

CWPPRA PPL 19 Nominees

<u>Region</u>	<u>Basin</u>	<u>Project Nominees</u>
1	Pontchartrain	Fritchie Marsh-Northshore Marsh Creation and Terracing Project
1	Pontchartrain	Seven Lagoons/ GIWW Marsh Creation, Shoreline Protection and Terracing
1	Pontchartrain	Labranche East Marsh Creation Habitat Enhancement
2	Mississippi River Delta	Pass a Loutre Restoration
2	Breton Sound	Monsecour Siphon
2	Breton Sound	Breton Marsh Restoration
2	Breton Sound	Dedicated Sediment Delivery and Water Conveyance for Marsh Creation West of Big Mar
2	Barataria	Bayou L'Ours Ridge Restoration and Terracing
2	Barataria	Bayou Dupont to Bayou Barataria Marsh Creation
2	Barataria	Chenier Ronquille Barrier Shoreline Restoration and Marsh Creation
3	Terrebonne	Lost Lake Marsh Creation and Hydrologic Restoration
3	Terrebonne	Terrebonne Bay Shoreline Restoration and Marsh Creation
3	Terrebonne	Madison/Terrebonne Bays Marsh Creation
3	Atchafalaya	Bateman Island Sediment Retention and Marsh Restoration
3	Teche-Vermilion	Chenier Au Tigre Headland Restoration
3	Teche-Vermilion	Cote Blanche Freshwater/Sediment Introduction and Shoreline Protection Project
4	Calcasieu-Sabine	Kelso Bayou Marsh Creation and hydrologic Restoration
4	Calcasieu-Sabine	Cameron-Creole Watershed Grand Bayou Marsh Creation Project
4	Mermentau	Freshwater Bayou Marsh Creation
4	Mermentau	Rockefeller Gulf of Mexico Shoreline Stabilization, Joseph's Harbor East

PPL19 PROJECT NOMINEE FACT SHEET

FINAL - March 26, 2009

Project Name: Fritchie Marsh-Northshore Marsh Creation and Terracing Project

Coastwide 2050 Strategy:

- Coastwide Strategy: Dedicated dredging to create, restore, or protect wetlands
- Regional Strategy 9: Marsh creation via dedicated sediment delivery

State Master Plan:

- **Planning Unit 1: East of the Mississippi River**
 - D 1-12. St. Tammany Marsh Restoration and Shoreline Protection: This measure will utilize dedicated dredging and vegetative plantings to provide shoreline protection and marsh creation along the north shoreline of Lake Pontchartrain. Approximately 11.7 miles of shoreline will be protected and approximately 326 acres of marsh will be created.

Project Location: Region 1 - Pontchartrain Basin, Pearl River Mouth mapping unit, Fritchie Marsh System, St. Tammany Parish. The Project Area is located approximately 3 miles southeast of Slidell, Louisiana, near the north shore of Lake Pontchartrain in St. Tammany Parish. The marsh is bounded by U.S. Highway 90 to the south and east, Louisiana Highway 433 to the west, and U.S. Highway 190 and additional marshland to the north.

Problem:

Although the CWPPRA PO-06 project was completed in 2001 and resulted in improved hydrology and marsh restoration throughout the area, a significant portion of the Fritchie Marsh was lost due to Hurricane Katrina. Now shallow open water areas dominate the landscape which reduces the effectiveness of the PO-06 project. Over 3,600 acres of this unit were lost in the past 50 years, and another 15% is expected to be lost over the next 50 years. The long-term loss rate is approximately 0.5%/yr; however, the loss rate jumped to 13% after the 2005 storms, as evidenced by satellite and aerial imagery collected by the USGS. This once stable land mass was severely damaged by the passing of Hurricane Katrina, to the effect that in some locations marsh was stacked over nine feet high along the tree line. These marshes cannot recover without replacement of lost sediment, which is critical if the northshore marshes are to be sustained.

Goals:

The goal of this project is to help restore the vital Fritchie Marsh ecosystem through marsh creation, terrace construction, and improving hydrology within the project area. The previous PO-06 project is helping to reconnect the project area to the Pearl River system; however, with so much marsh being physically removed after the storms, the benefits associated with PO-06 are limited. This project will reestablish the marsh that PO-06 is intending to benefit. As well, the additional culverts to be constructed under this proposal will only increase the freshwater and nutrients entering into, and ultimately sustaining, the restored marshes. Dredged material will

immediately create marsh to help this fragile ecosystem, and terracing will reduce wave fetch and have the potential to create marsh over the project life.

Specific goals of the project are:

- Create approximately 273 acres of intermediate marsh
- Vegetative plantings for marsh creation area
- Create approximately 100,000 linear feet of terraces with vegetation
- Reduce wave fetch and erosion of adjacent interior marshes
- Increase hydrologic connection with Pearl System

Proposed Solution:

Proposed project features include approximately 273 acres of marsh creation via hydraulic dredging and placement of 1.7 million cubic yards of material. Borrow areas will be determined during the planning phase of this project, but will be within the northern portion of Lake Pontchartrain. Water elevation in this area is approximately -1 ft NAVD and containment will be semi-confined. Target marsh elevation is +1.5 ft NAVD. Intermediate vegetation will be planted upon material compaction and settlement.

The installation of additional culverts under Hwy 190 will be investigated to help facilitate freshwater into the project area. During high water periods in the Pearl System water flows across Highway 190, and an additional culvert and small outfall channel could route this resource into the project area. The Fritchie Marsh watershed is large and improving water flow and capacity for riverine water to circulate through the restored marshes will contribute to the longevity and vitality of the project.

Approximately 100,000 linear feet of earthen terraces will be built to create a 1,300 acre terrace field. The water elevation in this area is approximately -1 ft NAVD and materials are conducive for terrace construction. Terraces will be constructed to a +3 ft NAVD, with a 10 foot crown and 1 on 5 slopes, and spaced approximately 500 ft apart from the center line of each terrace. Two rows of intermediate marsh plugs will be planted on the crown and two rows on each side of the terraces upon construction completion.

Preliminary Project Benefits:

1.) *What is the total acreage benefitted both directly and indirectly?*

Total 1,420 acres. Of this, approximately 273 acres is created marsh, 150 acres (69 acres emergent) are created terraces that will be directly constructed, and 1,000 acres of interspersed marsh and open water would be indirectly benefitted.

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

Approximately 325 net acres of created marsh and terraces will remain after 20 years assuming a loss rate of 0.5%/yr. The extent of currently existing marsh has not been quantified, but is irrelevant at this stage because the only difference in future with and without project is what is created under the project.

3.) *What is the anticipated loss rate reduction throughout the area of direct benefits over the project life?*

Using ENVWG convention, it is anticipated that the loss rate of the adjacent interior marsh would be reduced by 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.?*

This project will help protect the integrity of the Lake Pontchartrain lake rim and shoreline from eroding from the north. Without dedicated delivery of sediment to this area, large expanses of former marsh adjacent to the lake shoreline will continue to erode and threaten the Lake's northern rim.

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

It is expected that this project will have a net positive impact on non-critical infrastructure. Both the marsh creation and terrace field would help provide protection to U.S. Highways 90 and 190, key hurricane evacuation routes for New Orleans East and the areas surrounding the Fritchie Marsh Unit.

6.) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?*

This project will function synergistically with the CWPPRA PO-06 Fritchie Marsh project that was completed in 2001. The PO-06 project restored hydrology to what was once a stable marsh system; however, the marshes that once benefitted from this project were decimated by Hurricane Katrina. The proposed project will re-establish the marsh, which will be sustained by improved hydrology constructed under PO-06.

Under St Tammany Parish's Wastewater Master Plan, the Parish is beginning preliminary engineering and design on a new Regional Treatment Plant to be located to the north west of the project area. The Parish has completed a Preliminary Feasibility Analysis and is currently conducting a Baseline Ecological Characterization to provide a preliminary characterization of the Fritchie Marsh's suitability for wastewater assimilation, an analysis of loading and assimilation capabilities of the wetland, landowner constraints, and other appropriate information. Introduction of secondarily treated wastewater and associated nutrients to the project area would provide a great source of freshwater and nutrients to the project area, and create synergy between the Parish's Coastal Restoration Vision and Wastewater Master Plan.

Identification of Potential Issues:

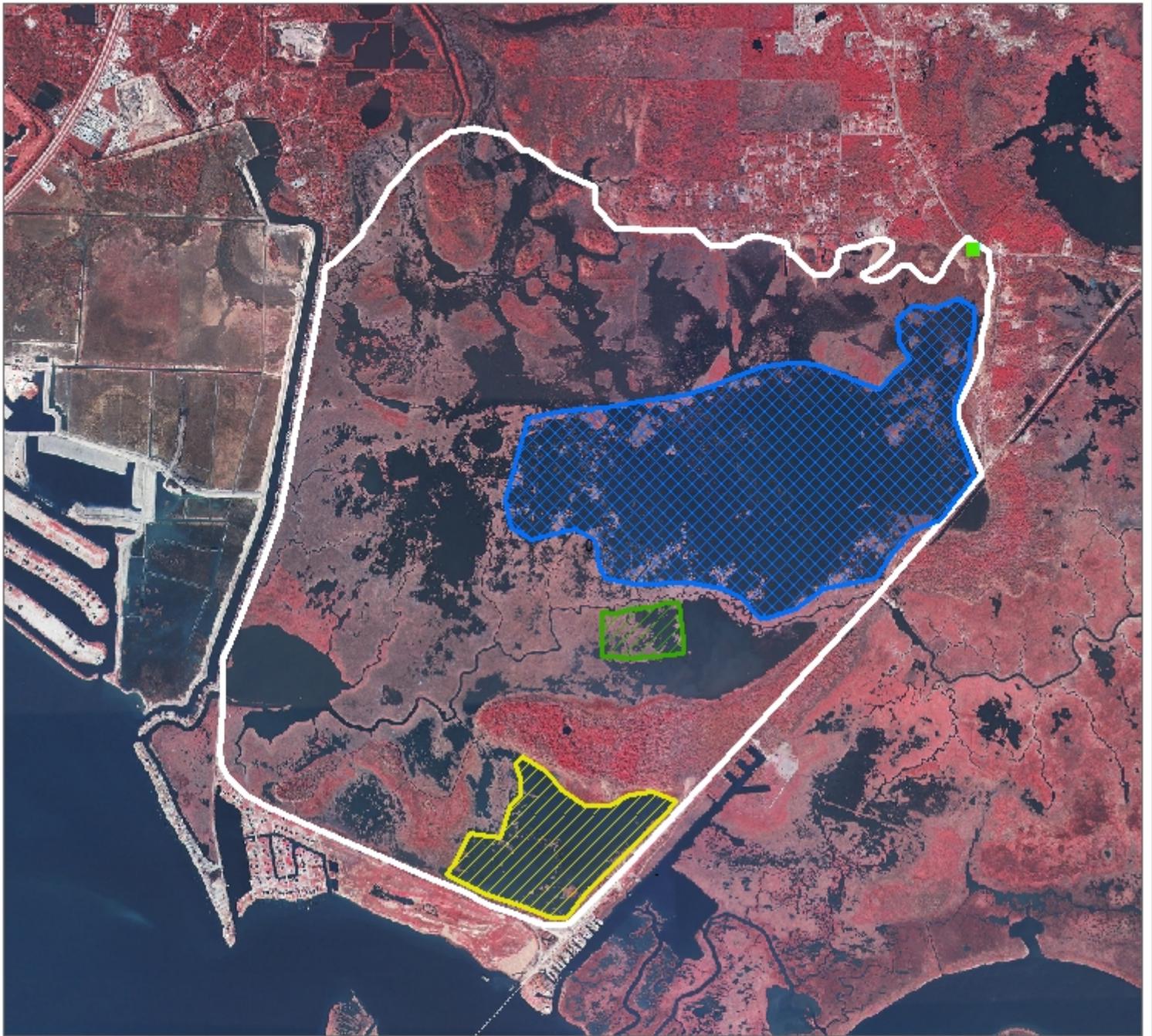
The Parish has already been in contact with the land owner for the marsh creation area, and has his full support for the project. There are a few pipelines in the area that will require project coordination with the pipeline owners. There are no known state-issued oyster leases in the project vicinity.

Preliminary Construction Costs:

The construction cost including 25% contingency is approximately \$14,831,410. The estimated fully-funded cost range is \$20M - \$25M.

Preparer of Fact Sheet:

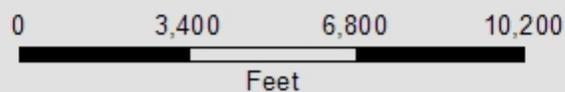
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**Fritchie Marsh-Northshore Marsh
Creation and Terracing Project
CWPPRA PPL19 Nominee
(January 2009)**



-  Culvert \ Pilot Channel
-  Marsh Creation
-  Marsh Nourishment
-  Terracing
-  Project Area



**PPL19 PROJECT NOMINEE FACT SHEET
FINAL - March 26, 2009**

Project

Seven Lagoons/GIWW Marsh Creation, Shoreline Protection and Terracing

Coast 2050 Strategy

Regional Ecosystem Strategies 11 (maintain shoreline integrity of Lake Borgne) and 15 (maintain East Orleans landbridge).

Project Location

Region 1, Orleans Parish, shoreline of Lake Borgne between Unknown Pass and Rabbit Island.

Problem

The East Orleans Landbridge area is impacted by both shoreline erosion and interior wetlands loss. Interior wetlands in the project area appear to have been scoured/impacted by the 2005 storms, resulting in the formation of new ponds.

Wetland loss rates in the vicinity of the project are estimated at 1.92%/yr (Alligator Bend 2006 WVA extended boundary). Recent (1998 – 2007) shoreline erosion rate in the project area is 6'/yr as estimated by USGS. Review of aerial photography shows shoreline breaches into interior ponds during the last ten years and pond formation in interior marshes.

Goals

The project goals are to create and restore marsh and to maintain a continuous shoreline between the Gulf Intracoastal Waterway and Lake Borgne.

Proposed Solution

Dedicated dredging from Lake Borgne to create 85 acres and nourish 200 acres of marsh with target elevation of +1.5' NAVD using 1.4 M cy of sediment dredged from Lake Borgne. Half of the created marsh acreage will be planted.

A shoreline protection berm will be constructed along 19,000 ft of Lake Borgne shoreline using about 1.2 M cy of sediment dredged from Lake Borgne. The conceptual design is based on the Lake Hermitage shoreline protection feature. The proposed shoreline berm would have a crown height of +4' and width of 50' with 1:25 back-slope and 1:50 lake-side slope. Footprint of the berm at +1.0' NAVD will be about 275'. Based on the conceptual berm profile, at +1.0' NAVD, the berm will extend 200 ft into Lake Borgne resulting in the creation of 87 acres of berm seaward of the Lake Borgne shoreline. Containment dikes will be constructed to allow management of the fill material. The berm will be planted with four rows each of smooth cordgrass and seashore paspalum on five-foot centers. It is anticipated that borrow areas for marsh creation/nourishment and the shoreline protection feature would be located in Lake Borgne within one to three miles of the shoreline.

Additionally, 21,250' of terraces would be constructed in selected portions of the Seven Lagoons. Conceptual terrace design is +3' high, 20-foot wide crown with 1:5 slopes. Estimated terrace width at +1.0' NAVD is 40'. Terraces will be planted at five-foot centers with two rows smooth cordgrass plugs on each slope and three rows on the crown.

Preliminary Project Benefits

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

The project will benefit a total of 392 acres. Marsh creation and nourishment will benefit 285 acres of marsh. The shoreline berm will create 87 acres ($\geq +1.0'$ NAVD) seaward of the existing shoreline and the terrace field will create 20 acres above $+1.0'$ NAVD.

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

About 219 total net acres of wetland to be protected/created over the project life.

It is estimated that 203 net acres (i.e., 295 acres – 94 acres) FWOP) of created/nourished marsh and shoreline berm will remain at TY20. At TY20, 16 acres of terraces would remain (assuming terraces lost at same rate as created/nourished marsh).

- 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 marsh loss rate will be reduced by 50% and the shoreline erosion rate will be reduced by 75%.

- 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 maintain the integrity of the Lake Borgne shoreline.

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

The project is anticipated to have marginal net positive impact on critical infrastructure (i.e., GIWW).

- 6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?*

The project could have positive synergistic effects with the Alligator Bend project.

Identification of Potential Issues

The proposed project has the following potential issues: shoreline protection design.

Preliminary Construction Costs

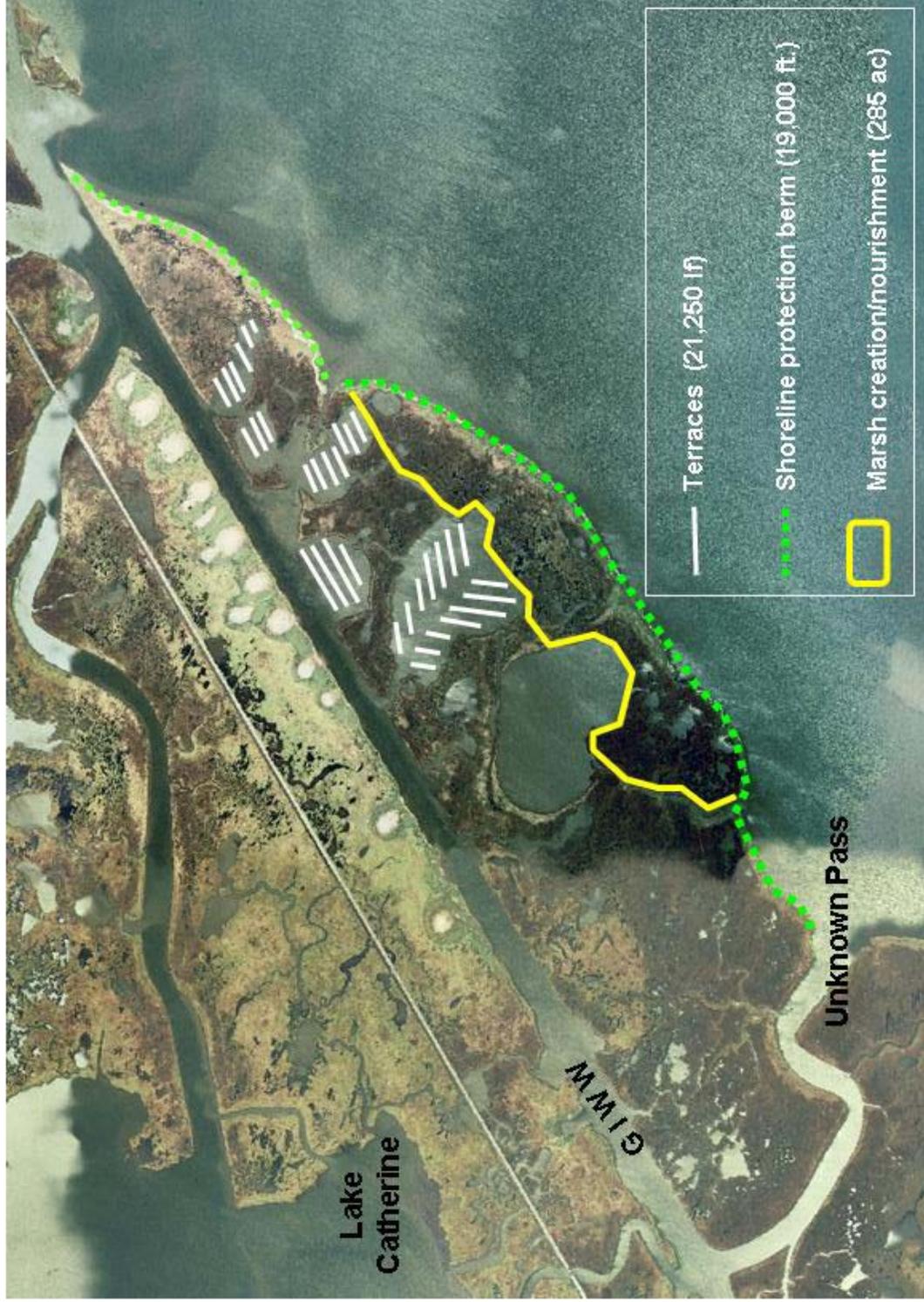
The construction cost plus contingencies is approximately \$18,376,599. The estimated fully funded cost range is \$25 - \$30 million.

Preparer(s) of Fact Sheet

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Seven Lagoons/GIWW Marsh Creation, Shoreline Protection and Terracing



PPL19 PROJECT NOMINEE FACT SHEET
FINAL – March 26, 2009

Project Name

LaBranche East Marsh Creation Habitat Enhancement

Coast 2050 Strategy

- Coastwide Common Strategies
 - Dedicated Dredging for Wetlands Creation
 - Vegetative Planting
 - Maintain or Restore Ridge Functions
- Region 1 regional ecosystem strategies
 - Dedicated delivery of sediment for marsh creation
- Region 1 mapping unit strategies
 - Dedicated Dredging

Project Location

Region 1, Pontchartrain Basin, St. Charles Parish, between Lake Pontchartrain and I-10, bounded to the west by the Fall Canal and the initial Bayou LaBranche Wetland Creation Project (PO-17) and to the east by a pipeline canal.

Problem

Dredging of access and flotation canals for the construction of I-10 resulted in increased salinity and altered hydrology that exacerbated the conversion of wetland vegetation into shallow open water bodies.

Goals

The primary goal is to restore the marsh that has been converted to shallow open water. Project implementation would result in an increase of fisheries and wildlife habitat acreage and diversity and improvement of water quality. The proposed project would provide storm buffer protection to I-10, the region's primary westward hurricane evacuation route, and to a lesser degree, the Canadian National Illinois Central Railroad line. Additional wetland storm buffer would complement the U. S. Army Corps of Engineers ongoing and contemplated hurricane protection measures in the area that include raising/enlarging the existing earthen levee and placement of a breakwater structure on the north side of the intersection of I-10 and I-310.

Proposed Solution

The proposed solution consists of the creation of \pm 365 acres of emergent wetlands, \pm 165 acres of shrub scrub wetlands, and \pm 240 acres of subtidal water bottoms using dedicated dredging from Lake Pontchartrain. The marsh creation area would have a target elevation the same as average healthy marsh. Shrub scrub areas would have a target elevation of average healthy marsh plus one foot. The subtidal area would have a target elevation of average healthy marsh minus 2 feet. Containment dikes would be built to separate the marsh creation from the subtidal water bottom area, and unconfined dredged material would be delivered within the marsh creation site without containment

to build random shrub scrub wetlands resulting in a more cost effective project. Vegetative plantings would be utilized in the areas designated to be emergent marsh. Elevated areas, resulting from the point discharge of dredged material, would vegetate naturally with shrub scrub vegetation. Successful wetland restoration in the immediate area (PO-17) clearly demonstrates the suitability and stability of soil and material availability from a sustainable borrow area (outlet end of Bonnet Carre Spillway).

Project Benefits

This project would benefit 770 acres of intermediate marsh and open water. Approximately 365 acres of marsh and \pm 165 acres of shrub scrub habitat would be created. In addition, \pm 240 acres of subtidal water bottoms would be improved. The project would result in a net of 519 acres over the project life.

Constructed in April of 1994, PO-17 has provided more than 14 years of wetland benefits and will likely continue to provide benefits well beyond its 20-year prescribed life expectancy. As with the PO-17 project, the proposed project would not only provide wildlife and fisheries and water quality benefits, but the restored wetland vegetation would buffer/weaken storm surge, providing additional protection to existing infrastructure including the Lake Pontchartrain and Vicinity Hurricane Protection Levee, I-10, the Canadian National Illinois Central Railroad embankment, aerial electrical lines, and non-essential infrastructure. The rail embankment and the two camps that are located south of PO-17 escaped significant damage from Hurricane Katrina while most of the camps and several portions of the rail embankment to the east were either lost or heavily damaged.

The current project would utilize data and lessons learned from PO-17. For example, the borrow area in the lake, used for PO-17, would be evaluated for re-use in an effort to save time and CWPPRA funding.

The project area's location north of I-10, makes it highly visible to motorists and would provide a readily discernible example of Louisiana's successful coastal restoration efforts. According to the Louisiana Department of Transportation and Development's Average Daily Traffic Count that was taken in 2005 for this segment of I-10, 54,687 vehicles a day pass this area. Because of its highly visible location near the New Orleans area, the project should be publicized as to its components and benefits.

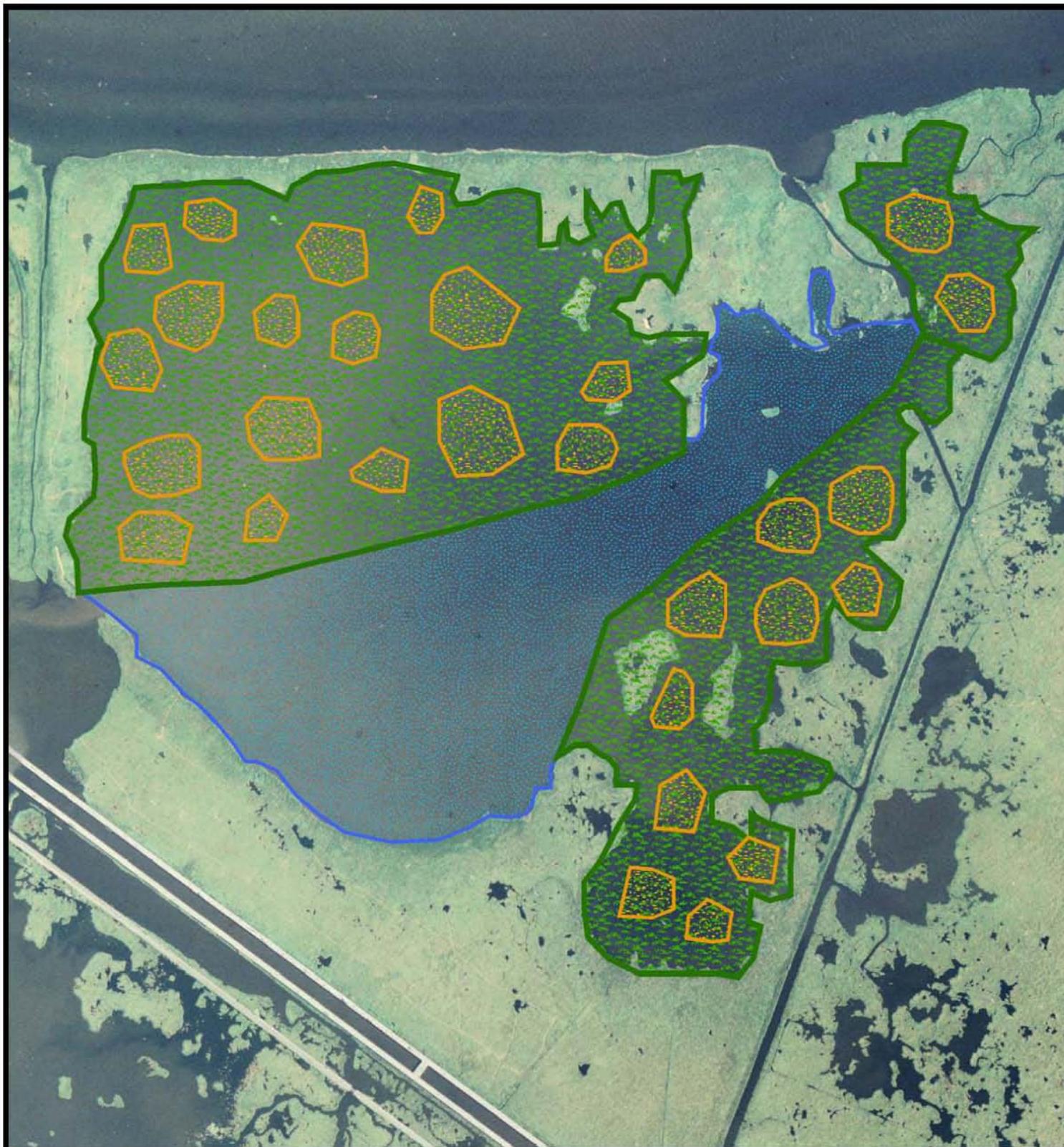
Project Cost

The estimated construction cost plus 25% contingency for this project is approximately \$21,989,000. The estimated fully-funded cost range is \$30-\$35 Million.

Preparers of Fact Sheet

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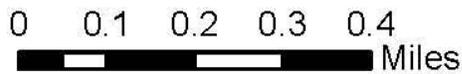
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LaBranche East Marsh Creation Habitat Enhancement

Legend

- Subtidal - 240 ac.
- Shrub Scrub 165 ac.
- Marsh Creation 365 ac.



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



Data Source:
2007 DOQQ Aerial Photography
Map Date: February 12, 2008

PPL19 PROJECT NOMINEE FACT SHEET
FINAL - March 26, 2009

Project Name

Pass a Loutre Restoration

Coast 2050 Strategy

Regional Strategy – Continue building and maintaining delta splays

Project Location

Region 2, Plaquemines Parish, Mississippi River Delta Basin, marshes north and south of Pass a Loutre on the Delta National Wildlife Refuge (NWR) and Pass a Loutre Wildlife Management Area (WMA).

Problem

Historically, Pass a Loutre was a major distributary of the Mississippi River. This pass carried sediments that created and maintained in excess of 120,000 acres of marsh. Pass a Loutre is not a maintained navigation channel and over time has filled in considerably and carries much less flow than it did historically. The Pass a Loutre channel has silted in and is now very shallow and narrow. The decreased channel size has much less capacity to carry fresh water and sediments and marshes historically nourished by the channel are now being starved and are subsiding at an alarming rate. In addition, a hopper dredge disposal site located at the head of Pass a Loutre has accelerated infilling of the channel.

Goals

The goal of this project is to restore an important distributary of the Mississippi River so that it will once again create new wetlands and nourish existing marsh. Dredged material will create marsh immediately and the increased fresh water and sediment carrying capacity of the channel will create marsh over time and increase the abundance and diversity of submerged aquatics.

Specific goals of the project are: 1) Enhance marsh-building processes within the project area; 2) Create approximately 587 acres of marsh with dredged material from construction of a conveyance channel; and 3) Over the 20-year life of the project, create approximately 550 acres of marsh via the construction of 12 crevasses.

Proposed Solution

- 1) Pass a Loutre would be dredged for approximately 5.6 miles from Head of Passes to Southeast Pass. Preliminary design includes channel dimensions of -30.0ft NAVD88 by a 300-ft bottom width.
- 2) Approximately 5.0M yd³ of material would be dredged during construction of the conveyance channel. That material will be used beneficially to create approximately 587 acres of marsh on Delta NWR and Pass a Loutre WMA.
- 3) Construction of 11 crevasses and cleanout of one existing crevasse. Crevasses will be constructed to a -8.0ft by 75-ft bottom width with 1(v):2(h) side slopes.

Preliminary Project Benefits

1) *What is the total acreage benefited both directly and indirectly?* Approximately 587 acres of marsh would be created from initial channel construction. Indirect benefits would occur over approximately 27,000 acres of marsh and open water habitats as a result of increased freshwater and sediment delivery (October 22, 2008 WVA).

2) *How many acres of wetlands will be protected/created over the project life?* Based on the PPL18 WVA, 1133 net acres of marsh would result from this project.

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 assumed reduction in marsh loss over the entire project area would be between 25-49%.

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?* Seven oil and gas companies have facilities and pipelines in this area which would benefit from an increase in marsh acreage. The loss of wetlands in this area exposes those facilities to open water wave energies resulting in expensive damages and oil spills. Protecting/creating wetlands in this area would also assist in reducing storm damages to oil and gas infrastructure and commercial development in nearby Venice, LA.

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 Delta Wide Crevasses Project (PPL6) which constructed several crevasses south of Pass a Loutre. Many of the crevasses constructed under that project depend on the sediment load delivered by Pass a Loutre. This project would also have a synergistic effect with several other projects on the Mississippi River Delta – Venice Ponds Marsh Creation and Crevasses (PPL15), Spanish Pass Diversion (PPL13), Benneys Bay Diversion (PPL10), West Bay Diversion (PPL1), an LDWF crevasse project on Pass a Loutre, and several state mitigation projects that have been constructed on Pass a Loutre WMA.

Identification of Potential Issues

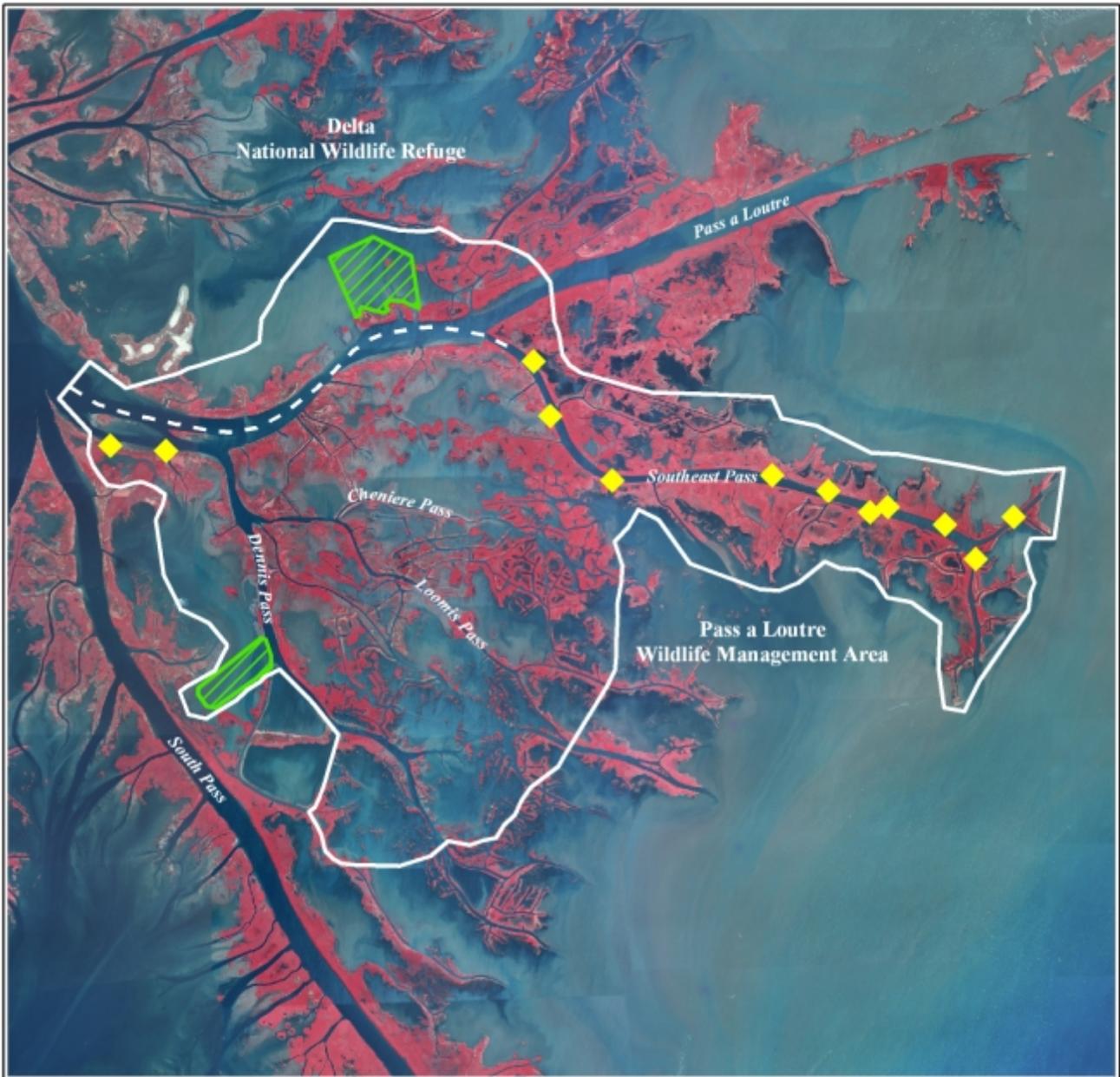
Several pipelines cross Pass a Loutre and would need to be avoided by dredging activities. The continued use of a hopper dredge disposal area at Head of Passes has raised some concerns over the longevity of the project.

Preliminary Construction Costs

The construction cost including 25% contingency is approximately \$28,167,250. The fully-funded cost calculated for PPL18 was \$34,383,309.

Preparer of Fact Sheet

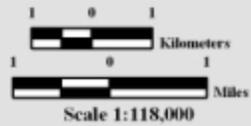
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Pass a Loutre Restoration (PPL18 Candidate)



-  Crevasse *
 -  Dredged Channel *
 -  Marsh Creation *
 -  Project Boundary
- * denotes proposed features



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

Map ID: USGS-NWRC 2008-11-03-40
 Map Date: July 10, 2008

Image Source:
 2005 Digital Orthophoto Quarter Quadrangles

PPL19 PROJECT NOMINEE FACT SHEET
FINAL - March 26, 2009

Project Name

Monsecour Siphon

Coast 2050 Strategy

- Coastwide Common Strategies
 - Diversions and river discharge
 - Management of diversion outfall for wetland benefits
- Region 2 Regional Ecosystem Strategies:
 - Restore and Sustain Marshes: #8: Construct most effective small diversions

Project Location

Region 2, Breton Sound Basin, Plaquemines Parish, north of Phoenix, LA.

Problem

This area has been disconnected from the Mississippi River since levees were constructed during the early 20th century. The lack of overbank flooding/crevasses ensures that wetlands here do not have sufficient sediment input to maintain elevation against subsidence. In addition, drainage canals and oil and gas canals and associated spoil banks probably create some undesirable impoundment and tidal scour/saltwater intrusion in the area. In addition to impoundment caused by canals and spoil banks, the area is probably somewhat naturally impounded due to natural ridges. Aerial photography clearly demonstrates the significant loss of marsh in this area.

Goals

Reduce rate of wetland loss. Restore fresh and intermediate marsh. Increase SAV cover.

Proposed Solution

Construct a siphon from the Mississippi River, with 2000 cfs maximum capacity (estimated average flow=1033 cfs). The project may require additional features for delivery and outfall management.

Preliminary Project Benefits

The total acreage benefited directly and indirectly is estimated to be 16,000 ac. We estimate approximately 1179 net acres will be protected/created/restored over the project life. The anticipated loss rate reduction throughout the area of direct benefits over the project life is >75%. No project features maintain or restore structural components of the coastal ecosystem. The project may have a significant positive net impact on the Mississippi River levee, which is critical infrastructure. The project will provide a synergistic effect with the Caernarvon Diversion project, Caernarvon Diversion Outfall Management (BS-03a), White Ditch Resurrection and Outfall Management (BS-12), Caernarvon Outfall Management/Lake Lery SR (BS-16), and Bertrandville Siphon (BS-18).

Identification of Potential Issues

The proposed project has potential oyster lease issues, pipeline issues, and O&M.

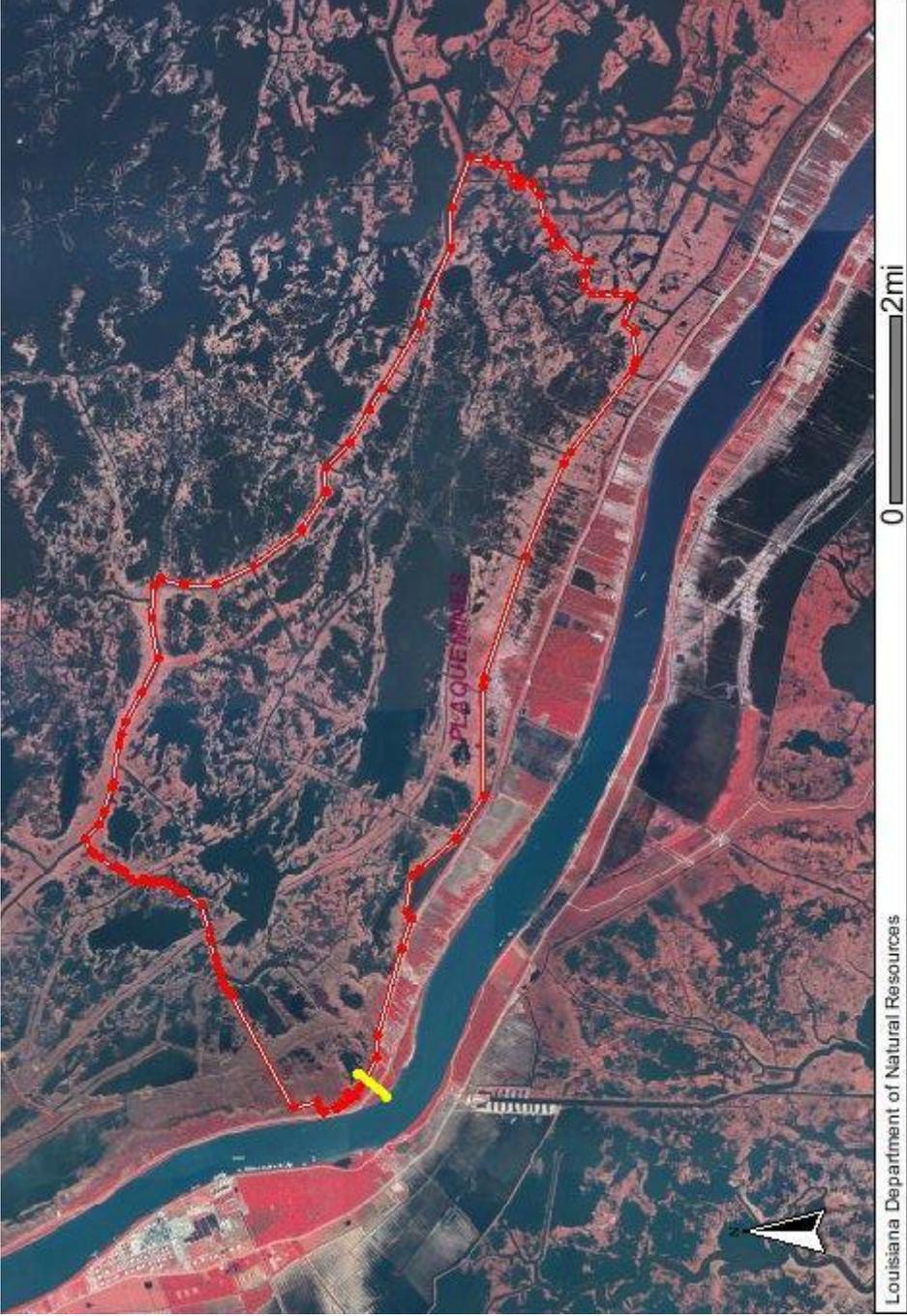
Preliminary Construction Costs

The construction cost including 25% contingency is approximately \$6,727,490. The estimated fully-funded cost range is \$10 M- \$15 M.

Preparer(s) of Fact Sheet

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Proposed Monsecour Siphon benefit area.

Siphon

PPL19 PROJECT NOMINEE FACT SHEET
FINAL - March 26, 2009

Project Name:

Breton Marsh Restoration Project

Coast 2050 Strategy:

- Dedicated dredging for wetland creation.

Project Location:

The project area is located in Region 2, Breton Basin, Plaquemines Parish, Caernarvon mapping unit, southeast of Delacroix, LA in an area south of Lake Lery between Bayou Terre aux Boeufs (near Delacroix) and River aux Chenes.

Problem:

The landfall of Hurricane Katrina in southeast Louisiana destroyed thousands of acres of marsh and other coastal habitats east of the Mississippi River. One of the areas most severely impacted was the Breton Sound Basin where it is estimated that 40.9 square miles of marsh were converted to open water. One of the most significant restoration tools used in this basin is the Caernarvon Freshwater Diversion. The operational plan of the Caernarvon Freshwater Diversion has proposed higher water discharge rates during the winter and spring to address hurricane impacts. Because much of the sediment and nutrients will be removed from the diversion water before it reaches the project area, the proposed increase in discharge rates will have little to no effect on project area's ability to rebuild. Without restoration, this region will begin to see the coalescence of water bodies, higher wave generated erosion rates, and a greater influence associated with the open brackish Black Bay system, especially during periods of reduced Caernarvon flow.

Goals:

The goal of this project is to restore marsh that was damaged by hurricane Katrina in 2005. Reestablishing this marsh would help restore marshes in the project area that once helped to moderate the effects of the brackish waters from the Black Bay system moving north into the more intermediate marshes.

Specific Goals: 1) Creation of 470 acres and nourishment of 148 acres of emergent marsh through hydraulic dredging. 2) Restore the western shoreline of Bayou Gentilly.

Proposed Solutions:

This project would create 470 acres of low salinity brackish marsh with the use of a hydraulic dredge. Renewable Mississippi River sediments that were deposited in Lake Lery as a direct result of the Caernarvon Diversion Project would be hydraulically dredged and pumped via pipeline to create marsh. Dredged material would be pumped to a height of between +1.5 to +2.0 ft NAVD 88 and contained with earthen dikes built from insitu material. These dikes would be gapped or degraded no later than three years post construction to allow for fisheries access. It is anticipated that water depths in the marsh creation cells are relatively shallow as they are the result of recent hurricane loss.

Preliminary Project Benefits:

1) *What is the total acreage benefited both directly and indirectly?* Direct benefits include creation and/or nourishment of 618 acres of marsh through hydraulic dredging.

2) *How many acres of wetlands will be protected/created over the project life?* This project would net approximately 381 acres of marsh throughout the life of the project.

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 loss rate in the area of direct benefits would be reduced by >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 does not restore any structural components.

5) *What is the net impact of the project on critical and non-critical infrastructure?* This project would provide protection to 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 the Caernarvon Diversion and the Caernarvon Outfall Management/Lake Lery Shoreline Restoration Project (BS-16) that was recently been approved for Phase I funding.

Identification of Potential Issues:

There are several pipelines in the area.

Preliminary Construction Costs:

Construction costs including 25% contingency is approximately \$18,179,711. The estimated fully-funded cost range is \$25M - \$30M.

Preparer(s) of Fact Sheet:

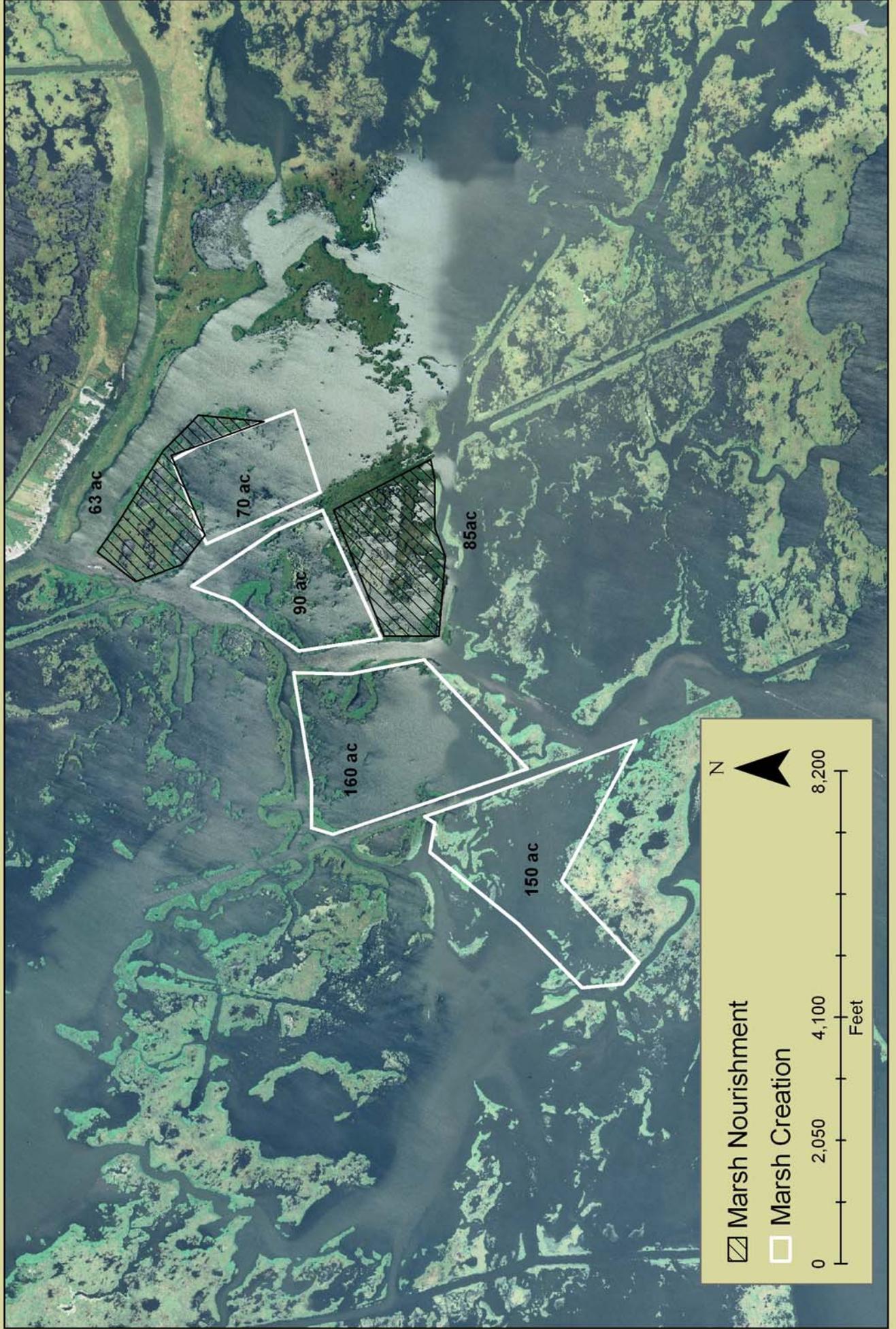
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U.S. Fish & Wildlife Service

Louisiana Ecological Services Field Office

Breton Marsh Creation and Nourishment Project



PPL19 PROJECT NOMINEE FACT SHEET
FINAL - March 26, 2009

Project Name:

Dedicated Sediment Delivery and Water Conveyance for Marsh Creation west of Big Mar

Coast 2050 Strategy:

Coastwide strategy: Dedicated dredging to create, restore, or protect wetlands
Regional Strategy 5: Manage outfall of existing diversions

Project Location:

Region 2. Caernarvon mapping unit; located to the west, southwest of Big Mar in upper Breton Sound, Plaquemines Parish.

Problem:

The upper Breton Sound marshes have long been subjected to subsidence, salt water intrusion, altered hydrology, and storm damage, which is heightened by the channelization of the Mississippi River. Construction and operation of the Caernarvon Freshwater Diversion Project is helping to reverse land loss in this area via re-introduction of river sediment, freshwater, and nutrients that at one time created much of coastal Louisiana. Opened in 1996, the structure has led to the infilling of Big Mar, a failed agricultural impoundment that serves as the structure's primary outfall area. As Big Mar fills in, flow that used, and is intended, to go down Delacroix Canal and into the marshes southwest of Big Mar is now taking the path of least resistance down Bayou Mandeville and into Lake Lery. Data collected by LSU has shown that of the flow entering Lake Lery, only a small portion exits the lake and is available for marshes further down the basin. After the passing of Hurricane Katrina in 2005, the Breton Sound marshes were devastated and land loss rates increased to 1.87%/yr (USGS) and 1.32%/yr in the upper sound. Considerable shearing has also occurred in the area resulting in the large-scale, direct removal of marsh. Reestablishment of the Breton Sound marshes is dependent upon both the direct reconstruction of lost marsh and optimizing the flow and outfall of the Caernarvon structure. The area west of Big Mar is currently receiving little Caernarvon flow from which to naturally rebuild marsh, and the flow to the west and southwest of Big Mar is becoming increasingly impeded with its infilling. This project will result in marsh creation in the areas not likely to rebuild on its own, and help facilitate flow back into the southwest wetlands of Breton Sound.

Proposed Solution:

Project features include approximately 500 acres of marsh creation via river mining and placement of 2.4 million cubic yards of material. In addition, a conveyance channel will be dredged from the northeast confluence of Delacroix Canal and Big Mar to the southwest corner of Big Mar where it joins with Delacroix Canal. Channel dimensions will be approximately 10,000 ft long, 100 ft wide and 5 ft deep requiring a total of 185,000 cubic yards of excavation. Material from the channel excavation will be beneficially used to create part of the marsh platform west of Big Mar. Construction of this channel will help redirect flow from the Caernarvon diversion to the southwest area of upper Breton Sound, which is currently taking the path of least resistance as Big Mar fills in through Bayou Mandeville into Lake Lery. The marsh

platform will be partially contained and vegetated with indigenous intermediate species upon compaction and dewatering.

Goals:

1. Create approximately 500 acres of intermediate marsh via sediment mining of the Mississippi River.
2. Excavate a channel 10,000 ft long, 100 ft wide, and 5 ft deep through the Big Mar to facilitate Caernarvon outfall to 10,400 acres of marshes west and southwest of Big Mar.
3. Reduce erosion of adjacent interior marshes.

Preliminary Project Benefits:

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

10,400 acre total project area. Approximately 500 acres of marsh platform will be constructed, and an area approximately 10,000 acres expected to be benefited from increased Caernarvon flow into southwest marshes.

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

Total net of 991 acres after twenty years, split by 438 acres of created marsh at the end of twenty years, plus a net of 553 acres benefited from increased Caernarvon flow into southwest marshes (see attached models).

3) *What is the anticipated loss rate reduction throughout the area of direct benefits over the project life?*

It is anticipated that the loss rate of the adjacent interior marsh would be reduced by 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.*

This project will help fortify the hurricane protection levee and communities located along the northern boundary of Breton Sound. There are several areas where a marsh buffer no longer exists in front of the levee system, and breaches from storm activity have already been observed. Marsh creation under this project will, in part, target areas that provide direct protection to the hurricane protection levee.

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

It is expected that this project will have a net positive impact on critical infrastructure, specifically the Plaquemines Parish hurricane protection levee.

6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?*

This project is part of the state master plan and will work in concert with several existing efforts in Breton Sound. Marsh creation sites will compliment the small USACE mitigation project near Braithwaite, and the channel excavation will facilitate flow to the outfall management structures constructed by the NRCS that depend upon flow down Delacroix canal.

Identification of Potential Issues:

No pipelines or oyster leases are in the project area. The borrow area will be the Mississippi River and a small portion of Big Mar for the purpose of facilitating diversion flow into Breton Sound. The landowners of both Big Mar and the surrounding marshes have been contacted and support the project concept.

Preliminary Construction Costs:

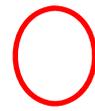
The construction cost including 25% contingency is approximately \$16,872,519. The estimated fully-funded cost range is \$20M - \$25M.

Preparer of Fact Sheet:

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Dedicated Sediment Delivery and Water Conveyance for Marsh Creation west of Big Mar

PPL-19 CWPRA Nominee



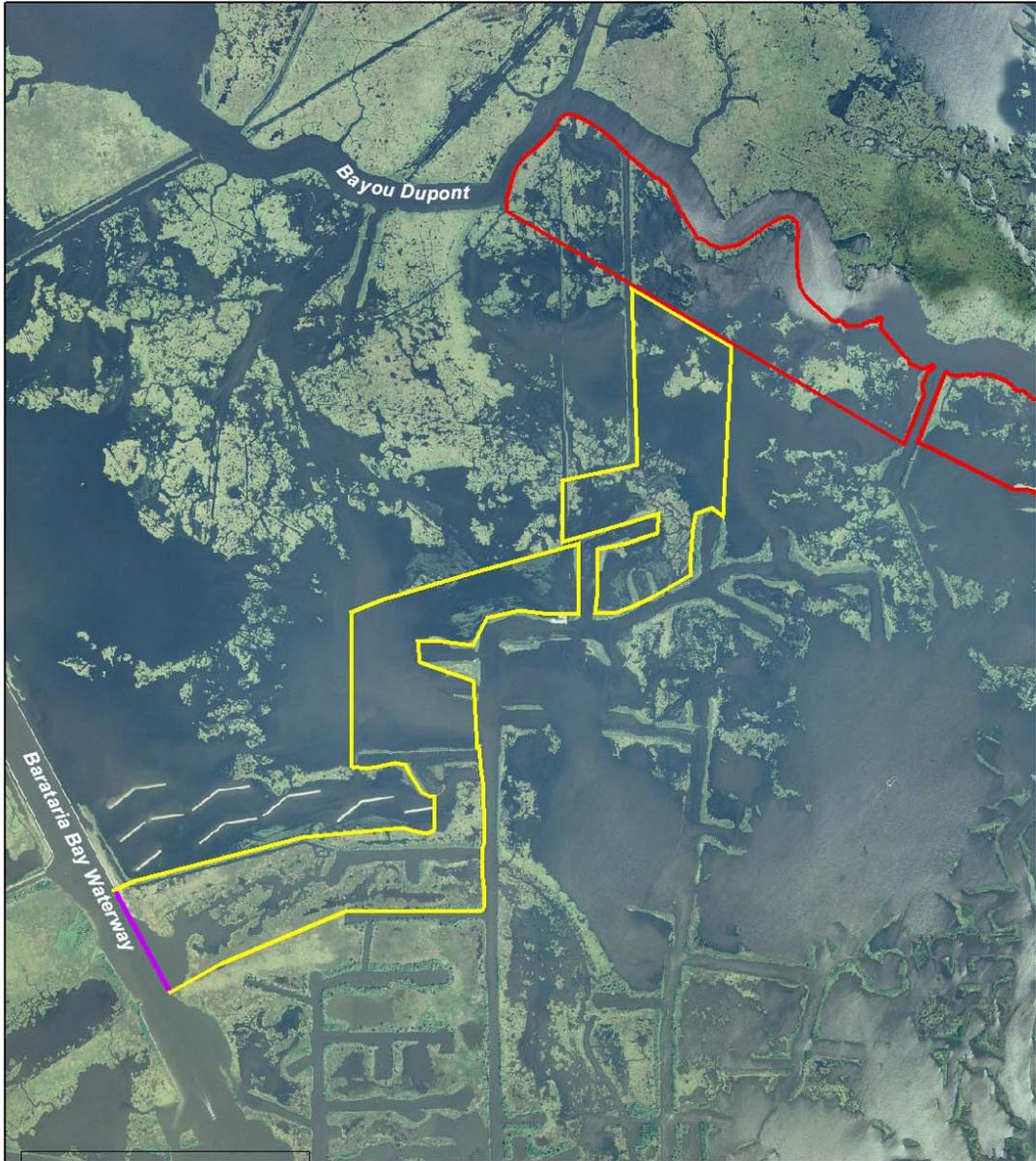
Marsh creation site



Proposed conveyance channel



Area of added diversion influence



Legend

-  Rock_Dike
-  BA-48 Project Boundary
-  Marsh Creation/Nourishment
~ 290 Ac. Marsh Creation
~ 215 Ac. Marsh Nourishment

N



0 800 1,600 3,200 4,800 6,400
Feet



Bayou Dupont to Bayou Barataria
Marsh Creation
Jefferson Parish, Louisiana
PPL 19

PPL19 PROJECT NOMINEE FACT SHEET
FINAL - March 31, 2009

Project Name

Bayou L'Ours Ridge Restoration and Terracing

Coast 2050 Strategy

Coastwide: Maintain or Restore Ridge Functions

Terracing

Vegetative Plantings

Local and Common Strategies: Maintain function of Bayou L'Ours Ridge

Restoration of the Bayou L'Ours ridge is part of the State of Louisiana's Master Plan.

Project Location

Region 2, Barataria Basin, Lafourche Parish, east of Galliano, and south of Little Lake

Problem

The gapping of the Bayou L'Ours ridge by pipeline canals has altered the hydrology of the area and contributed to the degradation of the marsh north of the ridge. Additionally, the tidal flow through these canals is causing the depth of these openings to increase. Also, portions of the marsh along the southern shore of the ridge are being eroded at a rate of about three feet per year.

Goals

The project will restore the function of the Bayou L'Ours ridge, partially restore the hydrology north of the ridge, and will halt the deepening of the gaps. Terraces will be created in areas near the ridge to help restore the ridge's natural function and prevent further erosion of the marsh immediately south of the ridge.

Proposed Solutions

Three of the gaps will be closed completely. Two additional gaps will be decreased in size and armored to prevent any further scouring. A 325-acre terracing field, consisting of approximately 30,000 linear feet of terraces will be constructed south of the ridge to provide additional protection to the ridge. The bankline of the canal south of closure 4 will be restored to prevent salt water intrusion into the terracing field.

Preliminary Project Benefits

1) What is the total acreage benefited both directly and indirectly? The terraces will create 30 acres which will be directly benefited. The project area of approximately 8,000 acres, of which approximately 2,600 acres are land, will be benefited indirectly due to a decrease in salinity.

2) How many acres of wetlands will be protected/created over the project life? At the end of 20 years, 24 of the terrace acres will remain. Additionally, 7 acres of erosional loss will be prevented in the marsh south of the Bayou L'Ours ridge. Assuming a 10% reduction in the loss rate north of the ridge due to salinity reduction, 76 acres would be preserved over 20 years. Thus, the net acres benefited would be 107.

3) What is the anticipated loss rate reduction throughout the area of direct benefits over the project life? <25%

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.* restores the function of the Bayou L'Ours ridge by providing a barrier to salt water intrusion

5) *What is the net impact of the project on critical and non-critical infrastructure?* Provides additional storm surge protection for the Clovelly Dome Oil Storage Terminal, the Larose to Golden Meadow levee system, and communities along Bayou Lafourche.

6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?* Reduces salt water intrusion to the area near the Little Lake Shoreline Protection (BA-37) Project. With increased usage of the Davis Pond diversion, the closure of the ridge will help restore the degraded marsh north of the ridge.

Identification of Potential Issues

Past projects in this area have had landowner issues, but landowners in the area, including the owners of the Tidewater Canal, have publicly expressed their support of the project.

Preliminary Construction Costs

The construction cost including 25 % contingency is approximately \$5,212,313. The estimated fully funded cost range is \$5,000,000 to \$10,000,000.

Preparer(s) of Fact Sheet

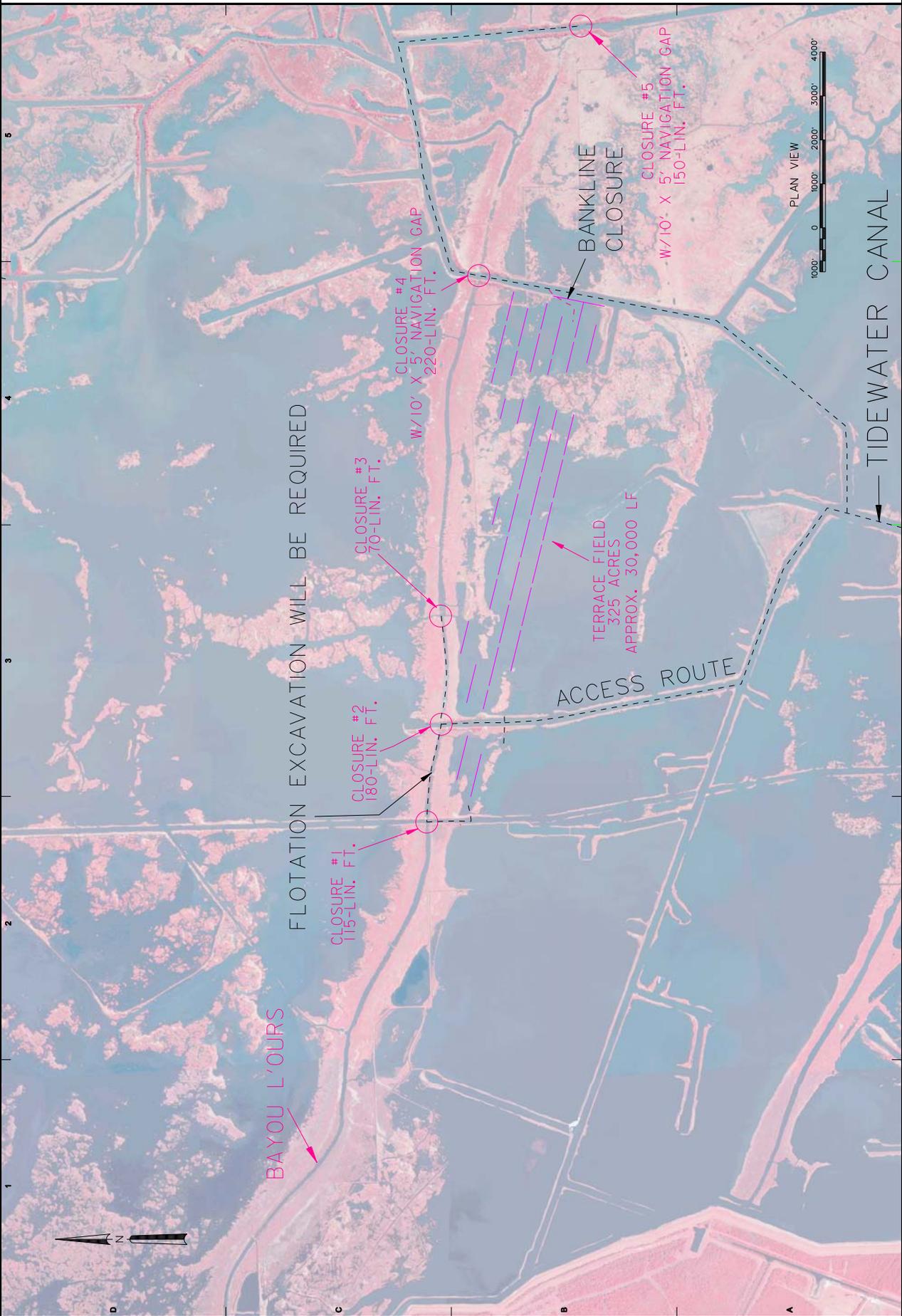
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 U.S. Army Corps of Engineers New Orleans District	RESTORATION PLAN BAYOU L'OURS PRELIMINARY	SHEET IDENTIFICATION C-01	U.S. ARMY CORPS OF ENGINEERS NEW ORLEANS DISTRICT NEW ORLEANS, LOUISIANA DRAWN BY: XXXX CHECKED BY: XXXX DATE: 10/20/11 PROJECT NO.: 11-00011 DRAWING NO.: 11-00011-001
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FLOTATION EXCAVATION WILL BE REQUIRED

BAYOU L'OURS

CLOSURE #1
115-LIN. FT.

CLOSURE #2
180-LIN. FT.

CLOSURE #3
70-LIN. FT.

CLOSURE #4
220-LIN. FT.

TERRACE FIELD
325 ACRES
APPROX. 30,000 LF

ACCESS ROUTE

BANKLINE
CLOSURE

CLOSURE #5
150-LIN. FT.

TIDEWATER CANAL



A B C D 1 2 3 4 5

PPL19 PROJECT NOMINEE FACT SHEET
FINAL - March 26, 2009

Project Name

Bayou Dupont to Bayou Barataria Marsh Creation

Coast 2050 Strategy

Region 2 Regional Strategy#26. Dedicated dredging to create marsh on the land bridge.

Louisiana's Comprehensive Master Plan for a Sustainable Coast - From page 52 of the Master Plan, "One way to accelerate the benefits of diversions would be to mechanically restore lost marsh by pumping sediments via pipeline from the bed of the Mississippi River, offshore, or from navigation channels. Combining land sustaining diversions and this type of mechanical marsh restoration could rapidly convert open water to wetlands and help the restored marsh remain viable. Pipeline conveyance of sediment is seen as a particularly good option for areas like Myrtle Grove and West Point a la Hache, where the Master Plan recommends situating land sustaining diversions. Together, diversions and pipeline conveyance of sediment could rebuild marsh quickly areas where land loss has reached crisis level.

See Figure 10, page 57 of the Master Plan (attached).

Project Location

Region 2, Barataria Basin, Jefferson Parish, extending southward from the PPL17 Bayou Dupont project (BA-48) to the Bayou Barataria ridge.

Problem

What problem will the project solve? The marshes located between Bayou Dupont and Bayou Barataria are very deteriorated. The deteriorated marsh, along with numerous canals, allows a level of tidal exchange that is considerably greater than historic conditions. The proposed marsh creation and nourishment will restore critical marsh acreage; the restored marsh and rock dike will partially restore the area's hydrology.

What evidence is there for the nature and scope of the problem in the project area? 2005 aerial imagery confirms that the areas marshes are severely deteriorated.

Goals

Create 290 acres and nourish 215 acres of marsh between Bayou Dupont and Bayou Barataria. Prevent erosion of created marsh from Barataria Bay Waterway and partially restore area hydrology. Consideration will be given to re-establishing ridge elevation along the former Bayou Barataria ridge in the southern portion of the project area.

Proposed Solution

505 acres of marsh creation and nourishment. Material for marsh creation will be excavated from the Mississippi River. Consideration will be given to re-establishing ridge elevation along the former Bayou Barataria ridge in the southern portion of the project area.

1,740 feet of bankline protection along the east bank of the Barataria Bay Waterway.

Preliminary Project Benefits

1) What is the total acreage benefited both directly and indirectly? 505 acres created and / or nourished.

2) How many acres of wetlands will be protected/created over the project life? 273 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%). Not determined yet.

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 serve to re-connect Bayou Dupont and Bayou Barataria with a band of healthy marsh, partially restoring the area's hydrology. Consideration will be given to re-establishing ridge elevation along the former Bayou Barataria ridge in the southern portion of the project area.

5) What is the net impact of the project on critical and non-critical infrastructure? Created and nourished marsh will reduce storm surge that would otherwise approach The Pen and the community of Lafitte unimpeded.

6) To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects? The proposed project's northern boundary is the southern boundary of the PPL17 Bayou Dupont Project. The proposed project's southern limit is in close proximity to a landowner / Duck's Unlimited sponsored terracing project that was construction 2006-07 and ties into the CWPPRA BA-26 project.

Identification of Potential Issues

The project design will have to address pipelines within the project area. Maintenance will be required for the bank protection feature.

Preliminary Fully Funded Costs

The construction cost including 25% contingency is approximately \$20,605,273. The estimated fully-funded cost range is \$25M-\$30M.

Preparer of Fact Sheet

Quin Kinler

USDA-NRCS

225-382-2047

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Preliminary Project Benefits:

1) *What is the total acreage benefited both directly and indirectly?* Direct benefits include creation and/or nourishment of 618 acres of marsh through hydraulic dredging.

2) *How many acres of wetlands will be protected/created over the project life?* This project would net approximately 381 acres of marsh throughout the life of the project.

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 loss rate in the area of direct benefits would be reduced by >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 does not restore any structural components.

5) *What is the net impact of the project on critical and non-critical infrastructure?* This project would provide protection to 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 the Caernarvon Diversion and the Caernarvon Outfall Management/Lake Lery Shoreline Restoration Project (BS-16) that was recently been approved for Phase I funding.

Identification of Potential Issues:

There are several pipelines in the area.

Preliminary Construction Costs:

Construction costs including 25% contingency is approximately \$18,179,711. The estimated fully-funded cost range is \$25M - \$30M.

Preparer(s) of Fact Sheet:

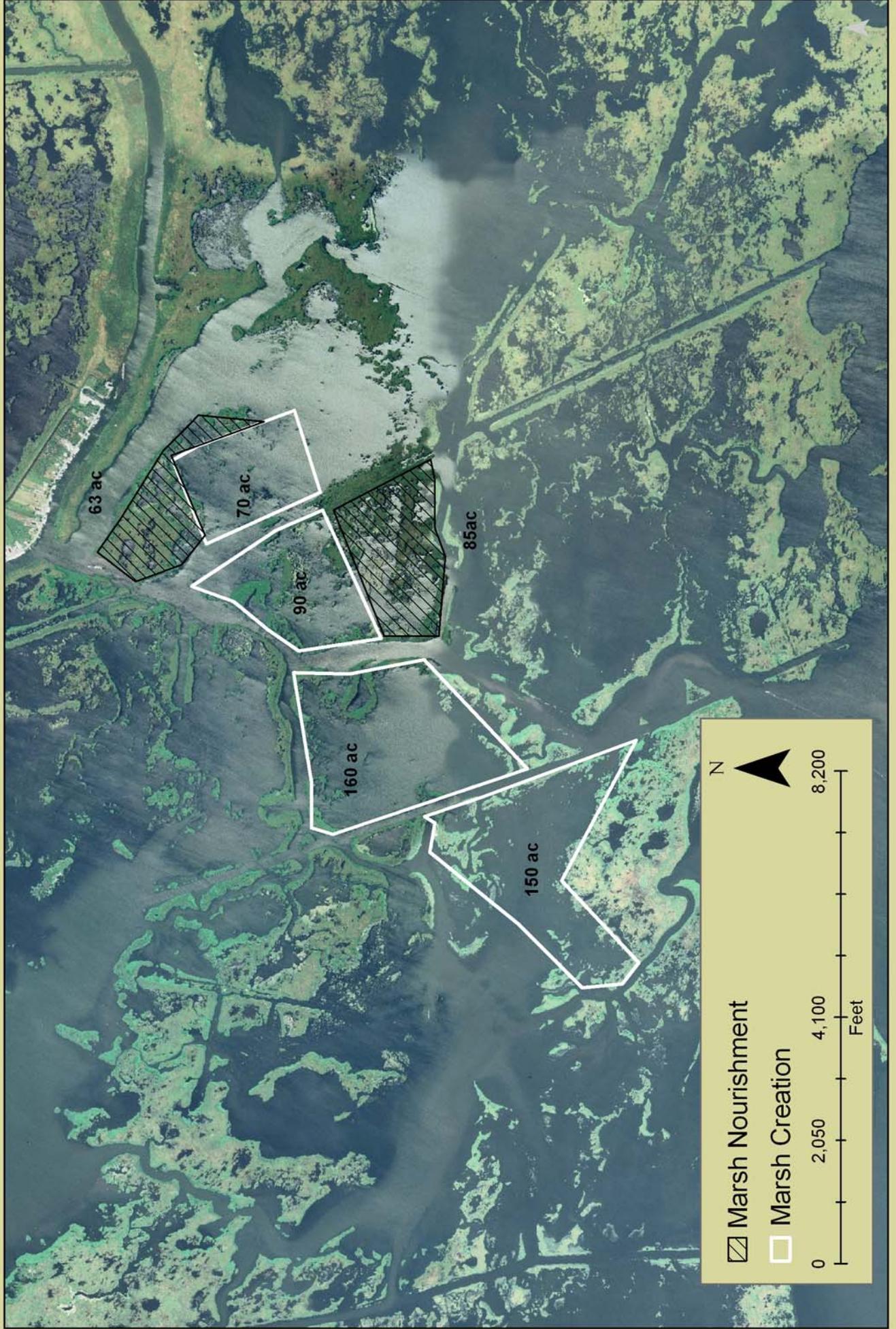
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U.S. Fish & Wildlife Service

Louisiana Ecological Services Field Office

Breton Marsh Creation and Nourishment Project



PPL19 PROJECT NOMINEE FACT SHEET
FINAL – March 26, 2009

Project Name

Chenier Ronquille Barrier Shoreline Restoration and Marsh Creation (RPT2-BA09)

Coast 2050 Strategy

Regional strategy 21 – extend and maintain barrier headlands, islands, and shorelines
Chenier Ronquille mapping unit strategy 15 – restore ridge function

Project Location

Region 2, Barataria Basin, Plaquemines Parish, between Quatre Bayou Pass and Pass Chaland

Problem

Chenier Ronquille is the most westerly extent of the lower Plaquemines shoreline and serves as the western anchor of that shoreline system. The area is undergoing shoreline erosion, interior wetland loss, and overwash. Coastal Research Laboratory/UNO (2000) reported shoreline erosion rates of 14.6 ft/yr for the Chenier Ronquille sub-reach. Shoreline erosion rates calculated by USGS for 1998 – 2007 averages 36 feet/year.

Project area marshes are also being converted to open water at an estimated rate of 3.16%/yr (derived loss rate from Coastal Research Laboratory/UNO (2000) report that evaluated short-term (1988 to 2000) land loss across the entire Barataria/Plaquemines shoreline. Data specific to the Chenier Ronquille sub-reach indicate average annual losses of 10.53 acres out of 334 acre area). This rate is similar to the loss rate of 3.76%/yr that can be derived from the Coast 2050 Chenier Ronquille mapping unit data for the period of 1983 – 1990.

Continued erosion of the western end of Chenier Ronquille directly contributes to enlargement of Quatre Bayou Pass. On-going shoreline erosion has caused the shoreline to intersect open water areas, resulting in overwash and breach formation and if unchecked will cause fragmentation of the shoreline and development of tidal inlets.

Goals

The project goal is to maintain shoreline integrity and create and restore saline marsh.

Proposed Solution

Dedicated dredging from nearshore Gulf deposits to create saline marsh in open water areas and nourish existing marshes in project area. About 11,000 ft of shoreline will be nourished through the creation of beach and dune (135 cy/ft fill density). Dune crest will be at +6 ft NAVD and 200 ft wide (backslope 1:30; foreslope 1:30 above +1.0' and 1:75 below +1.0'). The width of the shoreline nourishment at +1.0 NAVD will be 500 ft. Estimated in place beach and dune fill is 1.5 M cy. Based on experiences with losses of sand fencing during the 2008 storm season and the resultant debris field, it is proposed that intensive dune plantings be used in lieu of sand fencing

In addition to beach nourishment and dune restoration, 205 acres of marsh would be created and an additional 105 acres of marsh would be nourished (+1.6 ft NAVD final target elevation) using about 1.6 M cy of fine grained materials (the total polygon size for marsh creation and nourishment derived from SONRIS and marsh and water acres are based on ocular estimate). Collectively, both beach/dune and marsh fill will yield an overall fill density is 276 cy/ft. About 10,400 ft of marsh containment dike will be required. Half of the created marsh acres will be planted.

Based on current information, it is anticipated that about 3 M cy sand will remain in borrow areas investigated for the East Grand Terre that will not be used for construction of that project. These deposits are located about 16,000 to 18,000 ft from Chenier Ronquille and are sufficient to provide about 1.9 M cy of in place fill (assuming c:f of 1.6). After construction of East Grand Terre, some marsh material (1.6 M cy) will remain in investigated borrow areas; assuming c:f of 1:3, this remaining marsh material could provide 1.2 M cy of the required 2.0 M cy (in place) marsh fill. Consequently, additional marsh borrow areas would need to be cleared and it is anticipated that those borrow areas would be sited adjacent to the Quatre Bayou borrow area used for Chaland Headland. Based on pump distance for Chenier Ronquille and recent bid opening for East Grand Terre (slightly longer pump distance) it is proposed to use East Grand Terre in place unit costs as the basis for this estimate.

Preliminary Project Benefits

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

In total, the project will benefit 398 acres of beach, dune and saline marsh.

The project will benefit 310 acres of saline marsh (205 acres created and 105 nourished). The project will also benefit about 88 acres of Gulf shoreline through the restoration of beach and dune (11,000 ft in length, 350' created seaward at +1.0 ft NAVD).

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

The total net benefit will be 228 acres remaining at TY20.

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 marsh loss rate will be reduced by 50% and the shoreline erosion rate will be reduced by 60% (consistent with Elmer's Island 2008 WVA assumption).

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 maintain barrier shoreline landscape features.

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

The project is anticipated to have a moderate net positive impact on critical infrastructure (i.e., major natural gas transmission pipelines).

6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?*

The project could have positive synergistic effects with the recently implemented Chaland Headland and Bay Joe Wise projects as well as the state's East Grand Terre Island CIAP project.

Identification of Potential Issues

Oyster leases and pipelines within the project area will need to be considered during project design.

Preliminary Construction Costs:

The construction cost plus contingencies is approximately \$31,832,890. The estimated fully funded cost range is \$40 - \$50 million.

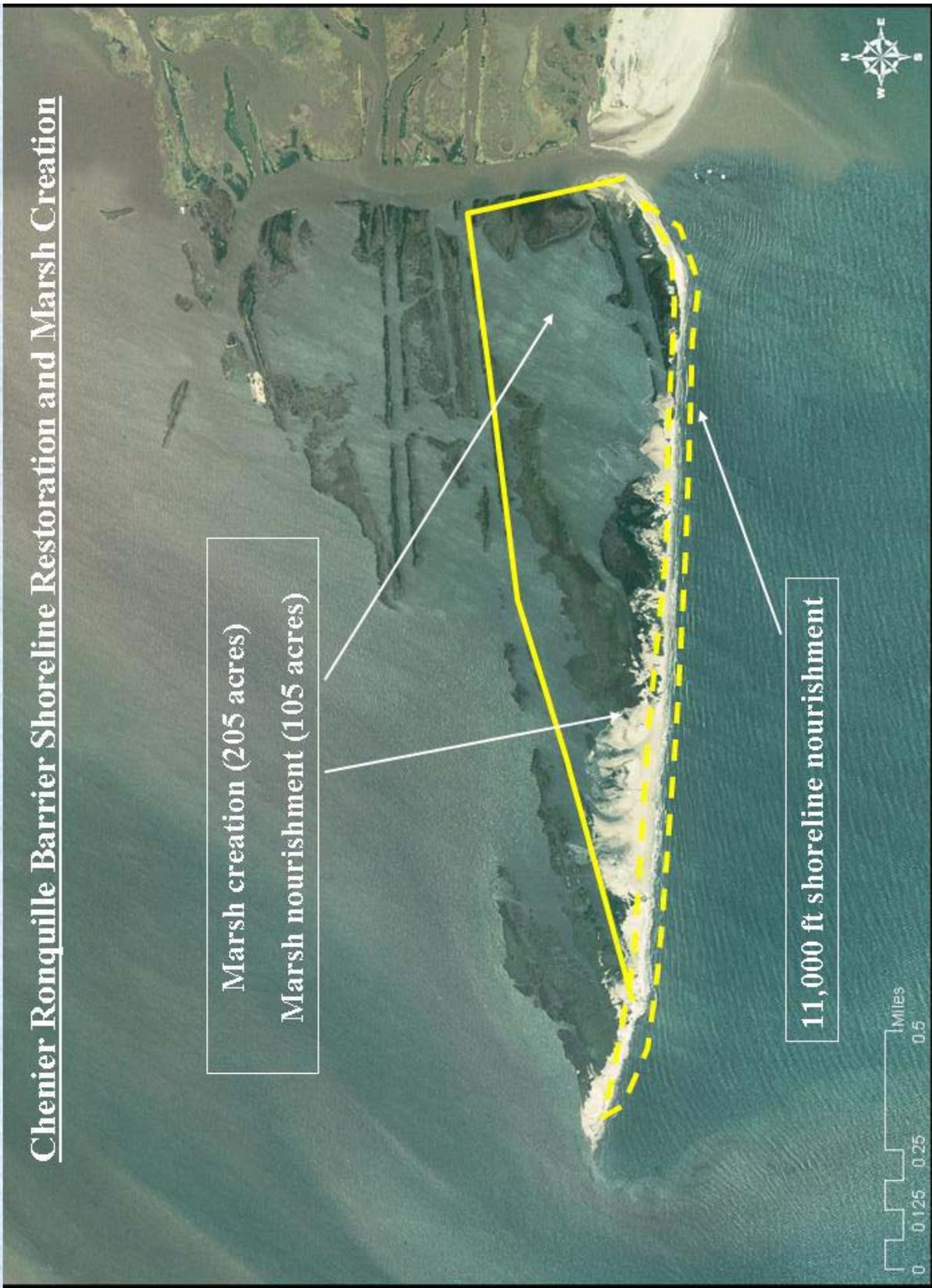
Preparer(s) of Fact Sheet:

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Chenier Ronquille Barrier Shoreline Restoration and Marsh Creation

Marsh creation (205 acres)
Marsh nourishment (105 acres)

11,000 ft shoreline nourishment



PPL19 PROJECT NOMINEE FACT SHEET
FINAL - March 26, 2009

Project Name

Lost Lake Marsh Creation and Hydrologic Restoration

Coast 2050 Strategy

Regional Strategy – Dedicated delivery of sediment for marsh building

Regional Strategy – Increase transfer of Atchafalaya River water to lower Penchant tidal marshes

Project Location

Region 3, Terrebonne Parish, Terrebonne Basin, near the vicinity of Lost Lake

Problem

Significant marsh loss has occurred between Lake Pagie and Bayou DeCade to the point that little structural framework remains separating those two waterbodies. Northeast of Lost Lake, interior marsh breakup has resulted in large, interior ponds where wind/wave energy continues to result in marsh loss. West of Lost Lake, interior breakup has occurred as a result of ponding and the periodic entrapment of higher salinity waters during storm events.

Goals

- 1) Prevent the coalescence of Bayou DeCade and Lake Pagie and extend the landbridge function of the North Lake Mechant Landbridge Project.
- 2) Address interior marsh loss with terraces and marsh creation.
- 3) Increase fresh water and sediment delivery to marshes north and west of Lost Lake.

Proposed Solution

The proposed project consists of several features to protect marsh, create marsh, and extend the landbridge function of the North Lake Mechant Landbridge Project to the west. Marshes north, east, and west of Lost Lake serve an important function as an intermediate zone buffering fresh marshes to the north from the higher salinities to the south. Features include:

- 1) Marsh creation (300 acres) between Lake Pagie and Bayou DeCade to prevent the coalescence of those two waterbodies and restore/protect some key features of structural framework (i.e., lake rim and bayou bank) in the area. This feature will compliment features currently being built under the North Lake Mechant Landbridge Project. In addition, 150 acres of marsh will be created north of Bayou DeCade.
- 2) Terracing (approximately 30,000 linear feet or 24 acres) to reduce fetch in deteriorated marsh northeast of Lost Lake.
- 3) At certain times of the year, Carencro Bayou is an excellent source of fresh water and sediments from the Atchafalaya River/Four League Bay system. However, delivery of that water into the marshes west of Lost Lake is limited by a series of fixed-crest weirs which limit water exchange. An opportunity exists to increase freshwater and sediment delivery by removing some of the fixed-crest weirs and installing structures with bays/gates.
- 4) The Penchant Basin Natural Resources Plan Project will provide an additional 500 cfs of freshwater flow into Brady Canal which will increase flows into Carencro Bayou north of Lost Lake. An

opportunity exists to increase freshwater and sediment delivery south of Carencro Bayou and to take advantage of excess fresh water north of Carencro Bayou by removing some of the plugs and fixed-crest weirs and installing structures with bays/gates.

Preliminary Project Benefits

1) *What is the total acreage benefited both directly and indirectly?* The total acreage benefited directly would be 474 acres (450 acres of marsh creation/nourishment and 24 acres of terraces). Indirect benefits would occur over approximately 11,350 acres as a result of increased fresh water and sediment delivery.

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 estimated at 646 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%)*. Background loss rates would be reduced by 50% in the marsh creation and marsh nourishment areas. Increased fresh water and nutrients would reduce marsh loss in the areas west and north of Lost Lake. The estimated reduction in marsh loss in those areas is approximately 19%. Overall, the reduction in marsh loss across the project area would be in the range of 25% to 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 help maintain the Lake Pagie shoreline and the southern bank of Bayou DeCade.

5) *What is the net impact of the project on critical and non-critical infrastructure?* The project would not protect any significant infrastructure.

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 located to the east. The concept of protecting this important landbridge would be extended westward. Other CWPPRA projects which protect marsh in this important area include the Brady Canal Hydrologic Restoration Project and the Penchant Basin Natural Resources Plan. This project would work synergistically with those projects to protect marsh in this portion of the western Terrebonne Basin.

Identification of Potential Issues

There are pipelines in the project area that will have to be avoided. Also, the water control structures will require periodic maintenance.

Preliminary Construction Costs

The estimated construction cost with a 25% contingency is \$18,606,206. The full-funded cost range is \$25M - \$30M.

Preparer of Fact Sheet

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U.S. Fish & Wildlife Service

Louisiana Ecological Services Field Office

Lost Lake Marsh Creation and Hydrologic Restoration



PPL19 PROJECT NOMINEE FACT SHEET
FINAL - March 26, 2009

Project Name:

Breton Marsh Restoration Project

Coast 2050 Strategy:

- Dedicated dredging for wetland creation.

Project Location:

The project area is located in Region 2, Breton Basin, Plaquemines Parish, Caernarvon mapping unit, southeast of Delacroix, LA in an area south of Lake Lery between Bayou Terre aux Boeufs (near Delacroix) and River aux Chenes.

Problem:

The landfall of Hurricane Katrina in southeast Louisiana destroyed thousands of acres of marsh and other coastal habitats east of the Mississippi River. One of the areas most severely impacted was the Breton Sound Basin where it is estimated that 40.9 square miles of marsh were converted to open water. One of the most significant restoration tools used in this basin is the Caernarvon Freshwater Diversion. The operational plan of the Caernarvon Freshwater Diversion has proposed higher water discharge rates during the winter and spring to address hurricane impacts. Because much of the sediment and nutrients will be removed from the diversion water before it reaches the project area, the proposed increase in discharge rates will have little to no effect on project area's ability to rebuild. Without restoration, this region will begin to see the coalescence of water bodies, higher wave generated erosion rates, and a greater influence associated with the open brackish Black Bay system, especially during periods of reduced Caernarvon flow.

Goals:

The goal of this project is to restore marsh that was damaged by hurricane Katrina in 2005. Reestablishing this marsh would help restore marshes in the project area that once helped to moderate the effects of the brackish waters from the Black Bay system moving north into the more intermediate marshes.

Specific Goals: 1) Creation of 470 acres and nourishment of 148 acres of emergent marsh through hydraulic dredging. 2) Restore the western shoreline of Bayou Gentilly.

Proposed Solutions:

This project would create 470 acres of low salinity brackish marsh with the use of a hydraulic dredge. Renewable Mississippi River sediments that were deposited in Lake Lery as a direct result of the Caernarvon Diversion Project would be hydraulically dredged and pumped via pipeline to create marsh. Dredged material would be pumped to a height of between +1.5 to +2.0 ft NAVD 88 and contained with earthen dikes built from insitu material. These dikes would be gapped or degraded no later than three years post construction to allow for fisheries access. It is anticipated that water depths in the marsh creation cells are relatively shallow as they are the result of recent hurricane loss.

PPL19 PROJECT NOMINEE FACT SHEET
FINAL - March 26, 2009

Project Name:

Terrebonne Bay Shoreline Restoration and Marsh Creation

Coast 2050 Strategy:

Coastwide Strategy: Maintenance of Bay and Lake Shoreline Integrity

Region 3 Strategy #8; Dedicated Dredging for Wetland Creation, #11- Maintain shoreline integrity of marshes adjacent to Caillou, Terrebonne, and Timbalier Bays

Project Location:

Region 3, Terrebonne Basin, Terrebonne Parish. Beginning on the southernmost contiguous point along the east bank of Bayou Terrebonne, continuing east along the northern shoreline of Terrebonne Bay and ending at Bayou Chitique.

Problem:

Emergent marshes north of Terrebonne Bay have been eroding as fast or faster than almost any other marshes along coastal Louisiana with high interior landloss rates calculated to be 2% per year and moderate shoreline erosion rates calculated to be between 3 and 8 ft per year. Reasons for this include a lack of sediment input and a limited supply of freshwater coupled with past dredging of oil and gas canals. This rapid loss of land has dramatically increased the tidal prism north of Terrebonne Bay and directly contributes to the ongoing flooding problems of many communities along Bayou Terrebonne including the town of Montegut. This rapidly increasing tidal prism is also accelerating the interior marsh loss rates for those marshes directly north of Terrebonne Bay. These marshes also serve to slow the progress of high saline waters that threaten the lower saline marshes north and west of Madison Bay and even in Lake Boudreaux.

Goals:

The goal of this project would be to start reducing the tidal prism that has been increasing for many years. This overall goal would be realized by strengthening the northern shoreline of Terrebonne Bay, creating and nourishing the emergent marshes just north of Terrebonne Bay and reducing the cross section of two major bayous. All these components of the project would work synergistically to reduce water exchange between Terrebonne Bay and interior lakes during normal tidal events and small storm events

Specific goals: 1) Reduce shoreline erosion along 31,000 ft of the northern shoreline of Terrebonne Bay and create approximately 40 acres of marsh through the restoration of the northern shoreline of Terrebonne Bay. 2) Create 235 ac of emergent marsh and nourish an additional 300 ac of emergent marsh. 3) Reduce the channel cross section on two major bayous to further reduce tidal exchange between the bay and interior marshes.

Proposed Solution:

This project would propose to strengthen or restore approximately 31,000 ft of shoreline along the northern bank of Terrebonne Bay by creating a +2 ft high earthen berm with a 50 ft crown which would be planted with *Spartina alterniflora*. North of the shoreline, 235 acres of emergent marsh would be created and 300 acres of emergent marsh would be nourished by hydraulic dredge. Dredge material would be placed to a height of +1.5 NAVD 88. All constructed containment dikes would be sufficiently gapped or degraded no later than 3 years post construction to allow for fisheries access. This project would also reduce the cross section

of two major bayous that convey high saline waters directly from Terrebonne Bay into Madison Bay and Bayou Terrebonne. This would be done with sheet piles and would not reduce the depth of the bayou where the cross section is reduced. This could be one part of a phased comprehensive plan to protect the northern shoreline of Terrebonne Bay from further erosion. The project would also work synergistically with the previously constructed CWPPRA Terrebonne Bay Demonstration Project (TE-45) which is adjacent to this proposed project.

Preliminary Project Benefits:

1) *What is the total acreage benefited both directly and indirectly?* Acres directly benefited by this project would be 575 acres of marsh. This would include the restoration of project area shorelines including the creation of approximately 40 acres of marsh. This would reduce the shoreline erosion rates by 50% from an average of 5.91 ft/yr (3 to 8 feet per year USGS - PPL 18) to 2.95 ft/yr. This project would also create 235 acres of marsh and nourish 300 acres of emergent marsh, reducing interior land loss rates 50% from 2.05% to 1.02% per year. Additional indirect benefits would be realized through the reduction of wind induced waves in the interior marsh ponds and a reduction of the tidal prism which could also reduce interior land loss rates affecting surrounding marshes.

2) *How many acres of wetlands will be protected/created over the project life?* This project would create/nourish approximately 270 ac of emergent marsh over the 20 year project life.

3) *What is the anticipated loss rate reduction throughout the area of direct benefits over the project life?* This project would initially create/nourish 575 acres of marsh and the interior loss rate of 2% per year would be reduced by 50% to 1% per year as well as a 50% reduction in the shoreline erosion rate from 5.91 ft/yr to 2.95 ft/yr. If the proposed project were to be constructed marsh loss rates would be expected to be reduced by 50% to 74% throughout the area of direct benefits 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 rime, Cheniers, etc?* This project would restore and help maintain the Terrebonne Bay shoreline as well as many other small lakes and marsh ponds.

5) *What is the net impact of the project on critical and non-critical infrastructure?* This project would help protect 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 project?* This project would work with the recently constructed CWPPRA Terrebonne Bay Demonstration Project TE-45.

Identification of Potential Issues:

Pipelines and oyster leases are potential issues with this project.

Preliminary Construction Costs:

Construction costs including 25% contingency is approximately \$19,580,368. The estimated fully-funded cost range is \$25M - \$30M.

Preparer(s) of Fact Sheet:

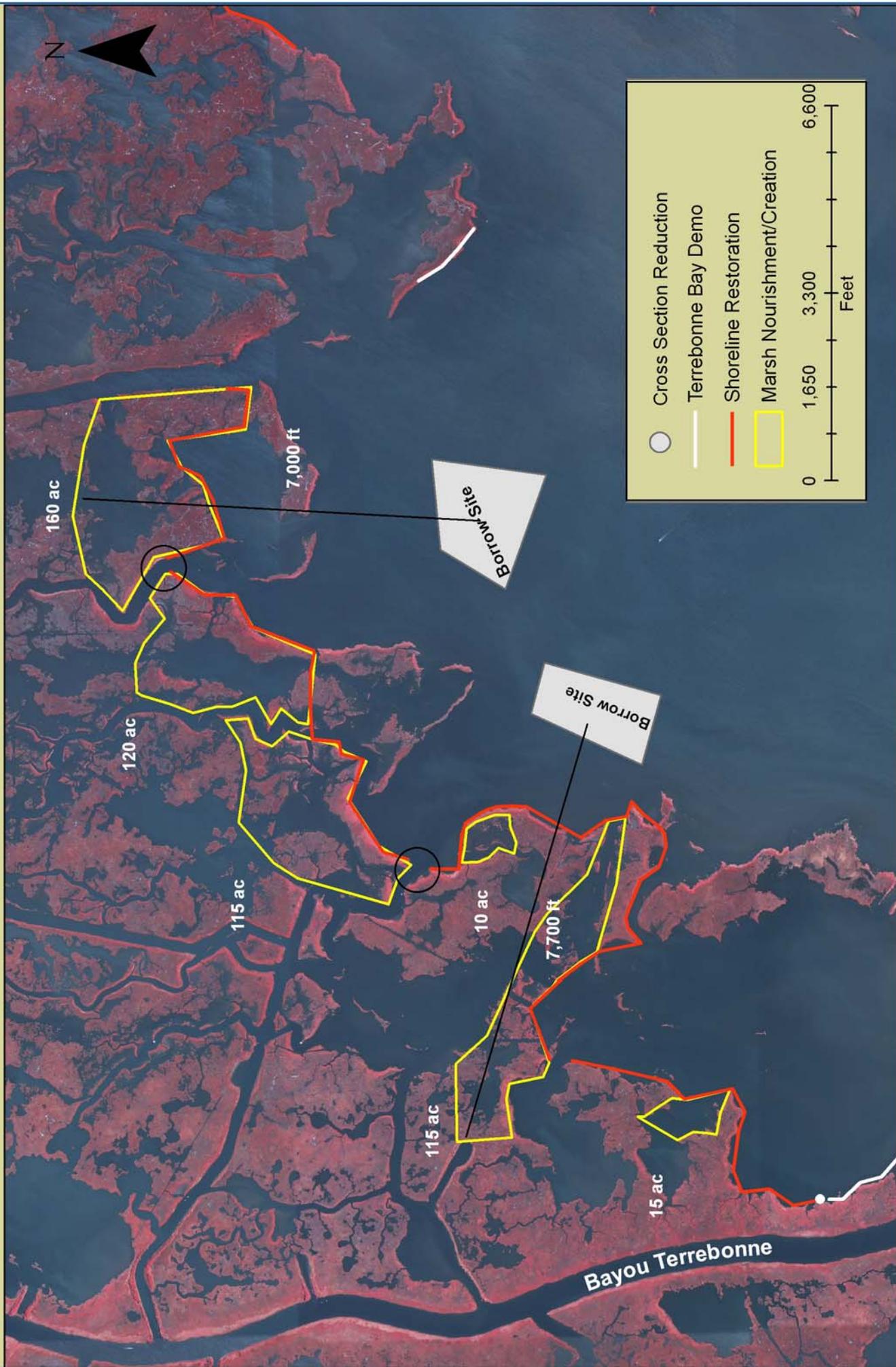
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U.S. Fish & Wildlife Service

Louisiana Ecological Services Field Office

Terrebonne Bay Shoreline Restoration and Marsh Creation Project



PPL19 PROJECT NOMINEE FACT SHEET
FINAL - March 26, 2009

Project Name

Madison/Terrebonne Bays Marsh Creation

Coast 2050 Strategy

Regional Ecosystem Strategy 8 – dedicated delivery and/or beneficial use of sediments for marsh building. Terrebonne Marshes mapping unit strategies 15 (protect bay/lake shorelines) and 16 (beneficial use of dredged material)

Project Location

Region 3, Terrebonne Parish, west of Bayou Terrebonne/south of Madison Bay.

Problem

The remaining land mass between Madison Bay and Terrebonne Bay is undergoing rapid deterioration from both interior wetlands loss and shoreline erosion. Shoreline erosion on the northern banks of Terrebonne Bay has been calculated to be between 1 and 85 ft/yr and interior marsh loss has been calculated to be -2.05 % per year by USGS based on 1988 to 2005 extended boundary for the PPL18 Terrebonne Bay project.

This marsh rim forms the last barrier between Terrebonne bay and interior marshes and infrastructure south of Montegut. Water depths and erosion of the northern edge of Terrebonne Bay may make restoration south of the proposed project technically challenging and costly. Marsh creation/nourishment along the southern edge of Madison Bay would act to create an interior line of defense. Ideally, additional cells would be created to the east in future years to stabilize the land mass between Madison and Terrebonne bays.

Goals

The project goal is to maintain a continuous wetland mass between Madison and Terrebonne Bays to prevent coalescence of the bays.

Proposed Solution

Dedicated dredging from either Lake Barre or Madison Bay to create and restore 430 acres of saline marsh directly west of Bayou de Mangue. An estimated 1.94 M cubic yards of material will be needed for the creation of 200 acres and nourishment of 230 acres within two proposed cells in the project boundary area.

Approximately 31,574 ft of primary containment dikes will be constructed to manage fill deposition. As conceptualized, Bayou Chitgue will remain open, although cell configuration may be adjusted as needed to accommodate local hydrology, user access, etc. Vegetative plantings (*Spartina alterniflora*) will be used for 100 acres (50%) of the proposed created marsh.

Preliminary Project Benefits

- 1) What is the total acreage benefited both directly and indirectly? Direct project benefits include creation and nourishment of 430 acres of emergent marsh.

- 2) How many acres of wetlands will be protected/created over the project life? Approximately 198 net acres of emergent marsh would be created/protected over the 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 loss rate reduction throughout the area of direct benefits over the project life would 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? The project maintains a bay rim. However, marsh creation is not considered a structural framework in the Coast 2050 criteria if it is not sustaining a barrier island or ridge.

5) What is the net impact of the project on critical and non-critical infrastructure? There are no effects on critical or non-critical infrastructure.

6) To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects? The project does not provide a synergistic effect with other approved and/or constructed restoration projects.

Identification of Potential Issues

The proposed project has oyster leases and pipelines within the project boundary and vicinity of potential borrow.

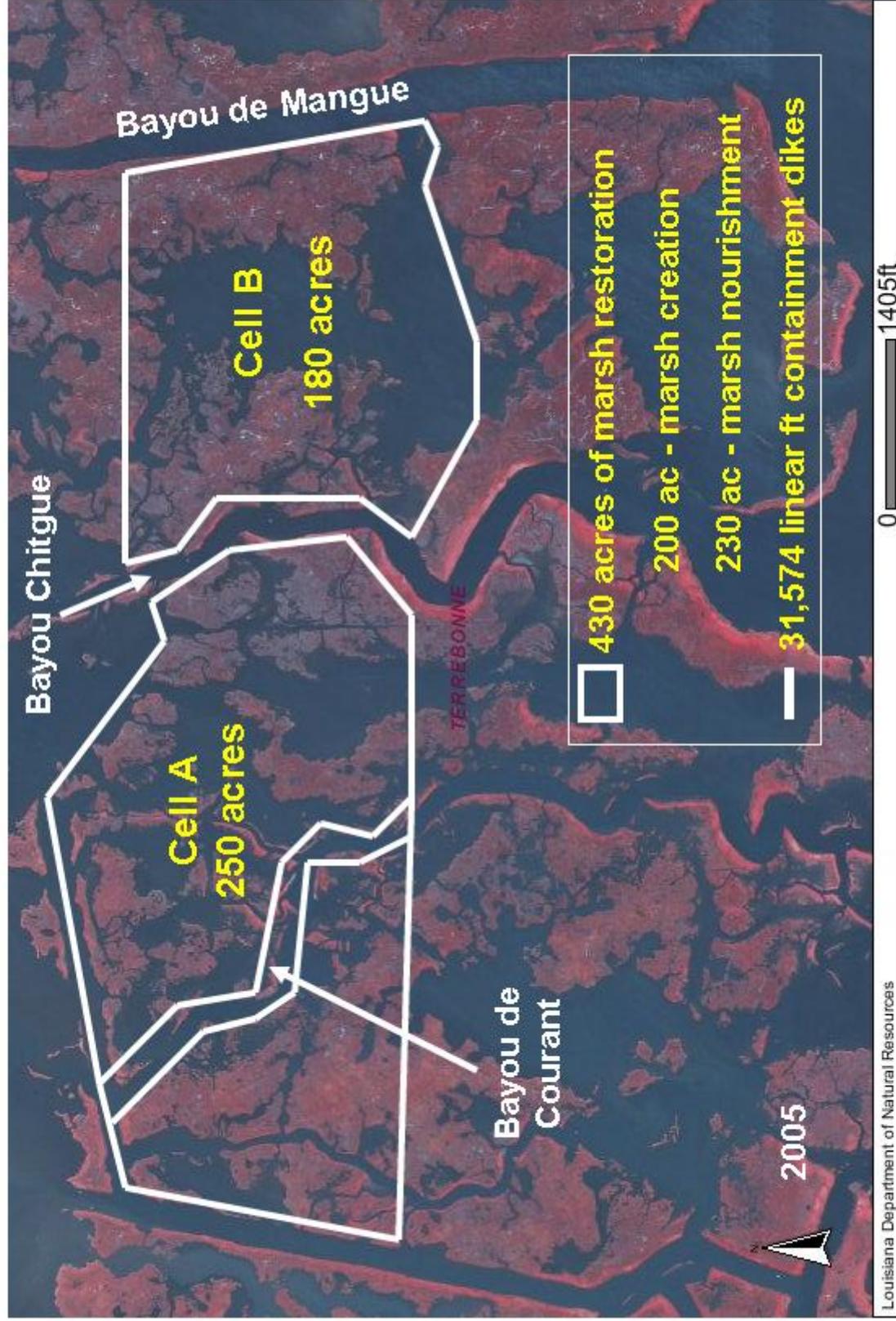
Preliminary Construction Costs

The construction cost including 25% contingency is approximately \$13,580,721. The estimated fully-funded cost range is \$15M - \$20M.

Preparer(s) of Fact Sheet

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PPL19 Madison/Terrebonne Bays Marsh Creation



PPL 19 PROJECT NOMINEE FACT SHEET
FINAL - March 26, 2009

Project Name:

Bateman Island Sediment Retention and Marsh Restoration

Coast 2050 Strategy:

Coast wide: Terracing

Regional: (#2) Increase deltaic land building where feasible.

(#8) Beneficial use of sediment for marsh building by any feasible means.

Project Location:

Region 3, Atchafalaya Basin, St. Mary Parish, between the Lower Atchafalaya River and Bayou Shaffer. The area is known as Bateman Island.

Problem:

Non-retention of readily available sediments and nutrients in a previously degraded marsh area. Shoreline erosion along the perimeter of Sweetbay Lake due to increasing open-water fetch conditions and marine traffic in Lower Atchafalaya River and Bayou Shaffer.

Goals:

Increase emergent wetlands in the southern area of Bateman Island by constructing earthen terraces and effectively trapping sediment and nutrients available from the Lower Atchafalaya River. Reduce shoreline erosion rates around Sweetbay Lake.

Proposed Solution:

Construct approximately 31,000 linear feet of terraces within the southern portion of Bateman Island in the vicinity of Sweetbay Lake.

Preliminary Project Benefits:

What is the total acreage benefited both directly and indirectly?

The total land acreage benefited both directly and indirectly is approximately 1094 acres.

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

Approximately 21 acres of freshwater marsh would be immediately created by virtue of the constructed terraces (31,000 linear feet with 5:1 slopes, 10' crown, 2' above water). It's anticipated that 42 additional acres would be created via accretion of material adjacent to terraces and 4 acres would be loss due to erosion of the southern most terrace. Therefore, a **net acreage of 59 acres** would result over the 20 year project life. This project would rebuild freshwater marsh habitat essential to wildlife resources and provide protection to oil and gas industry infrastructure.

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

It is anticipated that the loss rate would be reduced <25%.

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 proposed project would provide protection to oilfield canal levees that currently act as an artificial separation between interior freshwater wetlands and the ebb current effects of Bayou Shaffer and the Lower Atchafalaya River.

What is the net impact of the project on critical and non-critical infrastructure?

The proposed project would provide protection to critical oil and gas infrastructure.

To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects? There are no other State-Only or CWPPRA projects within the immediate vicinity of this project.

Identification of Potential Issues:

No significant potential issues are expected from project implementation. Oil and gas industry wells are located in the project area from which gas and flow lines can be avoided.

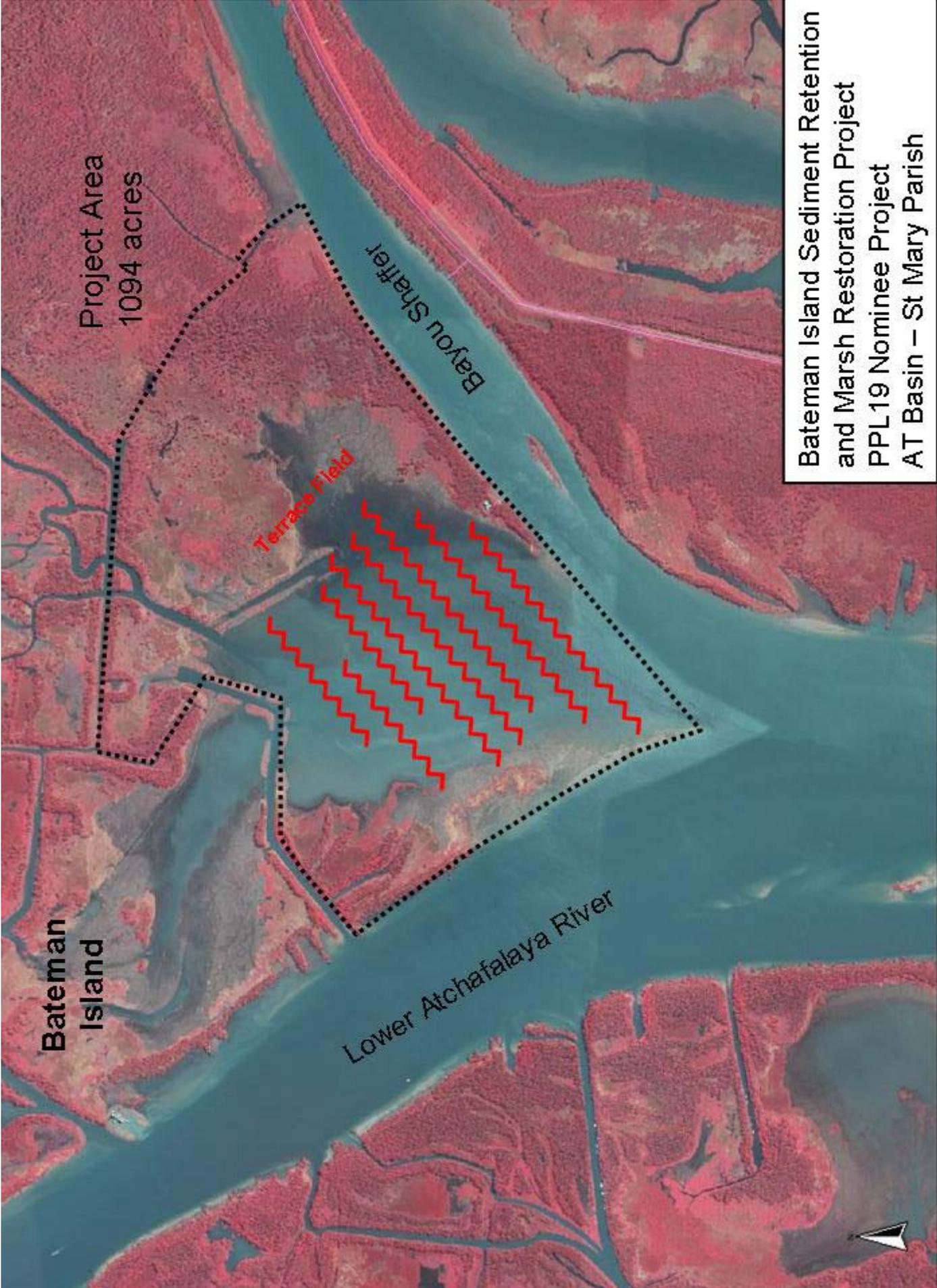
Preliminary Construction Cost:

The construction cost plus contingencies for this project is approximately \$1,080,571. The estimated fully funded cost range is \$0 - \$5 million.

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Project Area
1094 acres

Bayou Shaffer

Terrace Field

Bateman
Island

Lower Atchafalaya River

Bateman Island Sediment Retention
and Marsh Restoration Project
PPL19 Nominee Project
AT Basin - St Mary Parish

PPL 19 PROJECT NOMINEE FINAL FACT SHEET

3 Apr 09

Project Name: Cheniere Au Tigre Headland Restoration

Coast 2050 Strategy:

Coast-wide Common Strategy:

Maintenance of Gulf, Bay & Lake Shoreline Integrity

Maintain or Restore Ridge Functions

Beneficial Use of Dredged Material from Maintenance Operations

Region 3 Ecosystem Strategy (Teche-Vermilion Basin Strategy):

Strategy 10. Maintain shoreline integrity and stabilize critical areas of Teche-Vermilion Bay systems including the gulf shorelines.

Strategy 15. Reduce sedimentation in bays (by dedicated delivery of sediment as a construction alternative to shoreline protection).

Louisiana's Comprehensive Master Plan for a Sustainable Coast:

Page 60: Maintain basin integrity of freshwater reservoirs (stopping flow of saltwater into inland canals)

Page 64: Shoreline Stabilization (to protect surrounding marsh, cheniers, coastal prairie from wave-induced erosion).

Project Location: Cheniere Au Tigre stretches nearly 5 miles from Southwest Pass in the east to Freshwater Bayou in the west, 200 feet to a quarter of a mile wide, on the edge of the Gulf shore in the southernmost region of Vermilion Parish, about 40 miles south of Abbeville, LA.

Problem: Formation of breaches and scour areas along the gulf shoreline are undermining the structural integrity of the nearby chenier and its unique habitat. Protection provided by the chenier to the adjacent interior brackish marshes from increased salinity levels and the abrasive impacts of storms is threatened. In addition, nearby navigation channels or canals could serve as saltwater conduits inland should the land between them and the gulf become breached. The breach/scour areas mainly correspond to the locations of gaps in the segmented rock breakwaters located just offshore (these breakwaters were constructed via the CWPPRA demo project TV-16 and State Project CAT-01, in 2001 and 2005, respectively). Excessive water movement through these gaps during Hurricanes Rita and Ike removed accreted sediment & resultant vegetation landward of the rock structures; even more land was washed offshore through these gaps due to backwash as the storms passed and water retreated. The Paul J. Rainey Wildlife Sanctuary and the Louisiana Wildlife Management Area and Game Preserve are located in the vicinity of this problem.

Goals: Restore and maintain the Cheniere Au Tigre gulf shoreline and corresponding chenier formations. Prevent likelihood of increased saltwater intrusion into the brackish marshes and channels/canals north of the chenier. Minimize sediment loading into Vermilion Bay and work synergistically with the nearby TV-16 and CAT-01 projects through specific dredged material placement.

Proposed Solutions: Place dredged material linearly along the unvegetated portion of the gulf shoreline, in a continuous alignment roughly parallel to the existing rock breakwaters located about 200 ft offshore, for an estimated distance of 6000 linear ft (a distance somewhat greater than that of the TV-16 and CAT-01 projects combined). The material would either be hydraulically dredged from sand bars located gulfward of the rock breakwaters (approximately 1300 ft from shore), or from the Freshwater Bayou bar channel during its Federal maintenance dredging cycle, contingent upon timing, suitability of material, costs, etc. About 12,000 linear ft of containment dikes would be constructed as appropriate, with the dredged material placed to a final surface elevation of about 5 to 6 ft above the existing ground elevation on the dune or woody ridge creation side, sloping to an elevation conducive to marsh creation on gulf side (planting of filled areas optional).

Preliminary Project Benefits:

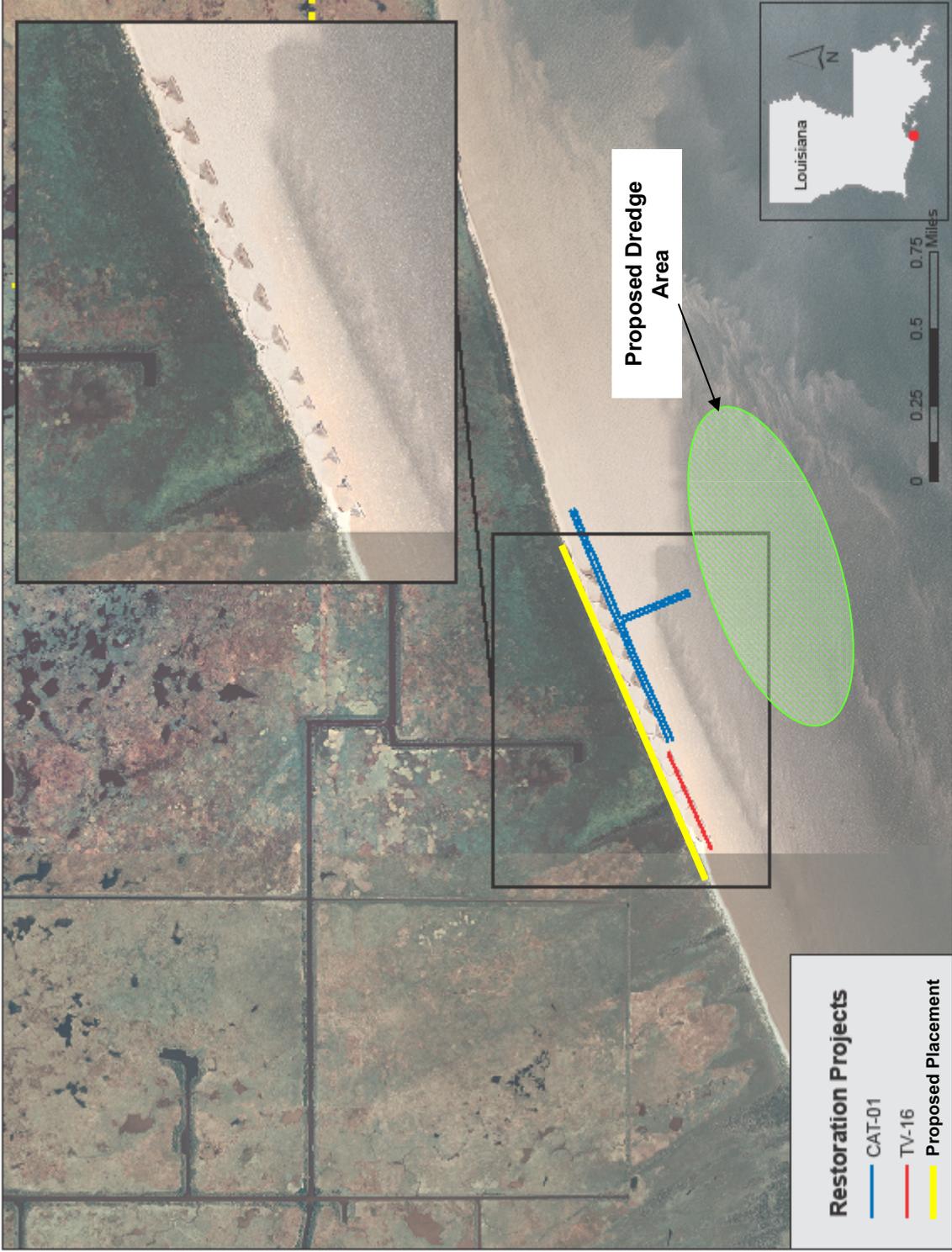
- 1) What is total acreage benefitted both directly and indirectly? Directly, 43 acres by rebuilding of barrier headland habitat; indirectly benefitting & protecting undetermined acreage of inland marsh & cheniers of the headland.
- 2) How many acres of wetlands will be protected/created over the project life? The total net benefit will be 43 acres of either dune or scrub/shrub, with marsh, remaining at TY20.
- 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%)? 25-49%
- 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, project features maintain both gulf shoreline and chenier stability.
- 5) What is the net impact of the project on critical and non-critical infrastructure? Dredged material placement will help prevent storm surge from adversely impacting areas cheneirs & marshes plus reduce the likelihood of increased breach development from the gulf into existing nearby channels & canals.
- 6) To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects? The proposed dredged material/dike placement alignment is situated on the shoreline just north of the already-constructed TV-16 and CAT-01 rock breakwater projects- the shoreline those breakwaters were designed to protect. Rebuilding headland thru dredged material placement in the vicinity of those projects will help recover accreted sediments lost during recent hurricane passages and further stabilize the area by providing a more stable shoreline to accrete against, plus thwart/delay new erosive gap/breach development during severe storm events.

Identification of Potential Issues: Oyster leases and pipelines.

Preliminary Construction Costs: The construction cost including 25% contingency is approximately \$ 6,742,600. The estimated fully-funded cost range is \$5M - \$10M.

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Cheniere Au Tigre Headland Restoration PPL 19 Project Nominee

PPL 19 PROJECT NOMINEE FACT SHEET
FINAL – April 6, 2009

Project Name

Cote Blanche Freshwater & Sediment Introduction & Shoreline Protection Project

Coast 2050 Strategy

Coast wide: Goal 1 – Assure Vertical Accumulation to Achieve Sustainability
Strategy 5 – Maintenance of Gulf, Bay and Lake Shoreline Integrity
Strategy 11 – Diversion & Riverine Discharge

Regional: 12. Maintain shoreline integrity and stabilize critical shoreline areas of the Teche-Vermilion system
15. Optimize Atchafalaya River flow in Gulf Intracoastal Waterway into marshes and minimize direct flow into bays & Gulf of Mexico
17. Reduce sedimentation into bays

Mapping Units - Cote Blanche Wetlands, East Cote Blanche Bay, West Cote Blanche Bay:

80. Protect Bay/Lake Shorelines

Louisiana State Master Plan

Atchafalaya River Delta & Chenier Plain:

Managing Water & Sediment - Opportunistic use of GIWW to distribute existing Atchafalaya freshwater & sediment flows to interior marshes
Bay/Lake Shoreline Stabilization – Prevent expansion of bays & lakes and prevent wave erosion impacts to surrounding marsh.

Project Location

The project is located in Region 3, Teche/Vermilion Basin, St. Mary Parish, within the TV-4 Cote Blanche Hydrologic Restoration Project interior, and along portions of the northern shoreline of East Cote Blanche Bay and eastern shoreline of West Cote Blanche Bay.

Problem

Significant loss of emergent wetland, up to .45% per year, was occurring in the project interior prior to TV-4 Project construction. The TV-4 Project has reduced water level variability, thereby providing conditions that would facilitate sediment accretion and achieve the project objective of reducing the rate of interior marsh loss. However, Hurricane Lili caused direct removal of approximately 1,740 acres of emergent marsh within the project area (Barras 2004), which was followed by additional loss from Hurricane Rita (Barras 2005 in draft). In addition, the storms blocked some avenues that previously provided for freshwater and sediment flow to interior marsh areas, and in other areas, some flows that should be circulating through interior areas have been short-circuited back into the canal systems. The TV-4 project structures have continued to function as intended, however, increasing sediment inputs should help to accelerate accretion.

The targeted area of shoreline has historic and predicted shoreline erosion rates of 15-20 ft/year. If left unchecked, the rapidly eroding shoreline along East Cote Blanche Bay will lead to a

conversion of interior wetlands to open bay. Installing shoreline protection would preserve the hydrologic integrity of water control structures installed under the TV-04 Project.

Proposed Solution

Project features will include channel enlargement, spoilbank gapping, and/or structural measures where necessary to increase freshwater & sediment input from the GIWW into interior Cote Blanche marshes and optimize distribution through multiple avenues to further reduce emergent marsh loss and accelerate sediment accretion to promote land building.

Project features also include construction of approximately 26,000 linear feet of armored protection parallel to the northern shoreline of East Cote Blanche Bay. The proposed location of the shoreline protection feature is approximately 23,000 linear feet, starting from 3300 feet west of Humble Canal and extending around Marone Point, and approximately 3,400 feet to the east of the Humble Canal between the shoreline protection segments installed as part of the TV-04 Project.

Goals

Reduce and/or reverse shoreline erosion rates, reduce interior land loss and promote land building, protect critical marsh habitat and maintain lower energy hydrology of the East Cote Blanche Bay wetlands established through the TV-04 project. The marsh habitat provides important habitat for wintering migratory waterfowl, bald eagles, black bears, and other furbearers. These wetlands also provide vital protection to inland areas of St. Mary Parish from storm surges associated with hurricanes.

Preliminary Project Benefits

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

The proposed shoreline protection feature would directly benefit approximately 209 acres by eliminating the annual shoreline loss of 17.5 ft/yr. Approximately 375 acres of intermediate marshes would benefit indirectly by preventing the breaching of, and tidal exchange through, several natural bayous and open water ponds lying adjacent to the E Cote Blanche Bay shoreline. Therefore the total acreage potentially benefitted by the shoreline protection would be 584 acres.

With the estimated additional flows and improved distribution, the freshwater and sediment introduction component is expected to benefit an approximate total of 11,150 wetland acres, of which approximately 9,500 acres is emergent marsh.

Therefore, for both project components, the total acreage benefitted would be approximately 11,735 acres.

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

Approximately 209 acres would be protected at the end of the project life due to the shoreline protection component.

For the freshwater & sediment introduction component, a total of 337 acres of emergent wetlands is estimated to be protected/created over the project life. In addition, approximately 12 acres of emergent marsh would be created with the dredged material from channel enlargement.

Therefore, for both project components, a total of 558 acres would 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?*

Shoreline protection will be provided by some form of armored structure which, when properly designed and installed, should reduce the shoreline erosion rates by 100% over the project's life.

The anticipated loss rate reduction over the project life due to the freshwater and sediment introduction component throughout the areas of direct benefit is estimated to range from 23% to 27%.

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?*

Shoreline protection feature will provide protection and serve to maintain a significant critical section of the East & West Cote Blanche Bays' shoreline.

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

The project would serve to protect inland oilfield well locations from exposure to open bay conditions, and from increased wave energy generated by marsh fragmentation and expansion of interior open water areas.

6) *To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?*

The project features will provide a synergistic effect with the TV-04 project, and TV-20 Bayou Sale Shoreline Protection Project by extending shoreline protection around the entire northern shore of East Cote Blanche Bay, and ultimately providing contiguous protection and promoting restoration to thousands of acres of deteriorating marsh in St. Mary parish.

Identification of Potential Issues

Potential issues are the possibility of interference with oil and gas infrastructure and O&M regarding the shoreline protection measures planned. St. Mary Parish and major landowners are in full support of the project.

Preliminary Construction Costs

The estimated construction cost plus 25% contingency is \$12,488,890, and the estimated fully funded cost range is \$15M - \$20M.

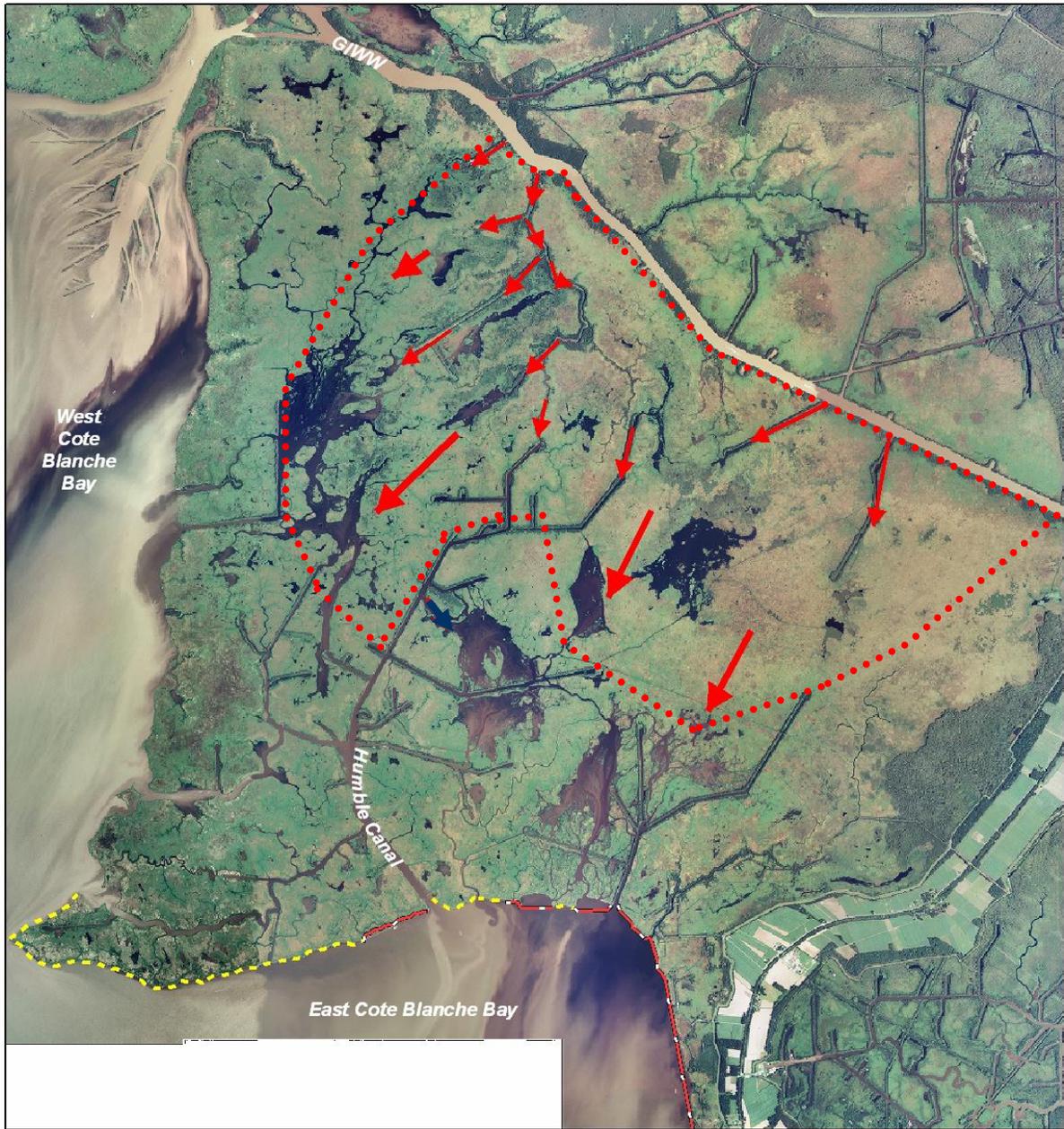
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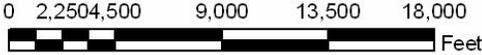


Legend

-  Freshwater Introduction
-  Proposed Shoreline Protection
-  Existing and/or Authorized Shoreline Protection



Cote Blanche
 Freshwater/Sediment Introduction
 and Shoreline Protection
 St. Mary Parish, Louisiana
 PPL-19



PPL19 PROJECT NOMINEE FACT SHEET
FINAL – April 6, 2009

Project Name

Kelso Bayou Marsh Creation and Hydrologic Restoration

Coast 2050 Strategy

Use of sediment for wetland creation and restore historic hydrologic and salinity conditions throughout Region 4 to protect wetlands from hydrologic modification.

Project Location

Region 4, Calcasieu-Sabine Basin, Cameron Parish, West Black Lake Mapping Unit, area east of Gum Cove and south of GIWW.

Problem

The most significant environmental problem affecting the marshes in this area is deterioration and conversion to open water. Between 1952 and 1974 the Black Lake and Brown Lake area marshes experienced an 81 percent marsh loss. Much of that loss occurred because the construction of the Calcasieu Ship Channel greatly increased the efficiency of water exchange through Calcasieu Pass. Freshwater retention was consequently reduced and saline water was able to enter Kelso Bayou in greater quantities and penetrate further north and west. Additionally, the ship channel acts as a conduit during storm events. Recent marsh loss and scouring at the mouth of Kelso Bayou from impacts related to Hurricanes Rita and Ike allow increased salt water exchange and storm surge impacts. The proposed project will be designed to reduce salt water intrusion and storm surge by repairing and armoring the mouth of Kelso Bayou. Currently, SAV habitat is also limited by salinity and tidal energy associated with the large opening at the ship channel.

Goals

The goal of this project is to restore and protect approximately 127 acres of critically important marsh and the numerous functions they provide. The proposed project will also reduce the artificial intrusion of Gulf marine waters into the Black Lake and Brown Lake area marshes and provide direct protection to Louisiana State Highway 27, the region's only northward hurricane evacuation route.

Proposed Solution

- 1) Approximately 127 acres of marsh will be created/nourished and planted to reestablish the natural meandering banks of Kelso Bayou between the Calcasieu Ship Channel and State Highway 27.
- 2) Approximately 2,500 linear feet of rock will be used to protect the marsh creation area and the existing shoreline along the Calcasieu Ship Channel.
- 3) The mouth of Kelso Bayou would be armored and the cross section reduced (approximately 80%) from over 430 feet wide and 10 feet deep to an approximate 100 foot top width and a 60 foot bottom width 6-8 feet deep.

Preliminary Project Benefits

The proposed project would utilize marsh creation techniques to create/nourish approximately 127 acres of marsh. That created marsh and a portion of the Calcasieu Ship Channel would be protected with a rock dike. The cross sectional area of Kelso Bayou would be reduced over 80% at the ship channel. It is estimated that reduction would lower salinity in the Brown Lake and Black Lake area marshes up to 15% and would be the foundation for existing and future restoration efforts in those areas.

1) What is the total acreage benefited both directly and indirectly? Approximately 127 acres of marsh would be created/nourished and planted using marsh creation. Indirect benefits would occur over approximately 16,767 acres of marsh and open water habitats as a result of reduced salinity and tidal exchange.

2) How many acres of wetlands will be protected/created over the project life? Based on preliminary estimates, 117 net acres of marsh would result from this project. Approximately 97 net acres from marsh creation and 20 net acres from salinity reduction.

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 would be approximately 50-74%. Interior shoreline erosion rates would be stopped and restored marsh would assume a 50% reduction in loss rate.

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 proposed project would repair a breach in the artificial levee ridge along the west side of the Calcasieu Ship Channel.

5) What is the net impact of the project on critical and non-critical infrastructure? Recent wetland loss in this area resulting from Hurricane Rita has left Highway 27 and Hackberry, Louisiana vulnerable to storm events. Currently, there is no barrier between those areas and the Calcasieu Ship Channel. Highway 27 and Hackberry, Louisiana both received record flooding from Hurricane Ike. The proposed project would protect and provide a wetland buffer to Hackberry and State Highway 27, which is the region's only northward hurricane evacuation route.

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 several thousand acres of recently completed and/or approved coastal restoration projects including; 1) the Brown Lake Hydrologic Restoration Project; 2) numerous North American Wetland Conservation Agreement (NAWCA) terracing projects totaling approximately 200,000 linear feet and including the recently announced partnership with Louisiana's Coastal Protection and Restoration Authority (CPRA) totaling 140,000 linear feet; and 3) the largest state-local beneficial use of dredge material project to rebuild approximately 440 acres in the Black Lake Marsh.

Identification of Potential Issues

Project managers have and will coordinate with the USACE to locate upland disposal sites or areas of the Ship Channel to be mined as a sediment source. Potential issues are the possibility

of interference with oil and gas infrastructure and O&M regarding the shoreline protection measures planned.

Preliminary Construction Costs

The construction cost including 25% contingency is approximately \$9,301,000. The estimated fully funded cost range is \$15M - \$20M.

Preparers of Fact Sheet

Troy Mallach, NRCS troy.mallach@la.usda.gov



Calcasieu Ship Channel

Legend

-  Water_Control_Structure
-  Shoreline_Protection
-  Marsh_Creation



**Kelso Bayou Marsh Creation
Cameron Parish, Louisiana
PPL 19**

PPL19 PROJECT NOMINEE FACT SHEET
FINAL - March 26, 2009

Project Name: Cameron-Creole Watershed Grand Bayou Marsh Creation Project

Coast 2050 Strategy: Regional Strategy: Use dedicated dredging or beneficial use of sediment for wetland creation or protection.

Project Location: Region 4, Calcasieu-Sabine Basin, Cameron Parish, 6 miles northeast from Cameron, LA, in the western portion of the Cameron-Creole Watershed on the Cameron Prairie NWR and Miami Corporation north of Grand Bayou.

Problem: 14,390 acres (32%) of the Cameron-Creole Watershed project (CCMP) marshes were lost to open water from 1932 to 1990 at an average loss rate of 248 ac/year (0.55%/year), due to subsidence and saltwater intrusion from the Calcasieu Ship Channel. The CCWP was implemented by the NRCS in 1989 to reduce saltwater intrusion and stimulate restoration through revegetation. The loss rate was reduced to only 37 ac/yr (0.12%/yr) by the CCWP prior to the 2005 hurricanes, but increased to 1.4%/year post-Rita (USGS 1988-2005). The Calcasieu-Sabine Basin lost 28 mi² (17,920 acres) (4.4%) as a result of H. Rita (Barras et al. 2006). Hurricanes Rita and Ike in 2005 and 2008 breached the watershed levee scouring the marsh and allowing higher Calcasieu Lake salinities to enter the watershed causing more land loss.

Goals: To restore approximately 515 acres of marsh via dredged material from Calcasieu Lake.

Proposed Solution: Place approximately 1.7 million cubic yards of material dredged from a Calcasieu Lake borrow site (2, 200 ft X 2,200 ft X 10 feet deep) located approximately 2,000 feet west of Grand Bayou, away from existing oyster reefs, into two marsh creation areas north of Grand Bayou to restore 515 acres and nourish 500 acres of brackish marsh. The hurricane-scoured marsh, within the project area, is very shallow (less than 1 foot deep) making it ideal for marsh restoration with sediment because more marsh per volume of dredged material could be restored. Following construction, retention levees would be degraded, man-made bayous (trenasses) constructed, and vegetation planted for estuarine fisheries access and to achieve a functional marsh.

Preliminary Project Benefits:

1) What is the total acreage benefited both directly and indirectly? The project would restore 515 acres and nourish 500 acres of brackish marsh in the 1,015-acre project area.

2) How many acres of wetlands will be protected/created over the project life? 505 net acres of marsh would result from this project over the 20-year project life (@ 50% of the 1.4% loss rate).

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 would be approximately 50-74%. Interior shoreline erosion rates would be stopped and restored marsh would assume a 50% reduction in loss rate.

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 not directly restore any of the above structural components, but it could help maintain the Cameron-Creole watershed levee by reducing wave energy from the east. Although the Cameron-Creole watershed levee could be maintained by the Cameron Creole Maintenance project (CS-04a), protection provided by this marsh creation project could reduce those maintenance costs.

5) What is the net impact of the project on critical and non-critical infrastructure? The marsh creation project will help maintain the north-south portion of the Cameron-Creole Watershed levee near Grand Bayou by reducing wave energy and hurricane scour from the east.

6) To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects? The project is synergistic with the NRCS-constructed Cameron-Creole Watershed Management Project, and the CWPPRA Cameron-Creole Plugs (CS-17), Cameron-Creole Maintenance (CS-04a), and Cameron-Creole Freshwater Introduction projects. These projects were implemented to reduce saltwater intrusion caused by the Calcasieu Ship Channel. Marsh would be reestablished in open water areas that have not revegetated since the implementation of the Cameron-Creole watershed project and have been further eroded by hurricanes Rita and Ike.

Identification of Potential Issues:

Project managers have and will continue coordinate with the LDWF to locate the borrow area to reduce turbidity impacts to oyster reefs in the southern portion of Calcasieu Lake.

Preliminary Construction Costs:

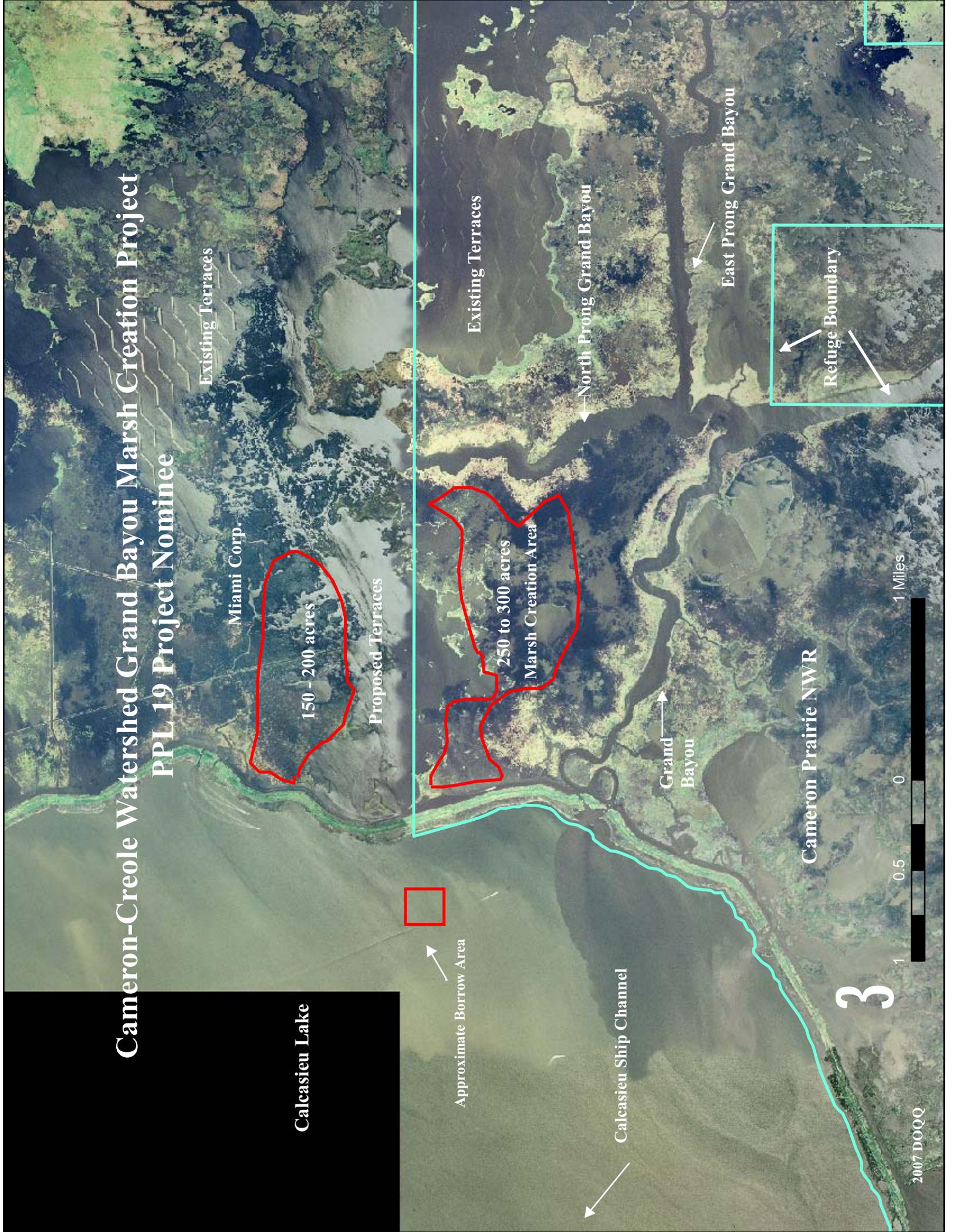
The estimated construction cost including 25% contingency is \$13,402,895. The fully-funded cost range is \$15M - \$20M.

Preparer of Fact Sheet:

Darryl Clark, U.S. Fish and Wildlife Service, (337) 291-3111, Darryl_Clark@fws.gov

Cameron-Creole Watershed Grand Bayou Marsh Creation Project

PPL 19 Project Nominee



Existing Terraces

Miami Corp.

150 - 200 acres

Proposed Terraces

250 to 300 acres
Marsh Creation Area

Existing Terraces

North Prong Grand Bayou

East Prong Grand Bayou

Grand Bayou

Cameron Prairie NWR

Refuge Boundary

Calcasieu Lake

Approximate Borrow Area

Calcasieu Ship Channel

1 Miles

0

0.5

1

2007 DOQQ

3

PPL19 PROJECT NOMINEE FACT SHEET
FINAL - March 26, 2009

Project Name

Freshwater Bayou Marsh Creation Project

Coast 2050 Strategy

Regional Strategy 6: Marsh Creation by Sediment Delivery or Dedicated Dredging.

Project Location

Region 4, Mermentau Basin, Vermilion Parish, Big Marsh Mapping Unit, area west of Freshwater Bayou and north of the Freshwater Bayou lock.

Problem

This area was damaged by Hurricane Rita and again by Hurricane Ike. Freshwater Bayou threatens to breach into the large interior open water area and establish a hydrologic connection that previously did not exist. This would exacerbate the environmental problems affecting marshes in this area. Interior marsh loss will likely increase without construction of the proposed project.

Goals

The goal is to create/maintain approximately 407 acres of marsh via beneficial use of maintenance dredged material from the mouth of Freshwater Bayou or other appropriate sources.

Proposed Solution

Beneficially use dredge material and/or dedicated dredge material to rebuild and nourish approximately 407 acres of marsh that was converted to fragmented marsh and open water by Hurricane Rita. Approximately 640,000 yds³ of material is dredged from Freshwater Bayou (lock to the Gulf) every three years. The proposed project would beneficially use that material or material identified from other sources to create marsh in two areas. The North Area would include approximately 186 acres of mostly open water that is in immediate need of repair. The South Area would include creation and marsh nourishment of approximately 221 acres of fragmented marsh and shallow open water (identified in yellow on the map). Average water depths are approximately 2 ft. and the target marsh elevation would be 1.1 feet NAVD88. Mobilization and demobilization costs may be conserved depending on the location and availability of source material identified for each area.

Preliminary Project Benefits

The proposed project would create approximately 290 acres or more of interior marsh and nourish approximately 117 acres. That marsh would restore and maintain a wetland buffer between the open water of the Mermentau Basin and Freshwater Bayou.

What is the total acreage benefited both directly and indirectly?

A total of 407 acres of marsh, shallow water, and mud flats would be benefited.

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

Approximately 275 net acres of marsh would result from this project.

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

Created and nourished marsh would assume a 50% reduction in loss rate; therefore, the anticipated loss rate reduction range would be 50-75%.

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.

What is the net impact of the project on critical and non-critical infrastructure?

Breaches with Freshwater Bayou would eventually create an avenue for salt water intrusion into the Mermentau Basin. Protecting and creating these wetlands would assist in reducing storm damages and protect hydrologic basin boundaries.

To what extent does the project provide a synergistic effect with other approved and/or constructed restoration projects?

The proposed project is synergistic with the Freshwater Bayou Wetland Protection Project (ME-04), which was implemented to reduce tidal erosion of the organic soils.

Identification of Potential Issues

LDNR indicated that there are pipelines in the project area. However, complications from those are not anticipated.

Preliminary Construction Costs

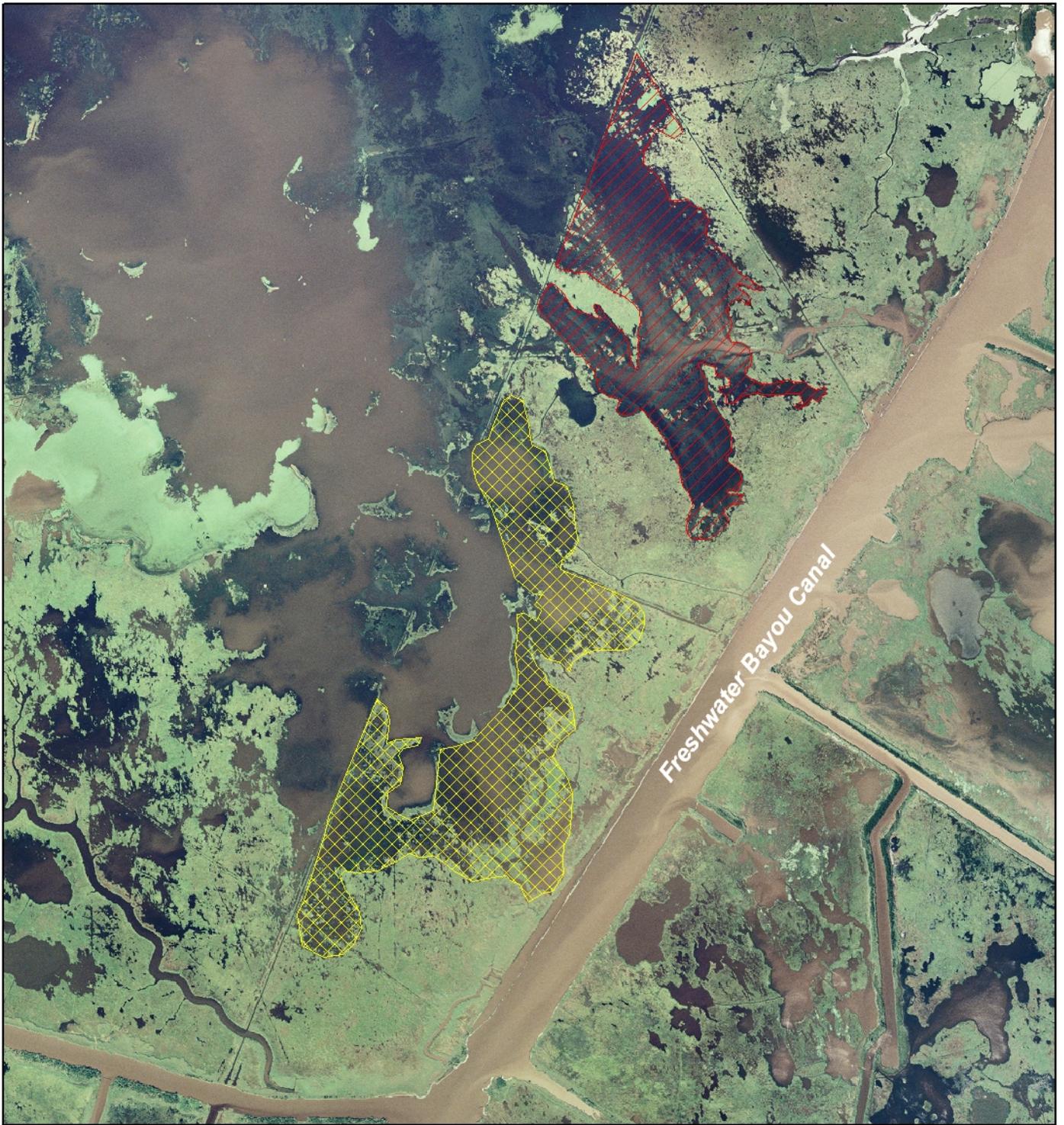
The construction cost including 25% contingency is approximately \$21,354,016.

The estimated fully-funded cost range is \$30M - \$35M.

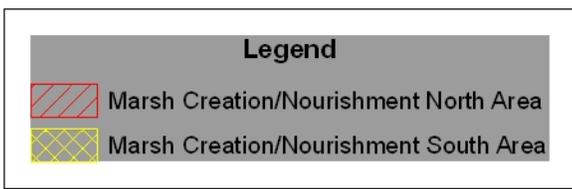
Preparer of Fact Sheet

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Judge Edwards, Vermilion Corporation, vermilioncorporation@connections-lct.com



Freshwater Bayou MC/Nourishment
PPL 19
Vermilion Parish, Louisiana



PPL19 PROJECT NOMINEE FACT SHEET
FINAL – April 6, 2009

Project Name:

Rockefeller Gulf of Mexico Shoreline Stabilization, Joseph's Harbor East, ME-25.

Coast 2050 Strategy:

Regional: Dedicated dredging or beneficial use of sediment for wetland creation or protection (6) and Stabilize Gulf of Mexico Shoreline from Old Mermentau River to Dewitt Canal (16). Coast-wide Common: Maintenance of Gulf, Bay and Lake shoreline Integrity, and Maintain, Protect or Restore Ridge Functions.

Project Location:

Region 4, Mermentau Basin, Cameron/Vermilion Parish, LA. Along the Gulf shoreline from eastern bank of Joseph's Harbor (Rockefeller Refuge) eastward 10,000 feet.

Problem:

The project will be designed to address Gulf shoreline retreat averaging 35' per year (Byrnes, McBride et al., 1995) with subsequent direct loss of saline emergent marsh.

Goal:

1) Reduce Gulf shoreline retreat and direct marsh loss at areas of need identified from Rockefeller Refuge east to Region 4 boundary, 2) protect saline marsh habitat, 3) Enhance fish and wildlife habitat.

Proposed Solution:

The project would entail construction of a near-shore break-waters along the Gulf of Mexico shoreline. The break-water would extend from the eastern bank of Joseph's Harbor canal eastward for 10,000 feet. The proposed structure would be tied into the present shoreline at the point of beginning and ending. It would be designed to attenuate shoreline retreat along this stretch of Gulf shoreline, as well as promote shallowing, settling out, and natural vegetative colonization of over-wash material landward of the proposed structure. The resultant design would be placed offshore along the -5' contour. The crest height of the proposed structure would be 8.5 feet above the Gulf floor (i.e., +3.5 ft above average water level), with an 18 foot crown and 1:2 slope on both sides. The proposed structure would consist of neutral buoyancy material encapsulated by 2,200 lb. class stone. The proposed design would include openings every 1000' to facilitate material and organism linkages. Excavation material for construction access would be placed on the landward side of the structures.

Preliminary Project Benefits:

1) The project is expected to influence approximately 125 acres directly. 2) 120 protected, 5 created, and a portion of 4,900 acres indirectly (Rockefeller Refuge Unit 5). This project is anticipated to benefit 125 acres (10K ln ft X 35 ft/yr X 20 yrs) X 0.75. The reduction efficiency was estimated by using 90% of the average wave transmission rates listed in the Rockefeller Refuge gulf Shoreline Stabilization Feasibility Study produced by Shiner Mosely and Associates (Table 6, page 4-19, methodology of Seabrook and Hall, 1998). Estimates for excavation are as follows; at the -5' contour, an additional 4' of material will be moved at a width of 80', for the 10,000 linear feet of the project or 118,500 cubic yards will be placed behind the rock structure. 3) Anticipated loss rate reduction for the segmented breakwater is 75%. 4) The project would protect and maintain chenier and beach function. 5) The project would have a net positive impact on non-critical infrastructure. This project would protect five existing pipelines that come ashore within the project area from continued erosion of the cover, which when uncovered, become a public and environmental hazard. This project would also protect properly plugged, land-based wellheads from erosion of the cover, thus becoming a public and environmental hazard. 6) The proposed project is designed as an eastward extension of the ME-18 (Rockefeller Refuge Gulf Stabilization Project).

Identification of Potential Issues:

There are 5 known pipelines in the proposed project area, and as determined by the CWPPRA planning working groups, this project may require a future maintenance event.

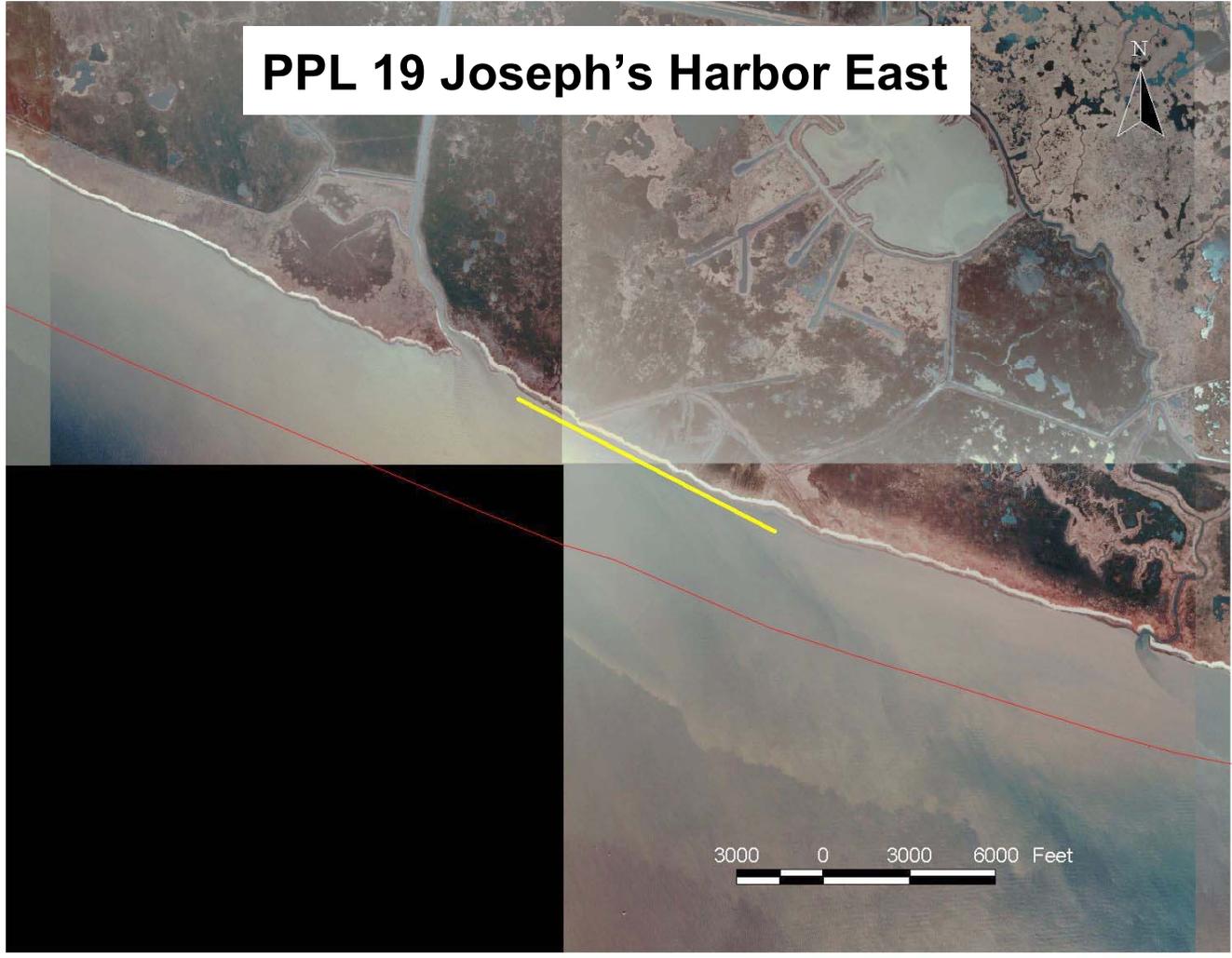
Preliminary Construction Costs:

The construction cost including 25% contingency is approximately \$17,722,418.
The estimated fully-funded cost range is \$35M - \$40M.

Preparer of Fact Sheet:

John D. Foret, NOAA Fisheries Service, 337/291-2107; john.foret@noaa.gov

PPL 19 Joseph's Harbor East



Demonstration Project Nominees

Coast-wide	DEMO	Rapidly Deployable Pre-cast Sediment Retention Barrier
Coast-wide	DEMO	Ecosystems Wave Attenuator for Shoreline Protection
Coast-wide	DEMO	Bayou Backer Demo
Coast-wide	DEMO	Floating Island Environmental Solutions BioHaven©
Coast-wide	DEMO	Viperwall Demo

PPL19 DEMONSTRATION NOMINEE FACT SHEET
March 26, 2009

Demonstration Project Name:

Rapidly Deployable Pre-Cast Sediment Retention Barrier Demonstration Project

Coast 2050 Strategy(ies):

Dedicated dredging of sediment for wetland creation

Potential Demonstration Project Location(s):

Any marsh creation location where earthen containment dikes are planned. Applicable Statewide

Problem:

Coastal Louisiana consists of areas with unstable soil conditions. The difficulty and expense of construction dikes on soft sediments are major obstacles to the routine use of dredged sediments to rebuild the marshes of coastal Louisiana. Further, dikes inhibit the natural exchange of water into and out of the newly created marsh, limiting the rate of colonization of desirable plant and animal species. Weirs and dike breaches allow only limited tidal interchange, especially for the small lunar tides along the Louisiana coasts. In addition, earthen levees do not provide slope appropriate for fisheries use of the created wetland.

Goals:

The primary goal of this demonstration is to manufacture, deploy and test an alternative method of retention structures of dredged sediments and marsh creation equivalent to traditional methods in areas where site conditions limit or preclude traditional methods.

Proposed Solution:

This project would demonstrate the use of specially designed pre-cast concrete barriers as retention structures for dredged material (Figure 1). With a typical width of 2-4 ft and a typical height of 4-8 ft, these sediment retention barriers can be constructed to any length compatible with their delivery and deployment (Figure 2 & 3). The barriers are strengthened by solid concrete columns on each end and on 5-10 ft centers along the length. Parallel baffles stretch between the columns. The baffles are lowest on the sediment side, rising toward the open water side at an angle of 30° to 60°. The baffles are separated vertically by 0.5 to 1.5 ft as necessary to retain sediment while allowing appropriate water and biotic interchange.

Project Benefits:

If successful the project benefits include: 1) provide the restoration community with an equivalent alternative to traditional methods of marsh creation containment in areas of poor soil conditions; 2) facilitate the natural exchange of water into and out of the newly created marsh, enhancing the colonization of desirable plant and animal species.

Total Project Costs +25%: \$1,093,750

Preparer of Fact Sheet:

John D. Foret, Ph.D., NOAA Fisheries Service, (337) 291-2107, john.foret@noaa.gov.

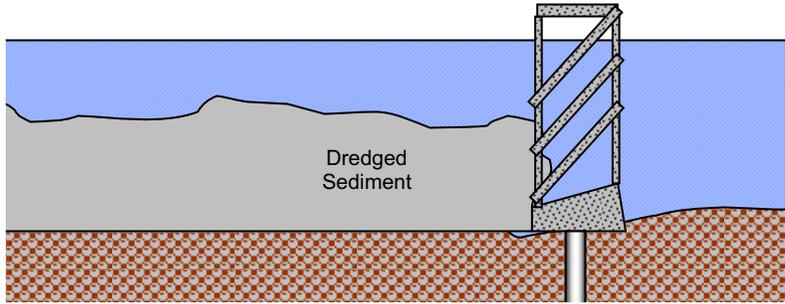


Figure 1. Side view of precast Rapidly Deployable Sediment Retention Structure; angled baffles retain dredged sediment while allowing bi-directional water flow.

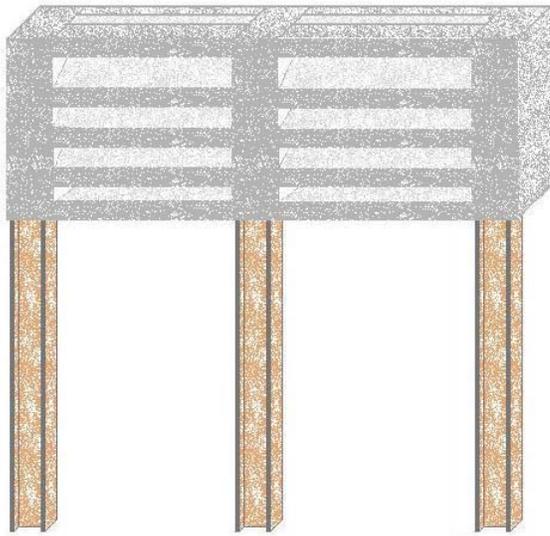


Figure 2. Sediment side view of pre-cast Rapidly Deployable Sediment Retention Structure; pilings provide stability while slanted panels holds sediment on one side and allow bi-directional water flow.

SEDIMENT SIDE CUT VIEW WATER SIDE

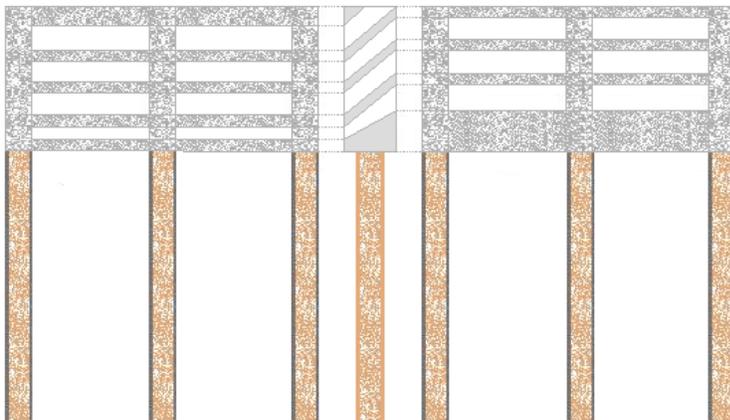


Figure 3. Other views of pre-cast Rapidly Deployable Sediment Retention Structure

PPL19 DEMONSTRATION NOMINEE FACT SHEET
March 26, 2009

Demonstration Project Name:

EcoSystems Wave Attenuator for Shoreline Protection Demo Project

Coast 2050 Strategy(ies):

Maintenance of Bay and lake Shoreline Integrity

Potential Demonstration Project Location(s):

Gulf, bay, or lake shorelines; specific site to be determined later. Applicable Statewide

Problem:

Coastal Louisiana consists of areas with unstable soil conditions, subsurface obstructions, accessibility limitations, etc. which limit the types of shoreline protection suitable to provide adequate relief of shoreline erosion. Traditional methods that have shown the most success are through the use of rock riprap. The major advantages of rock are the effectiveness and durability of protection that is provided. The disadvantages are the cost, supply, and site specific problems with placement and handling of material. However, the same problems are also associated with other “non-rock” alternatives that have been tried as substitutes to provide equivalent protection against shoreline erosion.

Goals:

The primary goal of this demonstration is to manufacture, deploy and test an alternative method of shoreline protection equivalent to traditional methods in areas where site conditions limit or preclude traditional methods.

Proposed Solution:

Walter Marine has developed a method of protection against shoreline erosion using the EcoSystems Wave Attenuator. This product is a unit of EcoSystems discs mounted on piling with an innovative anchoring system, which dissipates wave action. The EcoSystems Wave Attenuator could be applicable for use as a shoreline protection or in place of a channel plug. The intent of this demonstration project is to place the EcoSystems Wave Attenuator in an area where traditional restoration strategies would have used a rock plug or sheetpile for a channel closure. The project will evaluate the effectiveness of reducing wave energy and shoreline erosion.

Project Benefits:

If successful the project benefits include: 1) reduction in shoreline erosion associated with wave energy; 2) information regarding deployment and installation of EcoSystems Wave Attenuator; 3) information obtained would allow a comparison with riprap structures; 4) identification of other applications of EcoSystems Wave Attenuators.

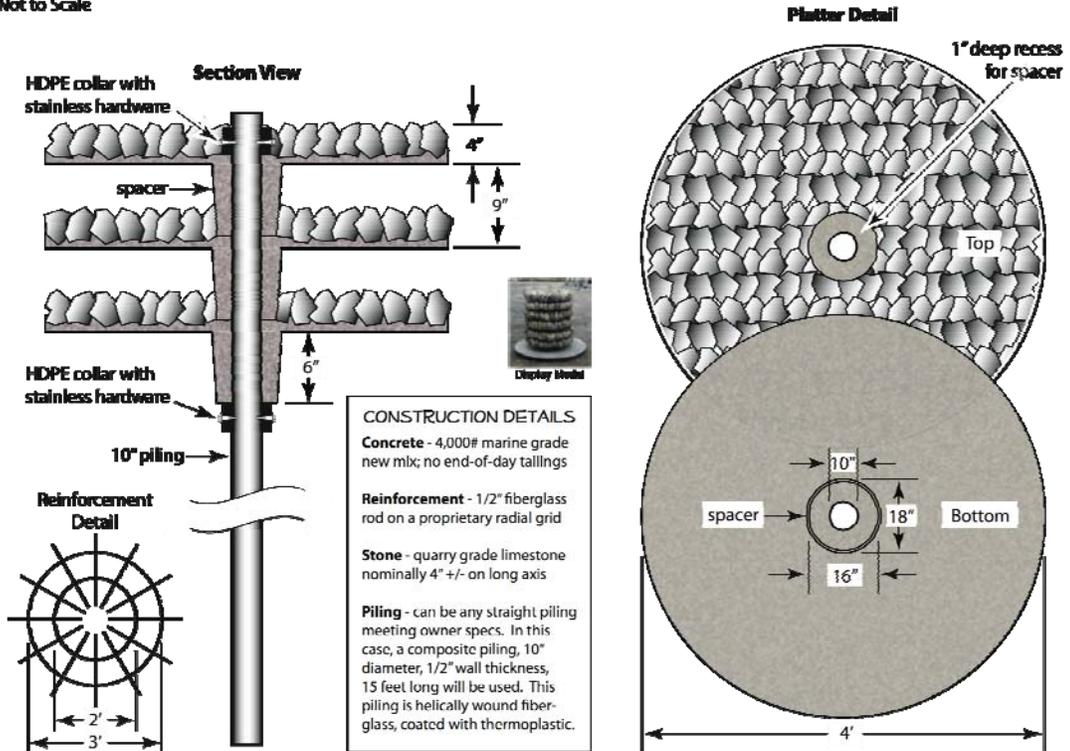
Total Project Costs +25%: \$1.5M

Preparer of Fact Sheet:

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ECOSYSTEMS[®] WAVE ATTENUATION SYSTEM

Not to Scale



PPL19 DEMONSTRATION NOMINEE FACT SHEET
March 26, 2009

Demonstration Project Name:

Bayou Backer Demo

Coast 2050 Strategy(ies):

Maintenance of Bay and lake Shoreline Integrity

Potential Demonstration Project Location(s):

Vermilion Bay, Rockefeller Refuge, or Grand Isle shoreline

Problem:

Bayou Backer is a long lasting wave energy reducer that is suited for wetlands protection and re-vegetation. Plugs are dispensed from rolls of 3" to 6" wide corn oil based (bio-degradable) plastic strip. In very loose ground plugs up to 38' long are pushed 16' deep. This leaves two 3' long blades above the surface. Below the surface, a 16' long loop forms the anchor. The product is a low cost alternative to rock, dirt, and vegetative plantings, as it can be easily transported and installed compared with these other methods. It is expected to last several years in our waters, and assist in abating shoreline erosion to allow plants recovery and establishment time. Wave pool testing was recently performed at Louisiana State University and can be seen in photos and videos at <http://www.grastic.com/backer>

Goals:

- (1) Test the effectiveness of the bio-grass to reduce shoreline erosion
- (2) Determine the applicability of the bio-grass in coastal Louisiana shores.
- (3) Test two spacing design for evaluation of shoreline protection versus cost effectiveness.

Proposed Solution:

Install triplicate plots of the following two spacing plans; 8 rows of plugs, 1 foot spacing, or 6,000 plugs, along approximately 750 linear feet of shoreline (8 rows at 1' OC = 8 plugs/ LF of shoreline * 750 LF of shoreline = 6,000 plugs). Each plug will be inserted to a 16 ft depth. A second, equivalent, section of shoreline, 5 rows of plugs will be spaced 3' OC (5 rows at 3' OC = 8 plugs/3 LF of shoreline * 750 LF of shoreline = 2,000 plugs). Total shoreline impacted is 4,500 linear feet with 8,000 plugs per treatment, times 3 treatments, or 24,000 plugs.

Project Benefits:

If successful the product could be a low cost option in shoreline protection, for initial terrace or marsh creation erosion control until vegetation establishes, direct creation of habitat in shallow waters where turbidity could be decreased, and used as an addition to both interior lake and exposed coastal bay shorelines and open bay waters.

Project Costs:

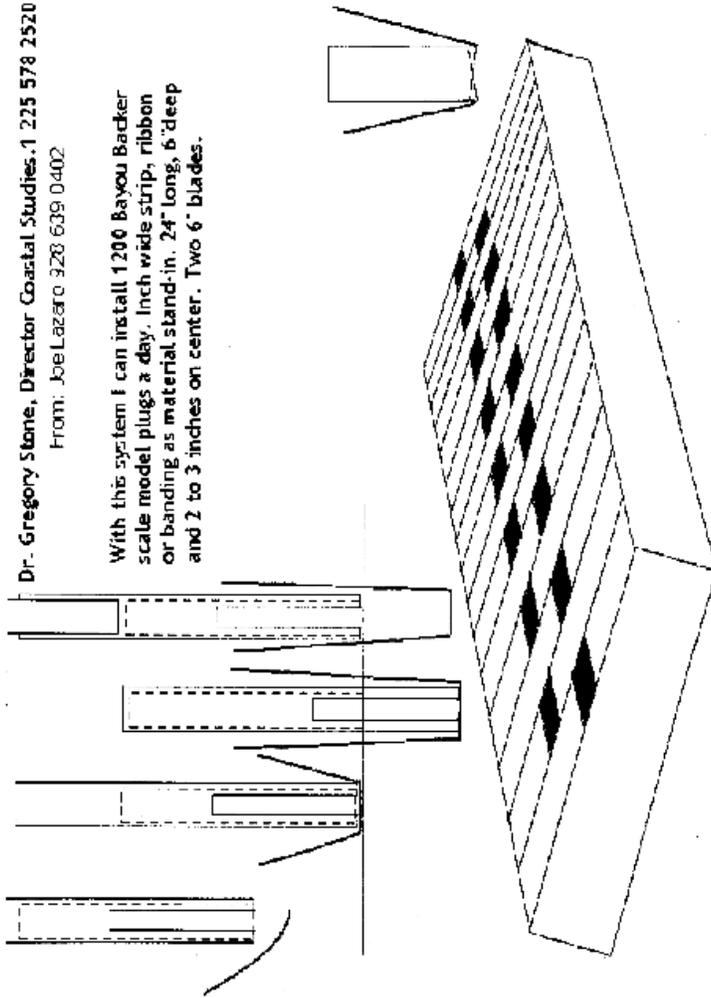
Construction costs + 25% contingency = \$520,000

Preparer of Fact Sheet:

John D. Foret. Ph.D., NOAA Fisheries Service, (337) 291-2107, john.foret@noaa.gov.

Dr. Gregory Stone, Director Coastal Studies. 1 225 578 2520
From: Joe Lazaro 328 639 0402

With this system I can install 1200 Bayou Backer
scale model plugs a day. Inch wide strip, ribbon
or banding as material stand-in. 24" long, 6" deep
and 2 to 3 inches on center. Two 6" blades.



PPL19 DEMONSTRATION PROJECT NOMINEE FACT SHEET

April 3, 2009

Demonstration Project Name:

Floating Island Environmental Solutions BioHaven

Coast 2050 Strategy(ies):

- Terracing- Provides nursery habitat, wave fetch reduction, and sediment trapping in addition to promoting conditions conducive to growth of submerged aquatic vegetation.
- Vegetative Planting
- Restore natural drainage patterns

Potential Demonstration Project Location(s):

Fresh and intermediate open water areas such as the Central Wetlands, and the Penchant Basin.

Problem:

What problem will the demonstration project try to solve?

- Terracing typically require shallow areas with soils of suitable mineral content to support the terracing structure. Terraces are also normally created with in-situ material resulting in an adjacent deep borrow area, which limits SAV, and emergent marsh growth in this area.
- Freshwater floating marshes can be loss due to increasing water levels and hydrologic modifications.

What evidence is there for the nature and scope of the problem in the project area?

- Constructability of terraces is severely limited in areas of poor load bearing, organic soils (Central Wetlands, Penchant Basin)
- During high water events, floating marshes can be subject to flows that could break up the floating marsh and carry them downstream by local currents

Goals:

What does the demonstration project hope to accomplish?

- Using the same configuration as a terrace field the demonstration project will hope to provide nursery habitat, reduce wave fetch, and trap sediment, in open water habitats with a poor substrates.
- Provide containment for floating marshes where they are susceptible to losses from man-made and natural waterways.

Proposed Solution:

Floating Island Biohavens will be joined together in and placed in a linear method to mimic a terrace field. The Floating Island Biohavens will then be planted with the native vegetation (See diagram). Various thicknesses of mats and dimensions would be tested.

Floating Island Biohavens would be placed across areas broken bank lines and canals, and serve as a containment system for interior freshwater floating marshes.

Project Benefits:

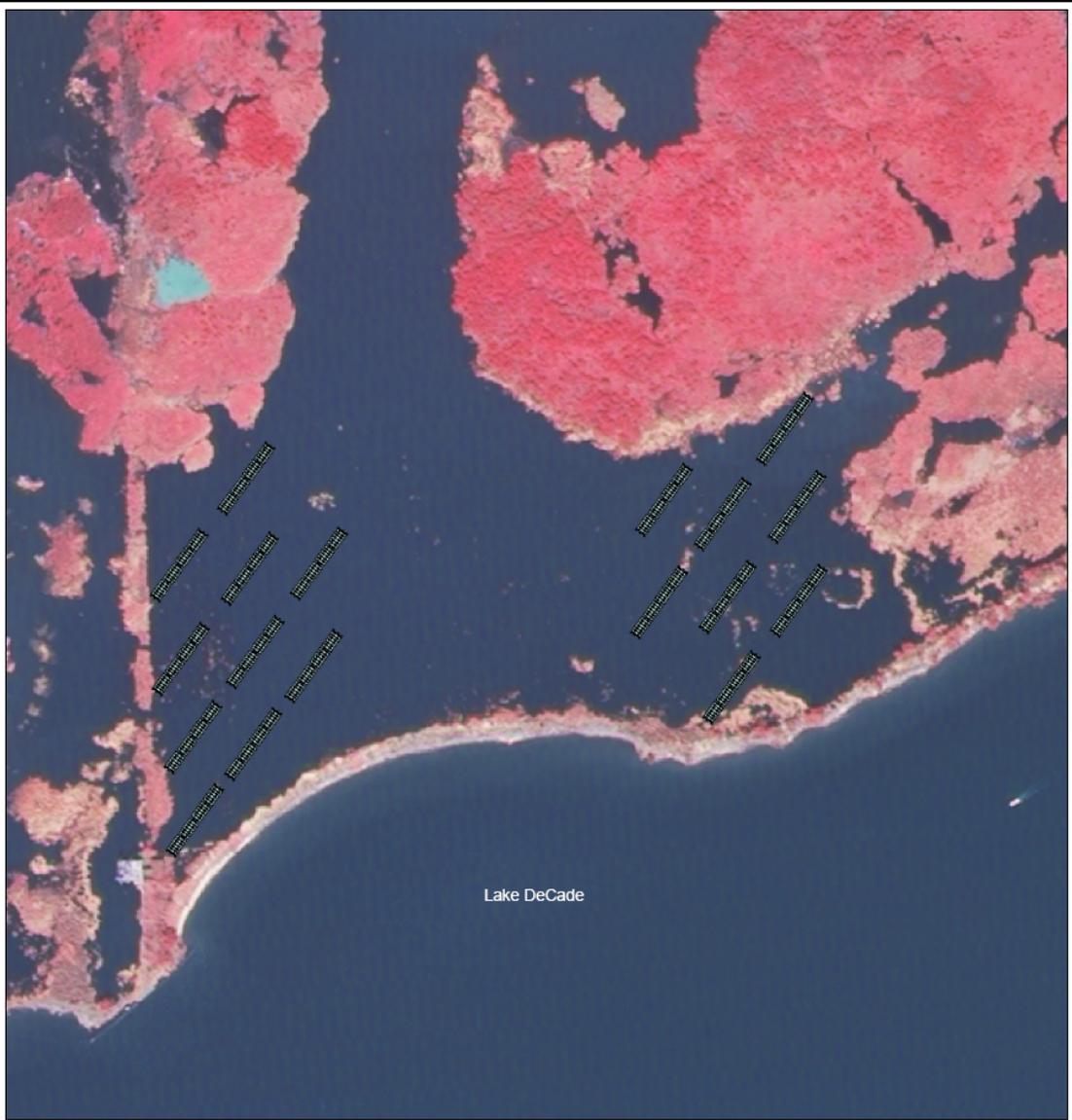
- Provide nursery habitat
- Reduce Wave Fetch
- Increase organic soil deposits
- Trap sediment
- Reduce interior marsh loss

Project Costs:

Estimated cost to implement demonstration project \$ 1,835,000

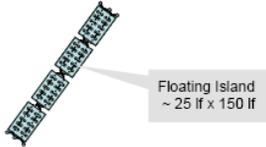
Preparer(s) of Fact Sheet:

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TIGUE Bonneval, Floating Island Environmental Solutions, 225-445-0886,
tiguebonneval@gmail.com



Floating Island Environmental Solutions BioHaven In the Vicinity of the Lake DeCade

Legend



Map Produced By:
U.S. Army Corps of Engineers
New Orleans, La

Data Source:
2005 DOQQ Aerial Photography
Map Date: March 09, 2009
Map ID: Floating Islands_Examples.mxd



Floating Island Environmental Solutions BioHaven Bayou Penchant/Espasa

Legend



Map Produced By:
U.S. Army Corps of Engineers
New Orleans, La

Data Source:
2004 DOQQ Aerial Photography
Map Date: March 10, 2009
Map ID: Floating Islands_Examples.mxd
2,760
Feet

PPL19 DEMONSTRATION PROJECT NOMINEE FACT SHEET

24 March 2009

Viper-Wall:

Coast 2050 Strategy(ies): Coastwide Strategies to maintain bay and lake shoreline integrity and stabilize major navigation Channels.

Potential Demonstration Project Location(s): Coastwide

Problem: Excessive erosion of bay and lake rims expose thousands of acres of interior marshes to increased rates of erosion and severe hydrologic change. In addition, the loss of wetlands resulting from the direct effects of bank erosion along Louisiana's nine major navigation channels in the coastal zone was estimated by the Coast 2050 plan to be in excess of 35,000 acres. The need for stabilization in critical areas was noted in all four Coast 2050 regions.

Goals: The proposed demonstration project would halt or decrease shoreline erosion rates and maintain exchange and interface with estuarine systems.

Proposed Solution:

The Viper-Wall is a wave breaking sediment collection system that would absorb and deflect wave energy, protect vegetation, and support its own weight in soft soils without disturbing the estuarine gradient.

1. The Stepped Shapes reduce wave run up and minimize subsequent scour.
2. The Slopping Shapes provide for gradual dissipation; and
3. The Terracing breaks up one long slope into a number of short slopes allowing sediment time to settle.

Project Benefits:

The proposed project would:

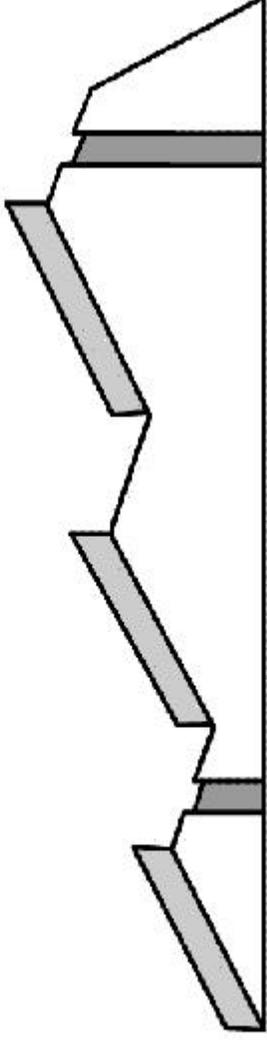
1. absorb and deflect wave energy;
2. protect existing or planted shoreline vegetation;
3. allow ingress and egress of aquatic species;
4. collect sediment by reducing wave energy; and
5. is removable and reusable

Project Costs:

\$1.5 million

Preparer(s) of Fact Sheet:

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How it Works:

The basic system has multiply angled wall sections in a stepped shaped formation that tricks a wave into feeling a bottom that is not their. As it goes over the first wall section the wave is forced to rise in elevation, just as it would normally be forced to do along any shoreline. This causes the wave top to travel faster than its bottom and starts its breaking cycle early, but before it can break, an open section appears and drops down between the wall sections to the true bottom which forces the wave energy to fall downward.

As the wave's energy falls in a downward motion it forces the water within the open area to be displaced towards the shoreline forming a "new wave" since the first wall section prevents it from moving seaward. This new wave is only a fraction of the original wave which continues to move towards the shoreline with much less force under the other wall sections of the system. The original wave is still moving towards the shoreline but above the systems wall sections, these additional wall sections continue to dissipate and separated the old wave from the "new wave" preventing them from combining and regenerating.