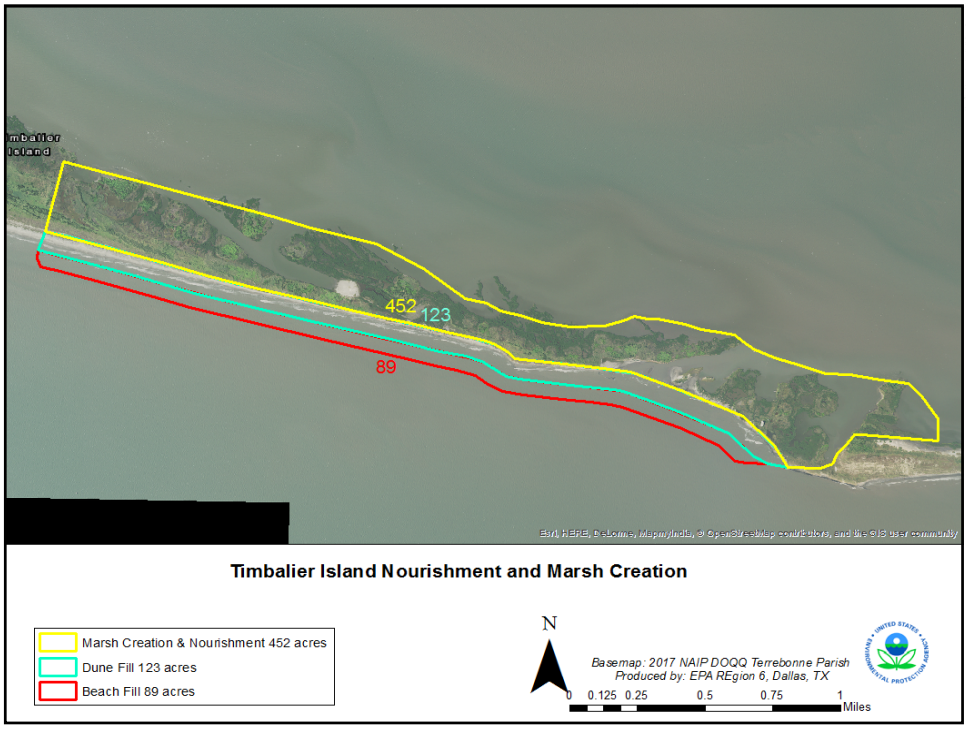
Problems

- Storm damage: barrier islands are first line of defense against storm surge
- Sediment starved area
- Day to day wind/wave action
- Construction of access/pipeline canals; historic oil and gas activity
- Terrebonne Parish could experience the second highest land loss of any parish (2017 MP)

Historical Reference







Species & Habitats Protected or Restored

T & E Species

- Piping Plover
- Red Knot
- Sea Turtles
- Sturgeon
- Manatee

Migratory Birds

- American Golden-plover
- Am Oystercatcher (Breeding)
- Black Skimmer (Breeding)
- Many shore and marsh birds
- Gulls, Terns, and oceanic birds

Critical Habitat: Piping Plover

Project Goals

- Restore beach, dune, and back marsh habitat
- Fill in-breaches to maintain contiguous island
- Create/nourish approximately 664 acres beach, dune and back marsh with sediment from Gulf of Mexico
- Attenuate storm surge
  - Protect inland marshes
  - Protect coastal communities
  - Protect infrastructure
- The estimated construction cost + 25% contingency is $30M - $35M

R3-TE-18

Trinity Island Back Barrier Marsh Restoration

TE-18

PPL – 28 Project Nominee Fact Sheet
PPL-28 Region 3 RPT Meeting
January 31, 2018

Project Name:
Trinity Island Back Barrier Marsh Restoration Project

State Master Plan Strategy:
Barrier Island Program - Pages 87-88 of Coastal Master Plan

Project Location:
Region 3, Terrebonne Basin, Terrebonne Parish, Isle Dernieres Barrier Island Refuge

Problem:
The barrier islands are eroding at a rapid pace. Since 1989 Trinity Island has lost approximately 30% of its acreage and is now an estimated 785 acres. Trinity is the largest island of the Isle Dernieres Barrier Island Refuge chain and provides the most storm surge buffer and daily erosion protection to protect local communities and nearby wetlands of Terrebonne Parish.

Goals:
To restore barrier island habitat and strengthen Trinity Island from fragmentation.

Proposed Solutions:
Utilize nearby, offshore sediments to restore approximately 350 acres of back barrier marsh habitat on the western end of Trinity Island. This location is thin and susceptible to fragmentation during a tropical event or simple prolonged annual erosion. This project will not only increase the longevity of the island but provide a storm surge buffer and daily erosion protection to the marshes north of the island.

Preliminary Project Benefits:

1) *What is the total acreage benefited both directly and indirectly?*
    a. Approximately 350 acres of back barrier island marsh will be created. It will also provide erosion protection to an additional 2,000 acres of saline marsh just north of the island.

2) *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, chenieres, etc?*
    a. Yes. This project restores 350 acres of barrier island habitat.

3) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?*
    a. This project would provide a synergistic effect several other regional barrier island projects including TE-50, TE-27, TE-37, TE-24, TE-20 and the ongoing Calliou Headlands Early Restoration Project.

Identification of Potential Issues
There are a few pipelines near the footprint of the island. These lines will have to be identified and worked around.

Preliminary Construction Costs
$25 - $30 Million

Preparer of Fact Sheet
Todd Baker, LDWF, (225) 765-2814, tbaker@wlf.louisiana.gov

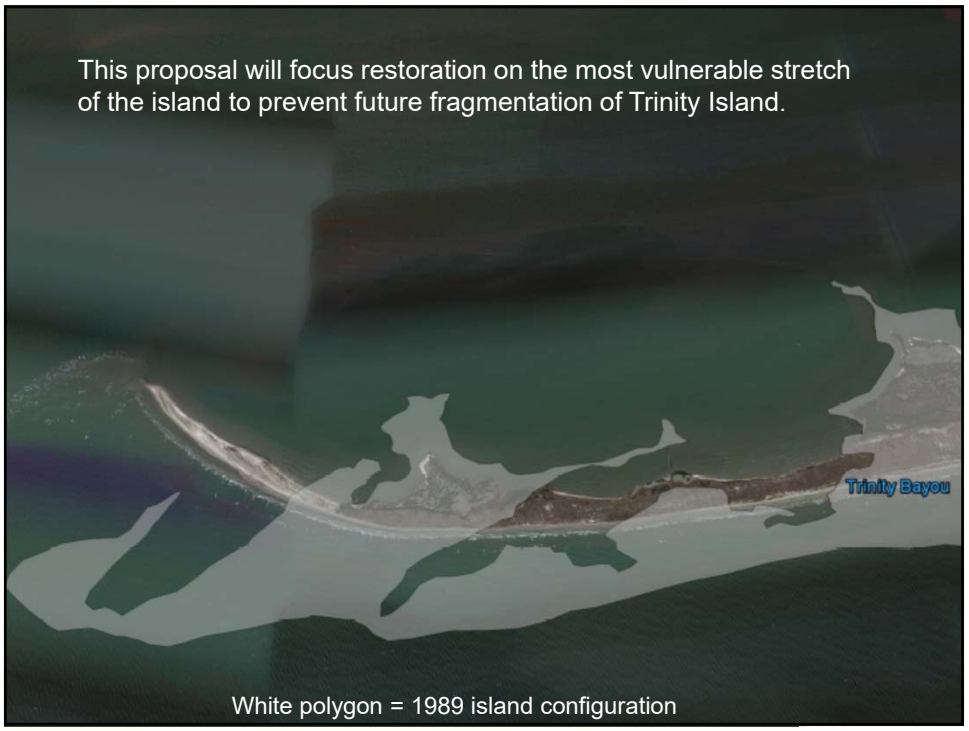
Trinity Island Restoration Project

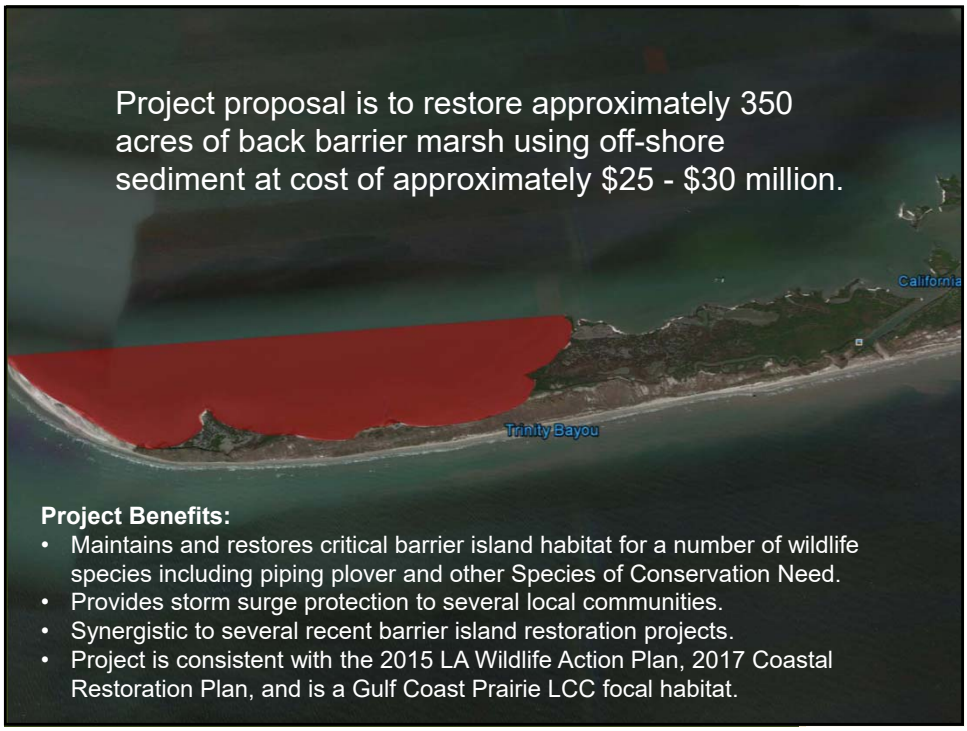
Lance Campbell

January 31, 2018

Trinity Island is part of the Isle Dernieres Barrier Islands State Refuge Complex Located in Terrebonne Parish


Since 1998 Trinity Island has lost approximately 30% of its acreage from just over 1,000 acres to an estimated 785 acres by 2016.
Lake Pelto
White polygon = 1989 island configuration


This proposal will focus restoration on the most vulnerable stretch of the island to prevent future fragmentation of Trinity Island.
Trinity Bayou
White polygon = 1989 island configuration



Project Benefits:

- Maintains and restores critical barrier island habitat for a number of wildlife species including piping plover and other Species of Conservation Need.
- Provides storm surge protection to several local communities.
- Synergistic to several recent barrier island restoration projects.
- Project is consistent with the 2015 LA Wildlife Action Plan, 2017 Coastal Restoration Plan, and is a Gulf Coast Prairie LCC focal habitat.

REGION 3 – TECHE-VERMILION BASIN

Project Number	Project Proposals
R3-TV-01	The Jaws - St. Mary Parish
R3-TV-02	North Marsh Restoration
R3-TV-03	North Marsh Restoration, Terracing and Marsh Creation
~~R3-TV-04~~	~~Freshwater Bayou East Marsh Creation and Hydrologic Restoration~~ *Withdrawn due to project overlap with R3-TV-02 and R3-TV-03*
R3-TV-05	Southeast Marsh Island Marsh Creation and Nourishment
R3-TV-06	Lake Ferme Marsh Creation and Nourishment
~~R3-TV-07~~	~~Shell Keys Natural Refuge Restoration~~ *Inconsistent with the 2017 State Master Plan*

R3-TV-01

The Jaws

TV-01

CWPPRA PPL 28 Nomination Sign-Up Sheet

Complete a sign-up sheet for each project you nominate. Please print neatly!

Name of Project: The Jaws - St Mary Par.

Is this a demonstration project? Yes (No)

If not, please provide the below information.

Region: *(Circle one)* 1 2 (3) 4 **Coastwide**

Basin: *(Circle one)* Pontchartrain, Barataria, (Terrebonne), Calcasieu-Sabine, Breton Sound, Atchafalaya, Teche-Vermilion, Mermentau

Did you provide a factsheet? Yes (No)

Contact Information:

Name: Harold Schoeffler

Phone Number: 3374171550

Email: Cadiastyle@aol.com

R3-TV-02

North Marsh Restoration (North Increment)

TV-02

PPL28 PROJECT NOMINEE FACT SHEET
January 31, 2018

Project Name
North Marsh Restoration (North Increment)

Project Location
Region 3, Teche-Vermilion, Vermilion Parish

Problem
Project area wetlands are undergoing losses at -0.33%/year based on 1985 to 2016 USGS data from the East Freshwater Bayou mapping unit. Marshes in this area are subject to losses from subsidence/sediment deficit, seasonal saltwater intrusion, shoreline erosion, and altered hydrology from levees and increased connectivity with Freshwater Bayou Canal. Interior marshes are fragmenting with erosion and submergence and waterbodies are enlarging. The result is plant stress reducing marsh productivity, a critical component of vertical accretion. Disturbances to the landscape from hurricanes and herbivory have resulted in the breakup and export of interior marsh. Erosion is leading to higher water turbidity within the interior ponds, increased pond width and depth, and decreasing coverage of submerged aquatic vegetation. Additionally, hurricanes have resulted in large and wide-spread sediment and therefore wetland loss. It is unlikely these areas will recover unaided.

As evidenced from aerial photography the project area is part of a larger feature of weakened interior marsh on either side of Freshwater Bayou Canal. If left to deteriorate, the project vicinity could eventually open into Freshwater Bayou risking conversion of larger interior marsh areas to open water.

Goals
The project goal is to create and nourish approximately 200 acres of marsh (160 acres creation and 40 acres nourishment), protect 5,790 feet of shoreline, and construct approximately 13,248 linear feet of terraces (approximately nine emergent acres).

Proposed Solution
The proposed project would create approximately 160 acres and nourish 40 acres of existing marsh utilizing dedicated dredging and confined disposal. Sediment would be mined from the Gulf of Mexico. The borrow area would be designed to avoid adverse impacts to the Gulf shoreline. In addition to marsh creation, approximately 5,790 linear feet of shoreline of Freshwater Bayou Canal would be protected. Presently, the shoreline protection is assumed to be a rock dike. Also, approximately 13,248 linear feet of terraces would be constructed. The terrace slopes and crown would be planted with appropriate marsh vegetation. Containment dikes would be gapped. Unimpeded tidal exchange would be maintained to the unit with gaps or dips in the rock dike and/or connections along interior canals. Designs will include means to reduce scour or wave propagation through dips or gaps in the rock dike. Tidal connections along interior canals could be armored for scour protection.

The project is the first increment of three within a conceptual comprehensive plan to address critical wetland loss on the east side of Freshwater Bayou Canal. The plan utilizes three restoration techniques, and increments are scaled to be cost competitive within CWPPRA given

practicalities of options for borrow areas. This northern reach is recommended as the highest priority of the three increments for overall cost savings.

Preliminary Project Benefits

1) *What is the total acreage benefited both directly and indirectly?*
This total project area is 526 ac (including terrace field).

2) *How many acres of wetlands will be protected/created over the project life?*
Approximately 150-200 acres of marsh will be protected/created over the project life.

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

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

5) *What is the net impact of the project on critical and non-critical infrastructure?*
The project would have moderate net positive impact to both critical (i.e., Freshwater Bayou Canal) and non-critical (i.e., minor oil and gas facilities) infrastructure. If marshes are left to deteriorate, the project area would eventually coalesce with Freshwater Bayou Canal. Oil and gas companies have facilities and pipelines in this area, which 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 project would provide a synergistic effect with the Cole's Bayou Marsh Restoration Project (TV-63), the Little Vermilion Bay Sediment Trapping Project (TV-12), Freshwater Bayou Bank Stabilization Project (TV-11), Freshwater Bayou Canal (ME-31), and Surplus Marsh Creation near Freshwater Bayou (ME-0025-SF).

Considerations

The proposed project has potential navigation and utility/pipeline considerations.

Preliminary Construction Costs

The construction +25% contingency cost range is $25M-$30M.

Preparer(s) of Fact Sheet:

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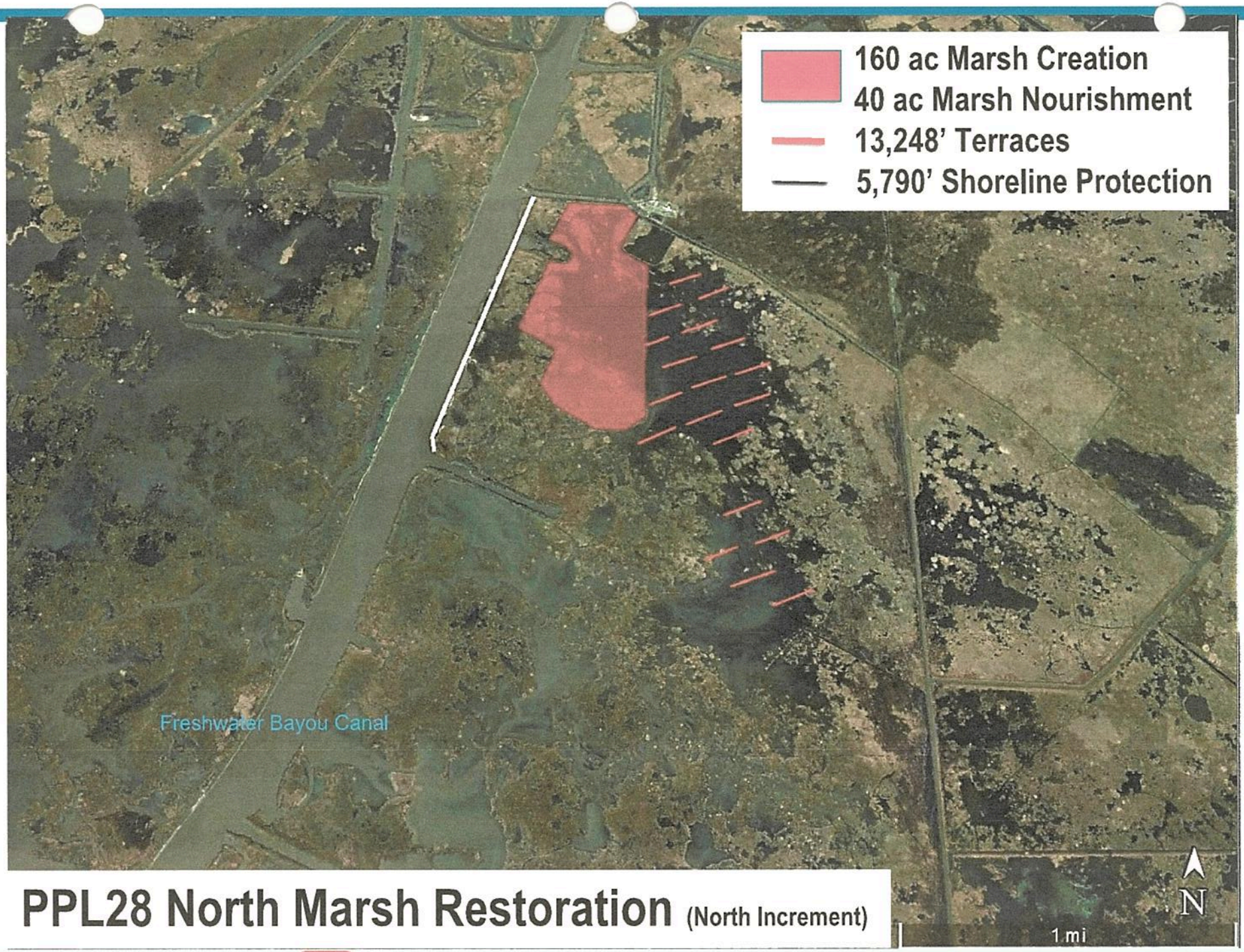
Daniel Meden, USACE, 504-862-1014, daniel.c.meden@usace.army.mil

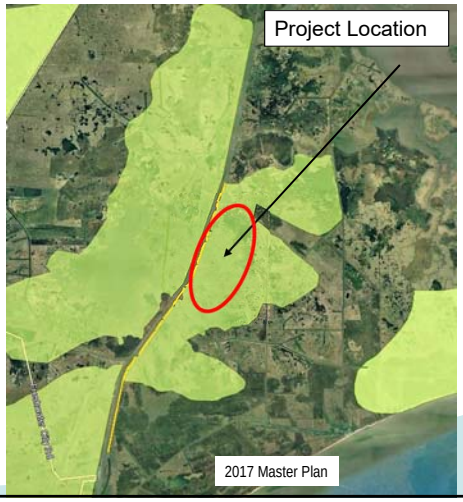


PPL28 North Marsh Restoration (North Increment)

NOAA FISHERIES

US Army Corps of Engineers

PPL28 North Marsh Restoration
(North Increment)



January 31, 2018

NOAA FISHERIES

US Army Corps of Engineers

NOAA FISHERIES

US Army Corps of Engineers


9.2 miles
11.4 miles
Google earth
6 mi
N


Borrow for 200 ac
Borrow for 100 ac
5 mi
N


Google earth
1 mi
N
NOAA FISHERIES
US Army Corps of Engineers
| Page 5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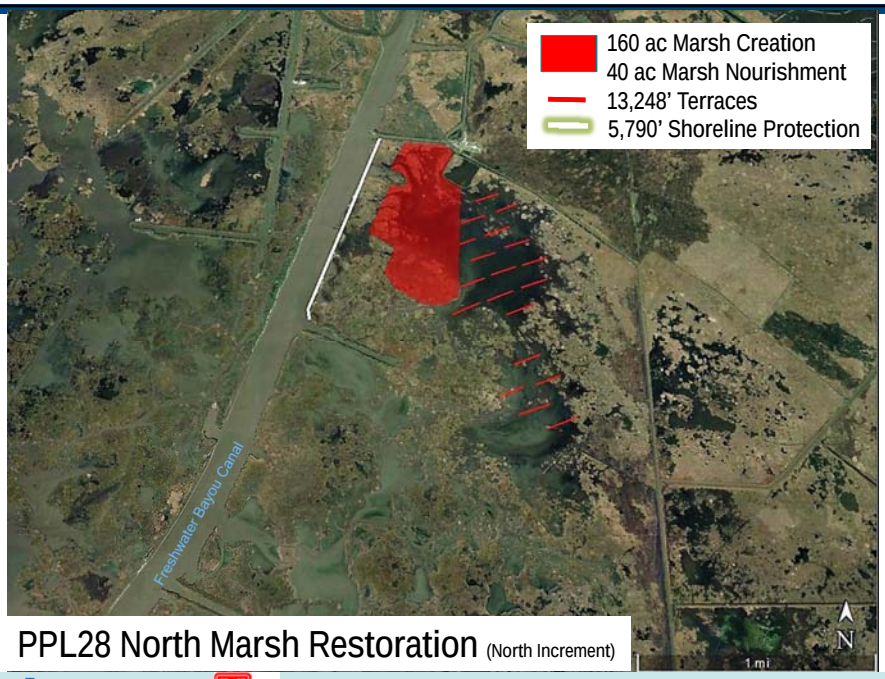
| Page 6



PPL28 North Marsh Restoration (North Increment)

NOAA FISHERIES | US Army Corps of Engineers | Page 7

Summary

- Total acres = 526 ac
- Marsh Creation = 160 ac
- Marsh Nourishment = 40 ac
- Terracing = 13,248 LF/9 ac
- Net acres = 150 - 200 ac
- Gulf of Mexico Borrow
- Construction + 25% Contingency Cost Range: $25M – $30M

NOAA FISHERIES | US Army Corps of Engineers | Page 8

R3-TV-03

North Marsh Protection, Terracing, and Marsh Creation

TV-03

PPL28 PROJECT NOMINEE FACT SHEET
January 2018

Project Name
North Marsh Protection, Terracing and Marsh Creation Project

Louisiana's 2017 Coastal Master Plan
Marsh Creation – 004.MC.07

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

Problem
In addition to marsh erosion along Freshwater Bayou Channel (FWB), significant interior marsh loss has resulted from saltwater intrusion and hydrologic changes associated increasing tidal influence, storm surge impacts, and herbivory. Vessel wakes and frequent vessel related water displacement surges cause erosion of marshes along FWB and increase water turbidity within FWB and adjoining marshes. The adjoining marshes are also impacted by increased tidal exchange due to FWB. Because of this increased tidal exchange, recent hurricane scour sites within those marshes are not likely to recover unaided. Internal wave action within the larger scour sites may cause erosion of the marsh edges of the larger ponds, compounding the turbidity problem. Ongoing erosion along the eastern bank of FWB has resulted in the creation of additional water exchange sites, causing more interior marshes to be impacted by FWB turbidity/hydrology. Frequent vessel induced water displacement surges may also adversely affect the interior project area ponds, lakes, and marshes causing the export of organic material from the project area and pushing turbid water into the marsh interior.

Goals
The project goals are to counter the negative effects of FWB and hurricane scour events by armoring the FWB shoreline to prevent increased water exchange, reducing FWB-related water exchange and turbidity intrusion into interior marshes, creating marsh in larger interior open water areas subject to internal wave action and erosion of marsh edges, and constructing earthen terraces to create a baffle system to dampen tidal exchange and trap suspended sediments in marshes immediately adjacent to the channel. Other terraces would be constructed in a large interior open water scour area to reduce fetch and associated marsh edge reduction, and to encourage SAV production.

Proposed Solution
Install rock armoring along the FWB shoreline totaling 7,020 feet (leaving 2 armored openings for water exchange). Create 129 acres of marsh and within interior ponds and lakes using a small dredge and borrowing from the edges of FWB. Two fields of earthen terraces with plantings, totaling 8,340 feet in length would be constructed. One field would create a baffle system to reduce hydraulic energy and trap suspended sediment, the other would reduce fetch across a large interior open water area.

Preliminary Project Benefits
1) *What is the total acreage benefited both directly and indirectly?*
   Approximately 170 acres of marsh would be benefitted directly (129 ac from marsh creation/nourishment, 9 acres from terracing, and 32 acres from shore protection. Indirect benefits may occur due to sediment trapping, reduction of physical erosion of interior marsh edges where protected by terraces, and increased SAV production.

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 167 acres (118 ac from marsh creation, 9 ac from terracing, 29 ac from shore protection).

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 loss rate reduction throughout the area of direct benefit is estimated to be 50% for the marsh creation and 100% for the shore armoring along FWB.

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

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

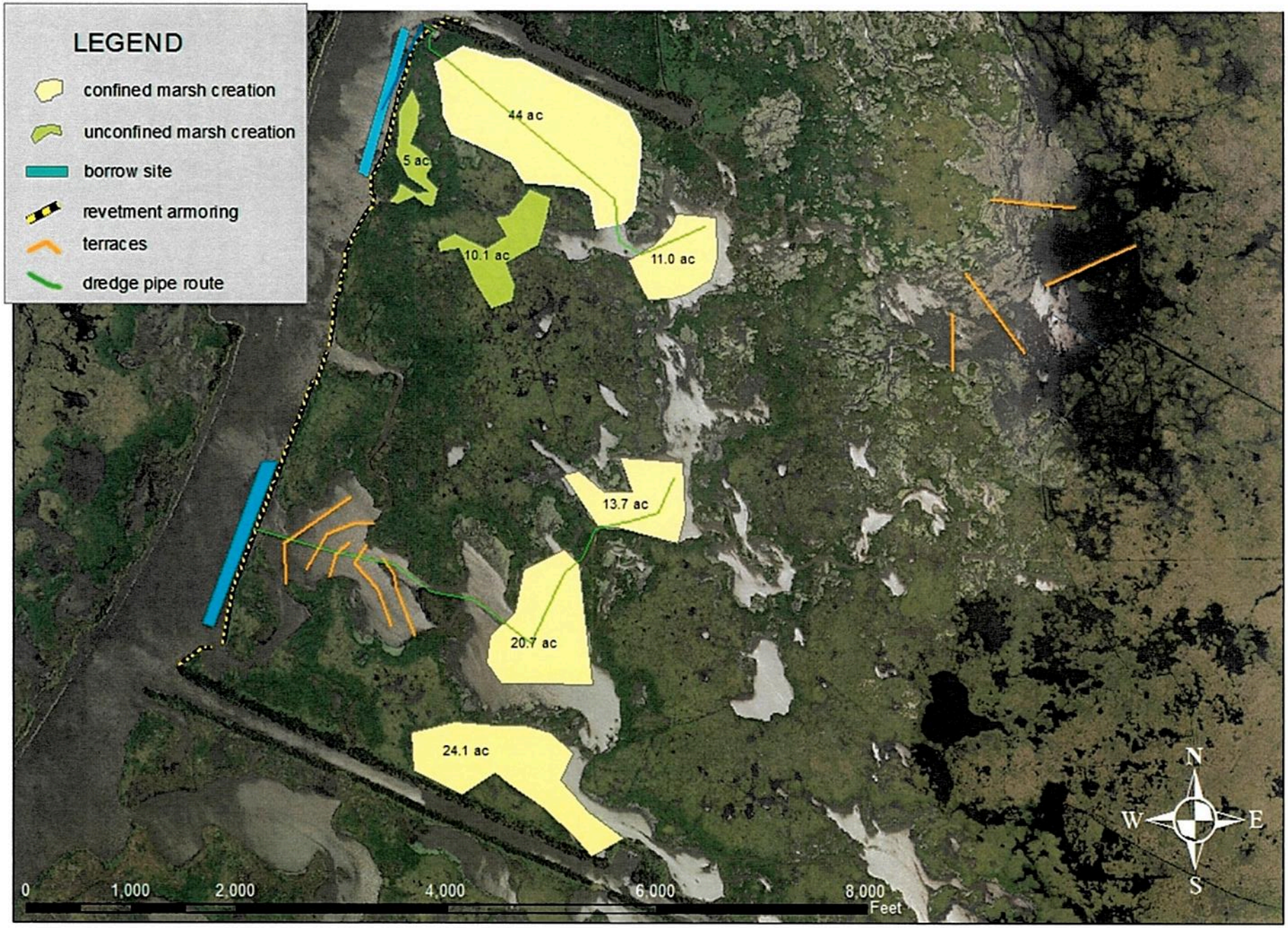
6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?*
None.

Other Considerations
Contaminant survey of borrow material required by landowner.

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

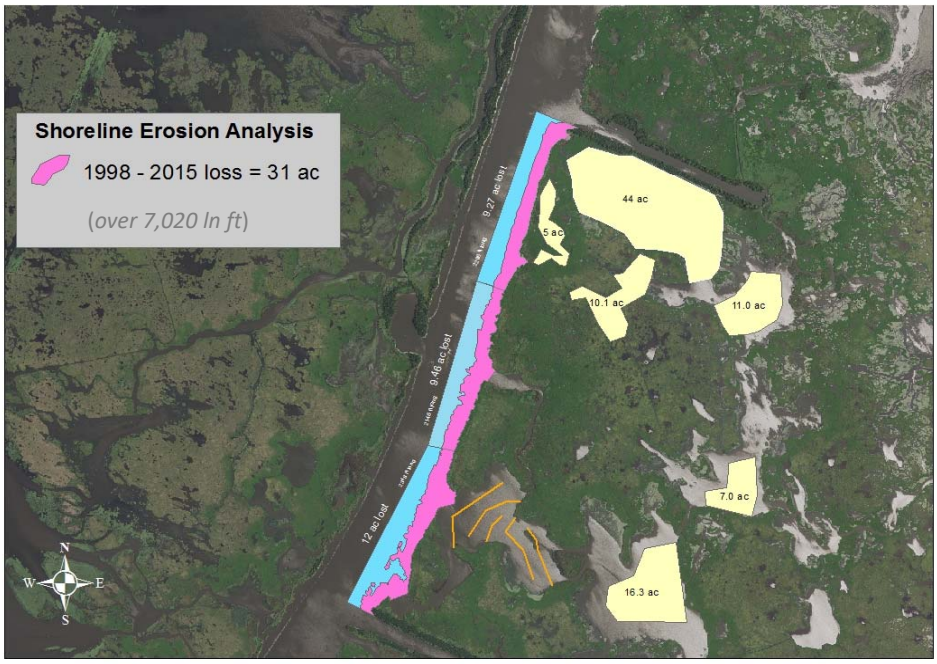
Preparer(s) of Fact Sheet:
Ronny Paille: U.S. Fish and Wildlife Service; 337-291-3117; Ronald_Paille@fws.gov

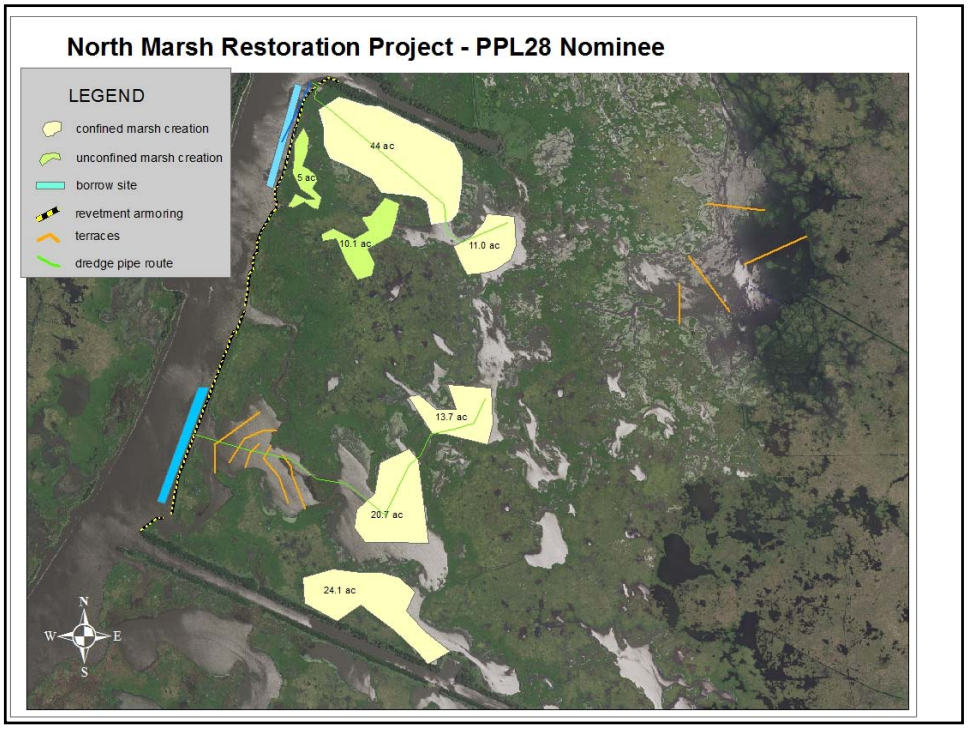
North Marsh Restoration Project - PPL28 Nominee

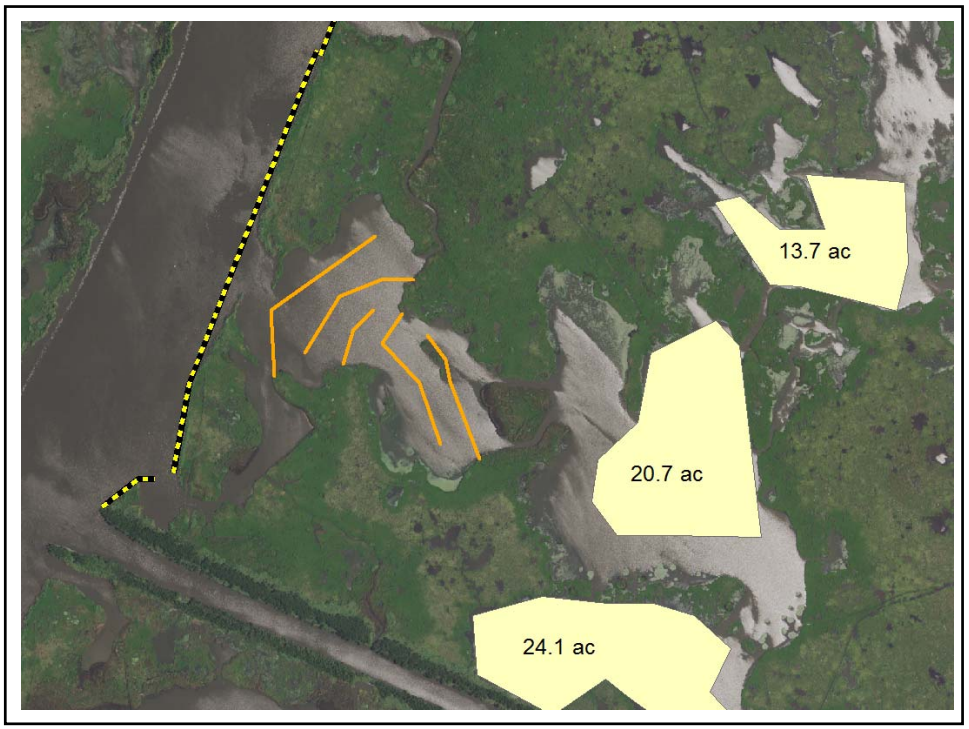


Vicinity Map: North Marsh Restoration

North Marsh Restoration Project - PPL28 Nominee




North Marsh Restoration Project - PPL28 Nominee
LEGEND
confined marsh creation
unconfined marsh creation
borrow site
revetment armoring
terraces
dredge pipe route
44 ac
5 ac
10.1 ac
11.0 ac
13.7 ac
20.7 ac
24.1 ac
N
W
E
S


13.7 ac
20.7 ac
24.1 ac

PPL28 North Marsh Restoration Project

Create **129** acres of marsh via marsh creation

Create **9** acres of marsh via terracing

Protect **32** acres of marsh via 7,020’ bank armor

Construction + 25% Contingency = **$18.3 M**

~~R3-TV-04~~

~~Freshwater Bayou East Marsh Creation and Hydrologic Restoration~~

Withdrawn due to project overlap with R3-TV-02 and R3-TV-03

TV-04

PPL28 Project Fact Sheet
January 31, 2018

Project Name
Freshwater Bayou East Marsh Creation and Hydrologic Restoration

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 shoreline protection, marsh creation and terraces to stabilize large fragmented 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.

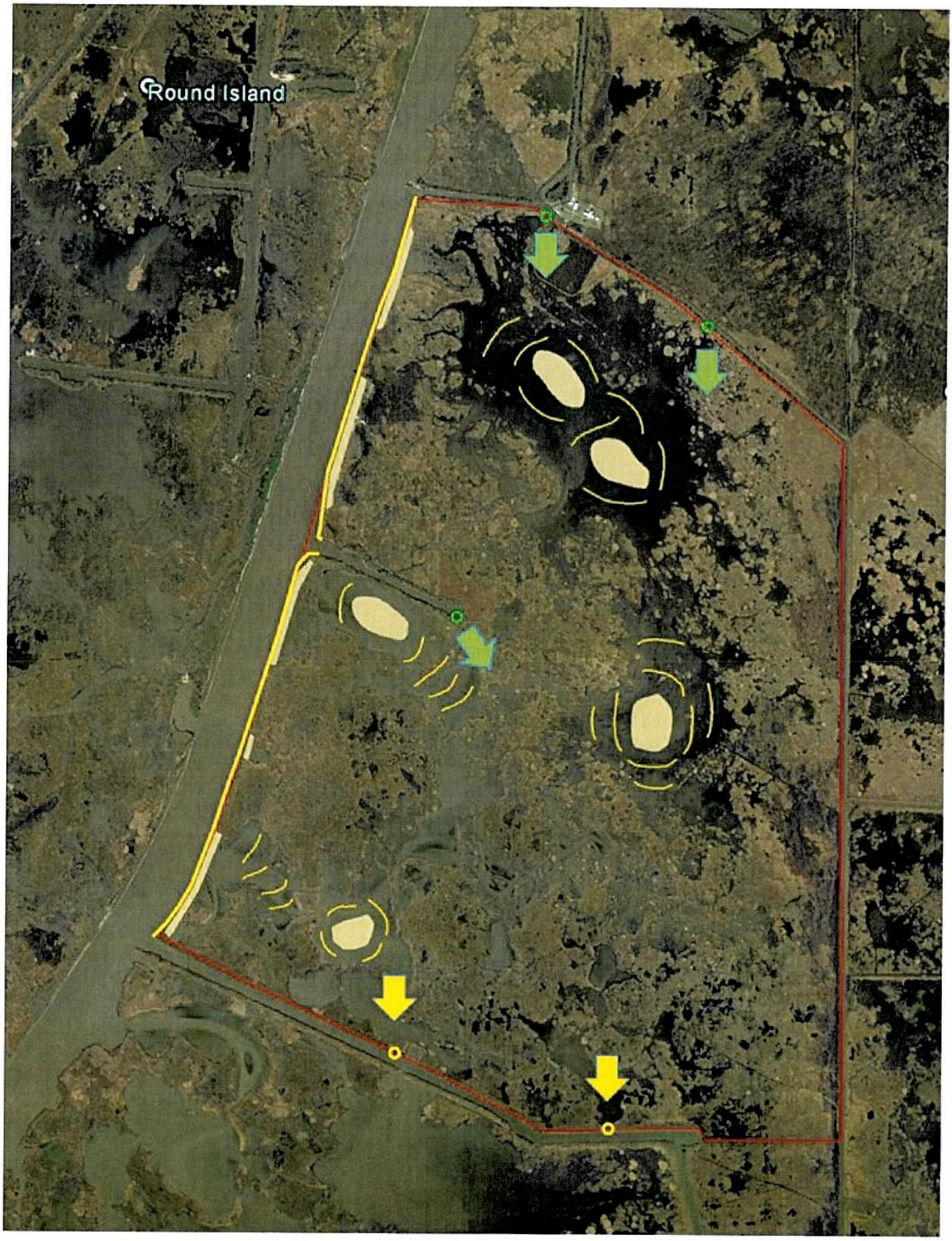
Proposed Solutions:
Approximately 12,700 linear ft of shoreline protection will be constructed across the breaches in the deteriorated bank of Freshwater Bayou. Sediments will be hydraulically dredged from Freshwater Bayou and pumped via pipeline to create approximately 51 acres of marsh habitat. Terraces will be built around the marsh creation cells constructed in open water to reduce wave energy and complement the marsh creation cells. 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.

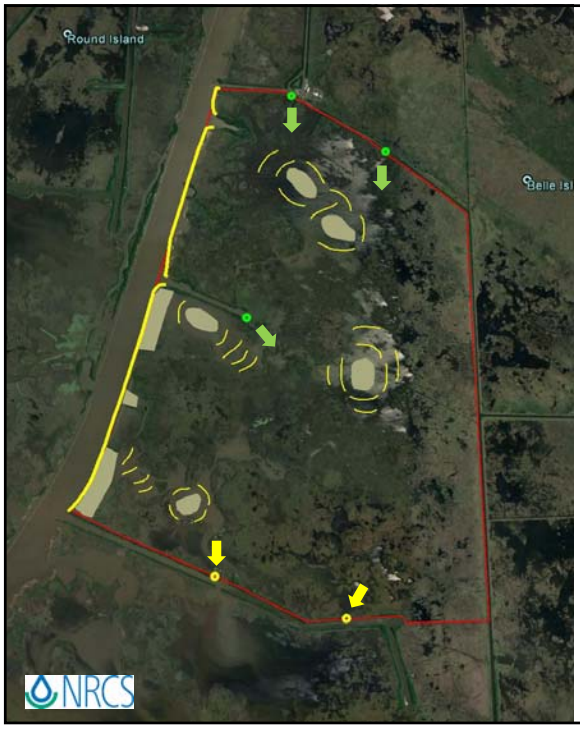
Project Benefits:
The project would result in approximately 166 acres (51 acres from hydraulic dredging, 21 acres from beneficial use of dredge material behind shoreline protection; 18 acres from terraces, and 20 acres from freshwater introduction).

Project Costs:
Estimated construction cost + 25% contingency is $14.2 million ($10-$15M range).

Preparer(s) of Fact Sheet:
Ron Boustany, NRCS, (337) 291-3067, ron.boustany@la.usda.gov

Freshwater Bayou East Marsh Creation and Hydrologic Restoration





PPL28-Freshwater Bayou East Marsh Creation and Hydrologic Restoration

Project Objectives:

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

Features/Benefits:

72 acres of marsh creation*
20,900 linear ft of terraces
12,700 ln ft shoreline protection
6 sets of 2-36" culverts

Cost:

Construction + 25% = $14.2M

- *Includes borrow from FW Bayou flotation channel material*


2010
2017
Google earth
N

R3-TV-05

Southeast Marsh Island Marsh Creation and Nourishment

TV-05

PPL28 PROJECT FACT SHEET
January 31, 2018

Project Name
Southeast Marsh Island Marsh Creation and Nourishment

Master Plan Strategy
Southeast Marsh Island (2017 Master Plan 03b.MC.101): Creation of approximately 1,200 acres of marsh on the eastern tip of Marsh Island to create new wetland habitat and restore degraded marsh.

Project Location
Region 3, Teche-Vermilion Basin, Iberia Parish, Southeast end of Marsh Island Wildlife Refuge.

Problem
Areas of emergent marsh in Marsh Island interior have been converted to open water, primarily due to hurricane activity and subsidence. Marsh Island has been projected to lose 12.9% of its marsh habitat through 2050. Areas targeted by this project are those with the greatest historic land loss and are proximal to East Cote Blanche Bay.

Proposed Solution
The project would utilize hydraulic dredging from an offshore borrow site (potentially the same one used for TV-21) to create/nourish approximately 1666 acres of emergent marsh by completely filling in open water and deteriorated areas and use unconfined or limited confinement techniques allowing finer material to flow through the interior marsh areas and provide nourishment. Borrow material will be targeted from the state offshore area to limit water quality impacts and minimize impacts to potential oyster bed areas. This project would complement the constructed Marsh Island Hydrologic Restoration (TV-14) and the East Marsh Island Marsh Creation (TV-21) projects on the east-end of Marsh Island.

Project Benefits
Create/nourish approximately 1666 acres of emergent marsh using sediment dredged from offshore.

Project Costs
The estimated construction cost including 25% contingency is $20M - $25M.

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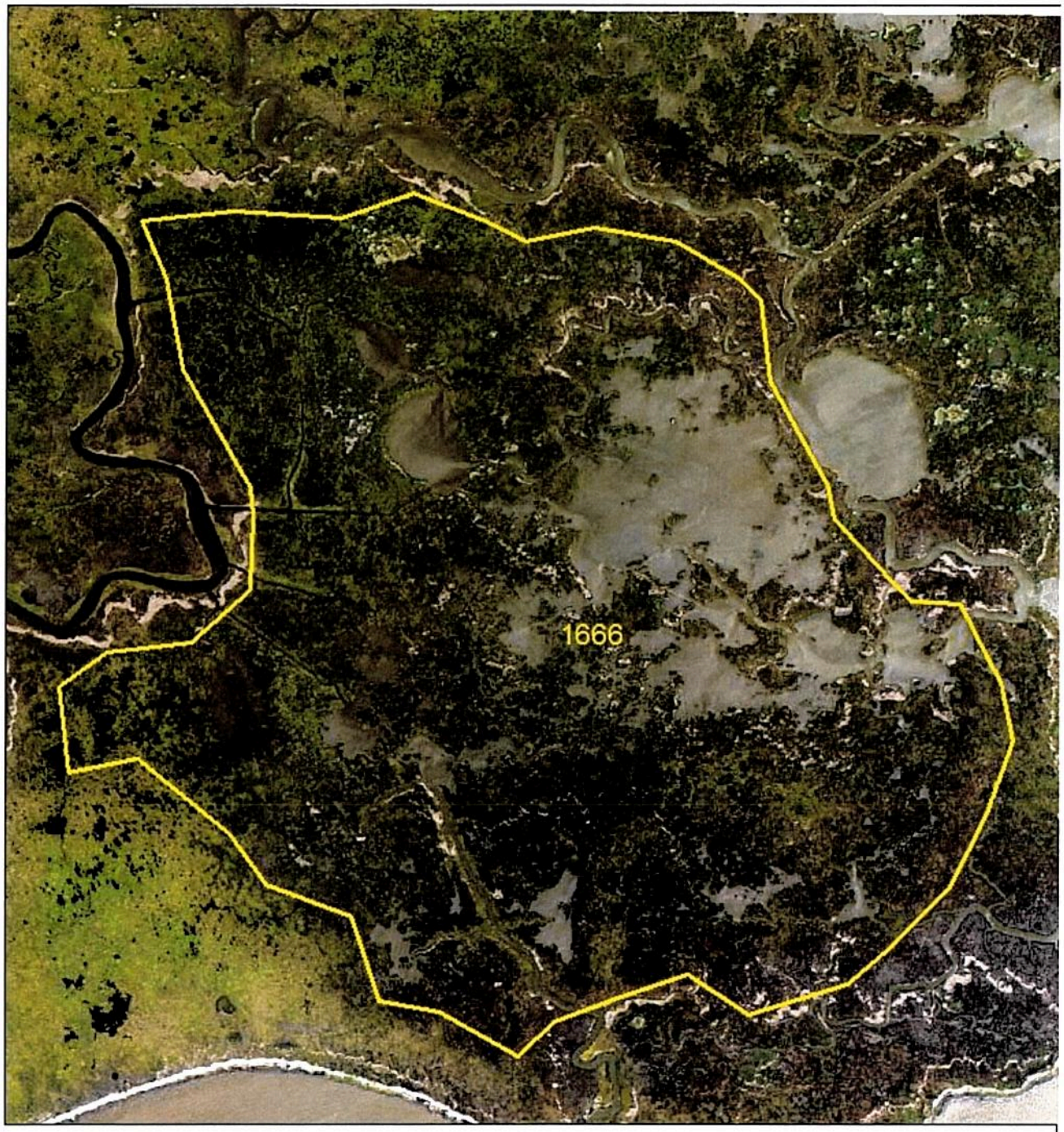
Sharon L. Osowski, Ph.D.; EPA; (214) 665-7506; osowski.sharon@epa.gov



SE Marsh Island Marsh Creation

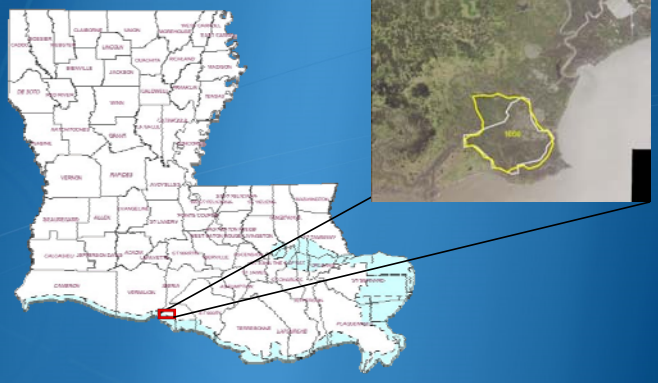
SE Marsh Island Marsh Creation

N

Basemap: 2017 USGS Iberia Parish
Produced by: EPA Region 6, Dallas, TX

0 0.15 0.3 0.6 0.9 Miles

SE Marsh Island Marsh Creation



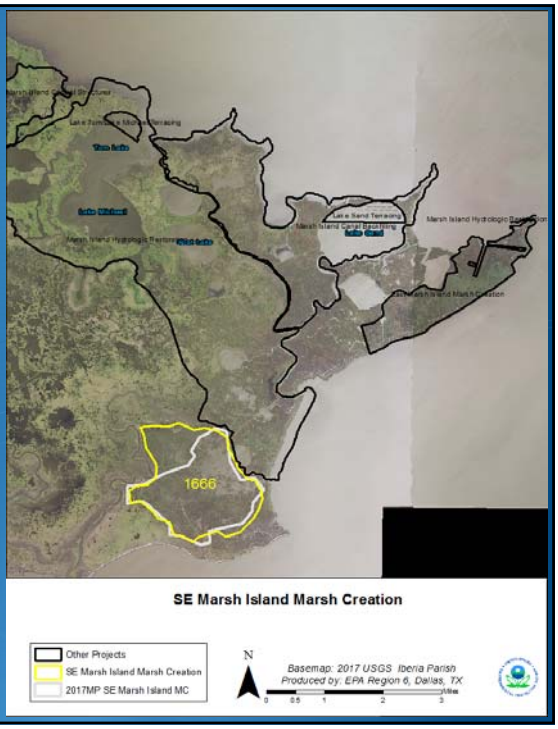
Coastal Wetlands Planning, Protection and Restoration Act

2017 Master Plan Solution

03b.MC.101 Southeast Marsh Island Marsh Creation : Creation of approximately 1,200 acres of marsh on the eastern tip of Marsh Island to create new wetland habitat and restore degraded marsh.

2017 Master Plan Consistency & Project Synergy

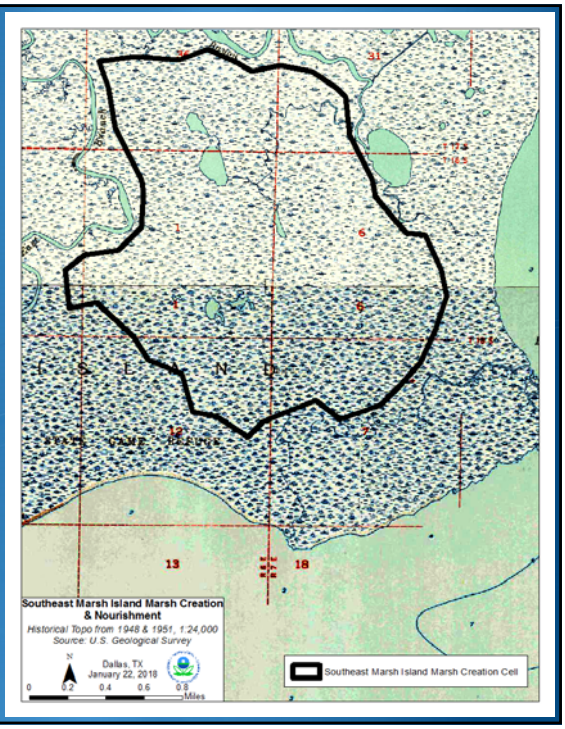
Borrow source for TV-21 can likely be used for this project proposal



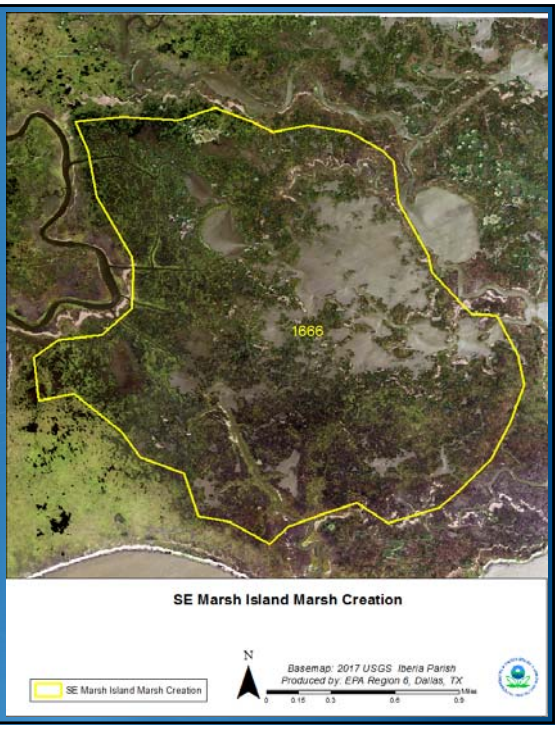
Problems

- Subsidence, storm and hurricane activity have increased wetland loss
- Iberia Parish could lose an additional 12% of its land area over the next 50 years and face severe storm surge flood risk (2017 MP).
- 90% or more of Marsh Island would experience 15ft + storm surge and would be lost in 50 years under the medium scenario (2017MP)

Historical Reference



Project Features



Species & Habitats Protected or Restored

T & E Species

- Red Knot
- Sea Turtles
- Sturgeon
- Manatee

Migratory Birds

- American Golden-plover
- Am Oystercatcher (Breeding)
- Black Skimmer (Breeding)
- Many shorebirds

Project Goals

- Create/nourish 1666 acres emergent marsh with sediment from offshore (borrow source for TV-21)
- Restore degraded wetland habitat
- Provide increased protection from storm surge and flooding
- Marsh Island serves to protect more inland areas in Iberia Parish
- Fully funded cost range $20-25M

R3-TV-06

Lake Ferme Marsh Creation and Nourishment

TV-06

PPL28 PROJECT NOMINEE FACT SHEET
February 31, 2018

Project Name
Lake Ferme Marsh Creation and Nourishment

Project Location
Region 3, Teche/Vermillion Basin, Iberia Parish, Marsh Island mapping unit

Problem
The loss rate near the project is 0.16%/yr based on 1985 to 2016 CRMS data the nearest station CRMS0499, but the standard rate of 0.04%/yr for the E. Marsh Island unit was used in benefit calculations. The proposed location is between Bird Island Bayou and Lake Ferme, at the center of the island. According to historical documents the area was once "well drained marsh" with the "finest freshwater lake on the island." Lake Ferme was the watering hole for wildlife in drought years prior to significant hydrologic alterations.

While much of the island has an underlying geologic sand base, that likely contributes to its stability, this central portion is not sand. With the creation of navigation canals, levees and salt water exchange had greater influence on central marshes. Recently, a water-control structure – the only centrally located water control structure –north of the proposed marshes was reconstructed, which allows drainage. The land losses that occurred primarily in distinctive events of the 1930s and 1950s will not recover with anticipated sea level changes without an addition of sediment to increase elevation.

Goals
The project goal is creating marsh in the project area to replace marsh lost, and restore lake shorelines. Specifically, the goal is to create and nourish approximately 415 acres of marsh.

Proposed Solution
The proposed project would restore the disintegrating interior marsh of the Island in select locations and nourish existing acres pending borrow availability and distance utilizing dedicated dredging and confined disposal of material from Gulf of Mexico, or Atchafalaya Bay via Bird Island Bayou. The borrow area would be designed to avoid adverse impacts to the lake shorelines and oyster bed. Any planting would be limited to a few rows along the lake edges. During Phase 0 and Phase 1, opportunities would be explored to increase the amount of marsh creation to further complete restoration of Marsh Island interiors.

Preliminary Project Benefits

1) *What is the total acreage benefited both directly and indirectly?*
   This total project area is 415 ac (290 ac. marsh creation and 125 ac. nourished, plus additional nourishment potential area).

2) *How many acres of wetlands will be protected/created over the project life?*
   Approximately 290 acers would be created/protected 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)?*

The anticipated land loss rate reduction throughout the area of direct benefits will be 50% over the projects life.

4) *Do any project features maintain or restore structural components of the coastal ecosystem such as barrier islands, natural or artificial levee ridges, beach and lake rims, cheniers, etc?*
The project would further restore the bank of the main navigable waterway, Bird Island Bayou, and the Lake Ferme shoreline.

5) *What is the net impact of the project on critical and non-critical infrastructure?*
There is no infrastructure directly influenced by the proposed project.

6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?*
This project would provide a synergistic effect with the Marsh Island Control Structure project (TV-06), which consists of management units north and south of the proposed location. The goal of that project has been to improve wildlife habitat by reducing the rate of land loss, re-vegetating shallow open-water areas, and increasing waterfowl food.

Considerations
The proposed project has potential pipeline considerations.

Preliminary Construction Costs
The construction +25% contingency cost range is $25M-$30M.

Preparer(s) of Fact Sheet:
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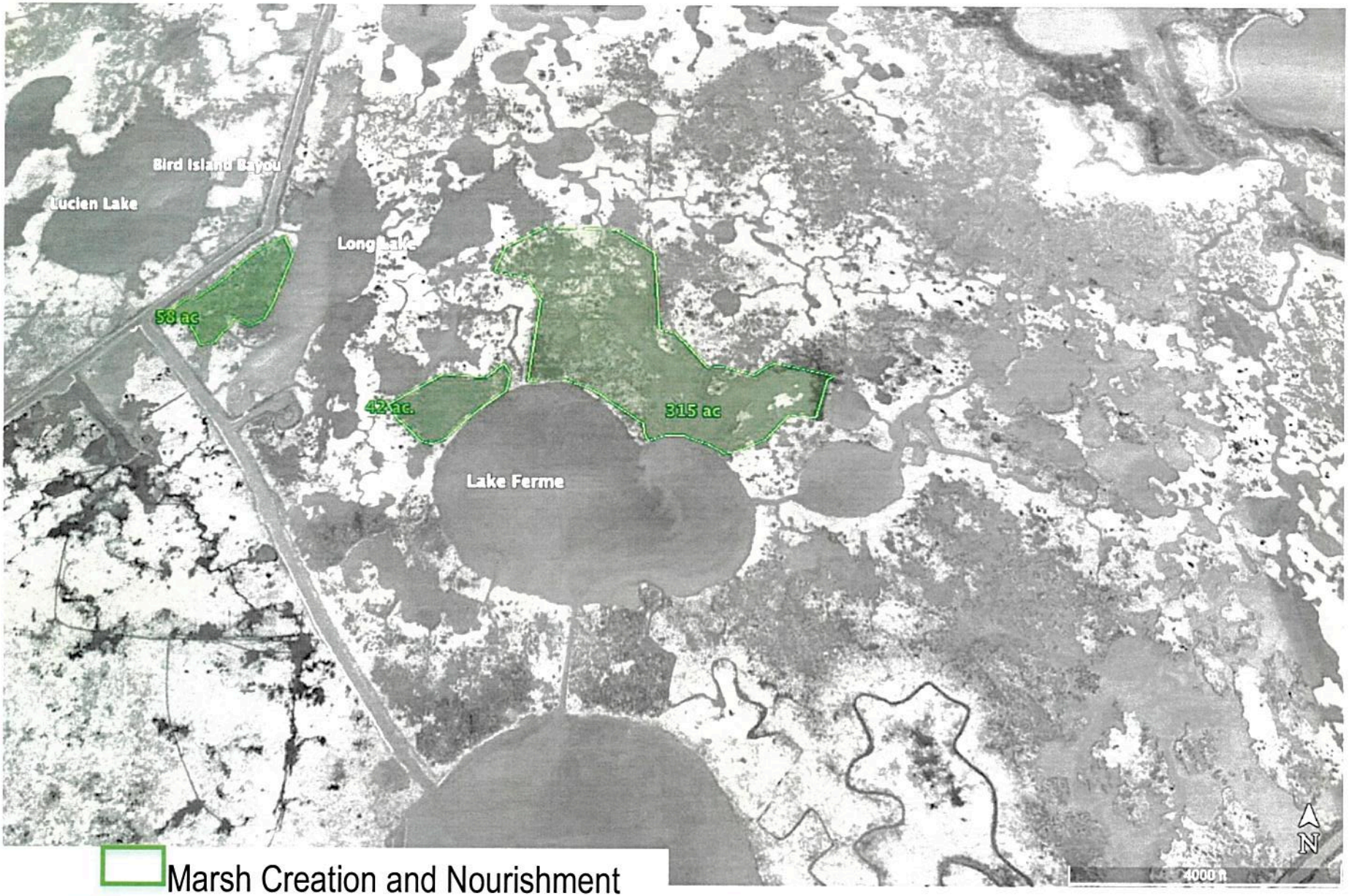
PPL28 Lake Ferme Marsh Creation and Nourishment

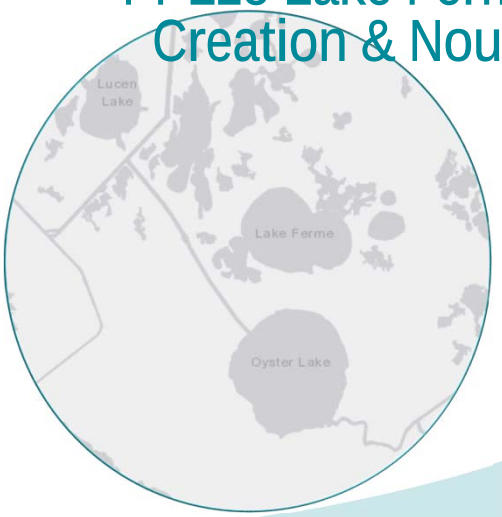


Feb. 2017

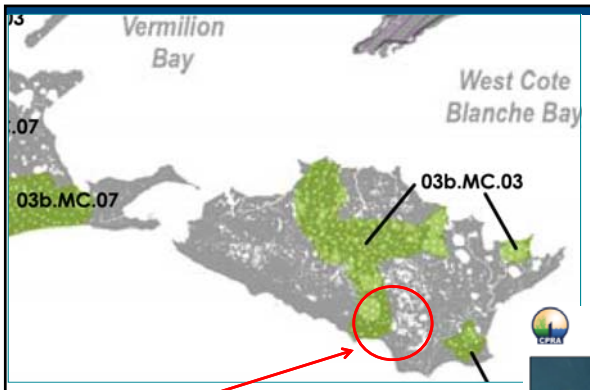
Marsh Creation and Nourishment

NOAA FISHERIES

PPL28 Lake Ferme Marsh Creation & Nourishment

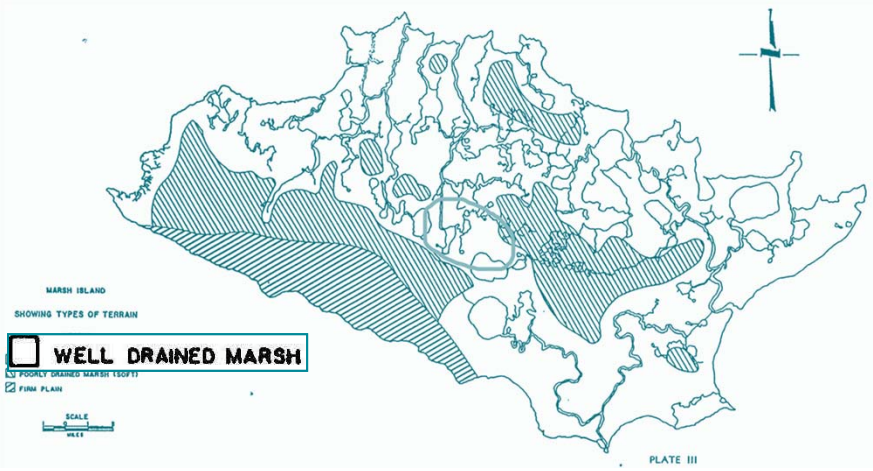


February 31, 2018

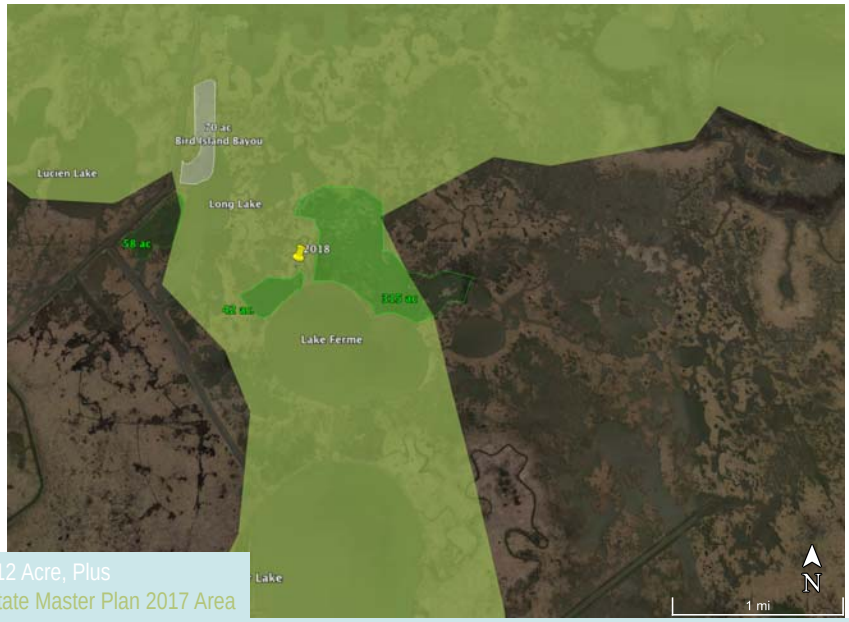


Lake Ferme Marsh Creation

Historic and Ecological significance.
1934, O'Neil Edward Orton 1959 McHellhenny and the Russell Sage Foundation



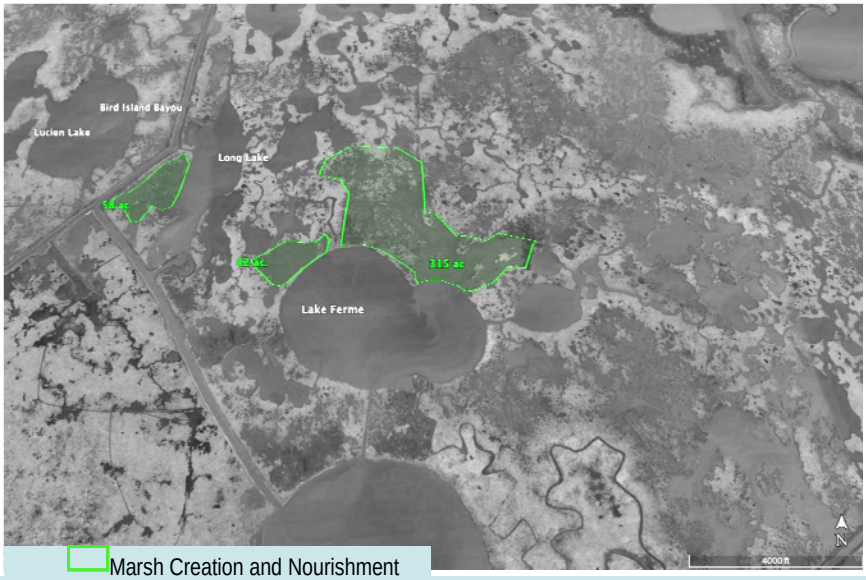
PPL28 Lake Ferme Marsh Creation and Nourishment



412 Acre, Plus
State Master Plan 2017 Area

Feb. 2017

PPL28 Lake Ferme Marsh Creation and Nourishment



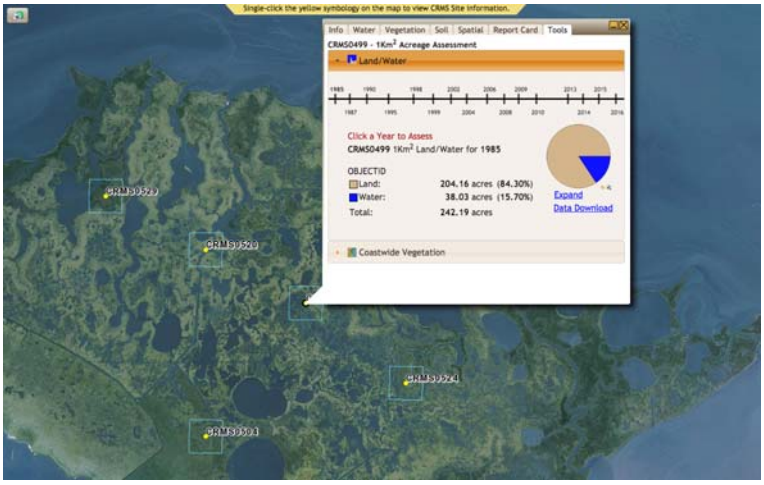
Feb. 2017

NOAA FISHERIES

Summary

- Total: 415 acres (ac)
- Marsh Creation: 290 ac
- Marsh Nourishment: 125 ac
- TY20 Net Acres : 290 ac
- Gulf of Mexico Borrow
- Construction + 25% contingency cost range is $25M - $30M

Additional Information : CRMS Stations



Additional Information: Nearby Projects

Lake Ferme Marsh Creation

~~R3-TV-07~~

~~Shell Keys Natural Refuge Restoration~~

Inconsistent with the 2017 State Master Plan

TV-07

CWPPRA PPL 28 Nomination Sign-Up Sheet

Complete a sign-up sheet for each project you nominate. Please print neatly!

Name of Project: Shell Keys National Refuge Restoration

Is this a demonstration project? Yes (No)

If not, please provide the below information.

Region: *(Circle one)* 1 2 (3) 4 **Coastwide**

Basin: *(Circle one)* Pontchartrain Barataria Terrebonne Calcasieu-Sabine

Breton Sound Atchafalaya Mermentau

(Teche-Vermilion)

Did you provide a factsheet? Yes (No)

Contact Information:

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