PPL34 Candidate Project Evaluation Matrix

11/4/2024

Project Name	Region	Parish	Project Area (acres)	Average Annual Habitat Units (AAHU)	Net Acres	Total Fully Funded Cost	Fully-Funded Phase I Cost	Fully-Funded Phase II Cost incl O&M	Average Annual Cost (AAC)	Cost Effectiveness (AAC/AAHU)	Cost Effectiveness (Cost/Net Acre)
Bayou L'Ours Ridge Restoration and Marsh Creation	2	Lafourche	278	100	161	$30,184,897	$2,720,797	$27,464,100	$2,500,473	$24,972	$187,484
East Lake Lery Shoreline Restoration	2	St. Bernard	295	124	234	$31,378,823	$2,658,495	$28,720,328	$2,046,600	$16,519	$134,098
Elmer's Island Restoration	2	Jefferson	244	76	147	$39,196,555	$4,103,017	$35,093,538	$2,848,654	$37,542	$266,643
Wood Lake Marsh Creation and Terracing	2	St. Bernard	609	166	306	$33,430,676	$3,002,732	$30,427,944	$2,803,899	$16,867	$109,251
Eastern Terrebonne Landbridge Marsh Creation Increment 1	3	Lafourche	585	170	310	$47,343,384	$3,681,751	$43,661,633	$2,593,031	$15,233	$152,721
South Isle de Jean Charles Landbridge Increment	3	Terrebonne	431	171	297	$43,323,163	$3,758,057	$39,565,106	$1,904,401	$11,145	$145,869
Grand Chenier Marsh Creation and Terracing	4	Cameron	315	108	256	$26,152,156	$2,732,807	$23,419,349	$2,228,309	$20,654	$102,157
Gulf Shoreline Protection West	4	Cameron	244	68	182	$59,181,890	$2,432,553	$56,749,337	$1,186,189	$17,513	$325,175

PPL34 Bayou L'Ours Ridge Restoration and Marsh Creation

Project Location
Region 2, Barataria Basin, Lafourche Parish, LA

Problem
Historically, wetland loss in the marshes near Little Lake was caused by altered hydrology from canals and levees, wind erosion on the shoreline of Little Lake, and natural subsidence. Hurricanes have contributed to significant loss in recent years. Restoration of the Bayou L'Ours Ridge has been identified as a measure to reduce saltwater intrusion and wetland loss in the basin. The total subsidence rate (i.e., median deep and shallow subsidence) used for predictive modeling in the 2023 Coastal Master Plan is estimated around 9.5 mm/yr (Fitzpatrick et al. 2021). USGS calculated a land change rate using a period of analysis from 1984 to 2024 of -2.08% per year.

Goals
The project goal is to restore 13,811 linear feet (LF) of ridge habitat along the Bayou L'Ours Ridge. An estimated 264 acres of marsh will be restored north of the ridge to an elevation supporting estuarine marsh habitat at the optimal inundation range for the longest period within the project life.

Proposed Solution
The proposed solution would be to restore the northern reach of the Bayou L'Ours ridge and restore marsh to the north to add additional protection to the ridge and adjacent infrastructure. The ridge will serve as containment for the marsh restoration feature. Temporary containment dikes will be constructed around the remaining marsh creation area and gapped within three years of construction to allow greater tidal exchange and estuarine organism access. Borrow for the marsh creation area is currently proposed from Little Lake.

The proposed ridge restoration feature is 13,811 LF. Material will be dredged from Bayou L'Ours. The ridge crown width is 15 feet (ft) with a top elevation of 5 ft. Side slopes are 1V:5H along both the marsh and bayou sides. The area of ridge above 1% inundation level (ridge credit acres) is 14 acres. Based on more recent ridge planting projects the goal is to plant the ridge with tree saplings (2-year-old) and seedlings (1-year-old) at 905 trees per acre as soon as possible during construction to establish woody vegetation before prevalence of nuisance species (e.g., common reed, Chinese tallowtree, etc).

Project Benefits
The project would result in 161 net acres (147 acres marsh, 14 acres ridge) over the 20-year project life.

Project Costs
The total fully-funded cost is $30,184,897.

Preparer of Fact Sheet
Angela Trahan, NRCS, (337) 291-3142, angela.trahan@usda.gov

Bayou L'Ours Ridge Restoration and Marsh Creation (PPL34 Candidate)

Marsh Creation

Ridge

Note: All features are proposed.

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Map Produced By:
U.S. Department of the Interior

PPL34 East Lake Lery Shoreline Restoration

Project Location
The project is located in Region 2, Breton Sound Basin, St. Bernard Parish, along the eastern shoreline of Lake Lery.

Problem
The marshes that formed the eastern Lake Lery shoreline were severely damaged in 2005 by Hurricane Katrina. In the years following this storm, fetch from the lake further eroded the lake's shoreline and interior marshes. The area has become so degraded that there is no longer an eastern Lake Lery shoreline. A large open water area has formed between the lake and the Bayou Terre aux Boeufs Ridge. Without restoration of this critical shoreline and adjacent marsh, the lake will likely continue to grow and erode the thin buffer of marsh along the Bayou Terre aux Boeufs ridge threatening the Delacroix community and Hwy 300. Based on a land change analysis conducted by the USGS, which included both interior marsh loss and lake shoreline erosion, the loss rate in the area is estimated to be -1.47% per year (1984 to 2024).

Goals
The primary goals of the project are to buffer the Bayou Terre aux Boeufs ridge against the wave energy of Lake Lery through the restoration of the eastern Lake Lery shoreline and the creation of intermediate marsh directly to the east of the former lake shoreline. The specific project goals are: 1) create 266 acres of marsh, 2) nourish 29 acres of marsh, and 3) restore/stabilize approximately 1.3 miles of the eastern Lake Lery shoreline through the construction of a large lakeside berm.

Proposed Solution
Sediments from Lake Lery will be hydraulically dredged and pumped via pipeline to create/nourish approximately 295 acres of marsh. The containment dikes will be gapped no later than three years post-construction. The target construction elevation is +1.1 feet NAVD88 which, after dewatering and consolidation of dredged sediments, should produce elevations conducive to the establishment of emergent marsh. Vegetative plantings are not proposed in the marsh creation areas. The project would also restore 7,094 LF of the eastern lake rim by constructing a lakeshore berm with a 25-ft crown width, 1V:7H (exterior) side slope, 1V:5H (interior) side slope, and a target top elevation of +3.5 ft NAVD88. The project includes vegetative plantings along the lake side slope of the shoreline restoration feature. Five acres of *Phragmites australis* will be planted parallel to the shoreline alignment.

Project Benefits
The project would result in 234 net acres over the 20-year project life.

Project Costs
The total fully-funded cost is $31,378,823.

Preparer of Fact Sheet
Kristen Ramsey, FWS, (337) 291-3137; kristen_ramsey@fws.gov

East Lake Lery Shoreline Restoration
(PPL34 Candidate)

Marsh Creation

Shoreline

Note: All features are proposed.

Project Location

Scale: 1:35,000

0.5 0 0.5 1

Kilometers

USGS
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Map Produced By:
U.S. Department of the Interior
U.S. Geological Survey
Wetland and Aquatic Research Center
Lafayette, La.

PPL34 Elmer's Island Restoration

Project Location
Region 2, Barataria Basin, Jefferson Parish, within the Elmer's Island Wildlife Refuge

Problem
As part of an erosional headland, Elmer's Island is dominated by coastal processes including overwash, longshore and offshore transport, and inlet dynamics. Longshore transport is from west to east along Elmer's Island historically supporting decreasing shoreline erosion rates in the same direction. However, inlet dynamics, prevailing southeasterly winds, and synoptic storms contribute to substantial erosion and elevation losses along Elmer's spit and Caminada Pass. The eastern end of the island has narrowed, increasing the risk of breaching. Substantial sediment volume and acreage losses occurred with shoreline recession and breaching along the spit during the 2020 and 2021 storms. Although the spit is dynamic, it has not exhibited recovery after these storms. Thus, the lagoon, mainland marsh and infrastructure have increasing vulnerability to habitat loss and impact to critical and non-critical infrastructure. Resiliency to wind and waves is related to the sediment budget and height and width of the headland and spit. The 1984 to 2024 loss rate is -0.55% per year. However, the most recent sediment budget (Applied Coastal 2020[1] and Coast and Harbor 2012[2]) predates the 2021 storms.

Goals
The project goal is to create and nourish 143 acres of back-barrier marsh and 32 acres of dune, to prevent headland breaching, create intertidal, supratidal, and dune habitat, maintain the lagoon functions, and reduce shoreline erosion of the mainland marshes. Breaching is defined as the formation of an inlet.

Proposed Solution
The project proposes 32 acres of dune creation and nourishment (with dune plantings and fencing) as well as 143 acres of back barrier marsh creation/nourishment (140 acres of creation and 3 acres of nourishment).

The techniques proposed to offset or reduce habitat losses include sediment fill placement by mining sediment from offshore to create and nourish marsh and construct a dune and beach extending previous restoration. Fill for back-barrier marsh creation would be mined from a borrow area sited south of Elmer's Island in the Gulf of Mexico at a location to avoid negative impacts to the sediment budget for Elmer's Island or Grand Isle. The marsh creation would be confined disposal, with the dike along the lagoon gapped no later than three years after construction to ensure tidal function. Dike gapping would be in an amount equivalent to one gap 25 feet wide every 25 linear feet of dike. Sediment would be placed to create marsh using a target elevation of +1.0 feet NAVD88 at Year 20 to provide benefits for 20 years. The dune would be constructed to +8 feet NAVD88 with sand mined from the Barataria Pass ebb shoal and delivered to Elmer's via a barge or scow and a pump-out location near the marsh creation borrow area. During construction, sand fencing would be installed to maintain the dune by trapping wind transported sand. After construction, the dune would be planted with appropriate vegetation.

Project Benefits
The project would result in 136 net acres over the 20-year project life.

Project Costs
The estimated fully funded cost is $39,196,555.

Preparers of Fact Sheet
Dawn Davis, NOAA Fisheries, (601) 890-1338, dawn.davis@noaa.gov
Patrick Williams, NOAA Fisheries, (225) 400-5943, patrick.williams@noaa.gov
Craig Gothreaux, NOAA Fisheries, (337) 280-0544, craig.gothreaux@noaa.gov

[1]Applied Coastal Research and Engineering (ACRE), 2020. Louisiana Operational Sediment Budget: Raccoon Point to Sandy Point, 1985-89 to 2013-16. Final Report prepared for Louisiana Coastal Protection and Restoration Authority, Contract 4400009020, Task 5, 118 p. plus appendices.

[2] Coast & Harbor Engineering, Inc. 2012. Elmer's Island Restoration Project Planning and Evaluation Support. Final Report prepared for Tetra Tech EM Inc. and the National Oceanographic and Atmospheric Administration. 62 p.

Elmer's Island Restoration
(PPL34 Candidate)

Marsh Creation

Dune

Note: All features are proposed.

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Map Produced By:
U.S. Department of the Interior

PPL 34 Wood Lake Marsh Creation and Terraces

Project Location
The project is located in Region 2, Breton Sound Basin, St. Bernard Parish, northeast of Lake Lery, bounded by Howard's Ditch and Bayou Terre aux Boeufs (BTaB).

Problem
Hurricane Katrina (2005) removed a large swath of marsh south of the project area adjacent to Lake Lery which had previously been made vulnerable by access canals for petroleum exploration and fur trapping/hunting. Subsequent hurricanes (Gustave in 2008 and Isaac in 2012) continued thinning marsh within the project area between Lake Lery and BTaB. These marshes continued to open, aided by Hurricane Ida in 2021 and increasing water levels, such that deteriorated marshes to the north of the project area are now hydrologically connected to Lake Lery, exposing these vulnerable marshes and soils to more disruptive energy via increased tidal prism and wind fetch distances. From January 1984 to July 2024, extended boundary of the project area, experienced a land change rate of -1.47%/yr. based on a USGS hyper-temporal analysis of satellite imagery. Total subsidence derived from the 2023 Master Plan in the area is estimated to be 9.60 mm/y (Fitzpatrick et al. 2021).

Goals
This project would create and nourish 421 acres of emergent marsh and create 13,160 LF of terraces between Lake Lery and BTaB to protect the BTaB Ridge and reduce hydrologic exchange and wind fetch between Lake Lery and marshes to the north.

Proposed Solution
Approximately 331 acres of marsh will be created and approximately 90 acres of marsh will be nourished (421 acres total) in a marsh creation area utilizing approximately 2.7M cubic yards of sediment hydraulically dredged from Lake Lery along with 13,160 LF (9 acres of marsh) created by terraces. Terraces will be constructed 300 ft apart. Earthen containment proposed for the area will be degraded as necessary to re-establish hydrologic connectivity with adjacent wetlands by three years following construction (Target Year 3).

Project Benefits
The project would result in 306 net acres over the 20-year project life.

Project Costs
The total fully-funded cost estimate is $33,430,676.

Preparers of Fact Sheet
Thomas McGinnis, II; USDA-NRCS; Thomas.mcginnis2@usda.gov
Vincent Palumbo, III; USDA-NRCS; vincent.palumboIII@usda.gov
Blaise Pezold; Meraux Foundation; blaise@merauxfoundation.org

Wood Lake Marsh Creation
(PPL34 Candidate)

Marsh Creation

Terraces

Note: All features are proposed.

Project Location

Scale: 1:35,000

0.5 0 0.5 1

Kilometers

USGS
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Map Produced By:
U.S. Department of the Interior
U.S. Geological Survey
Wetland and Aquatic Research Center
Lafayette, La.

PPL34 Eastern Terrebonne Land Bridge
Marsh Creation and Terracing Increment I

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

Problem
Since 1932, the Terrebonne Basin has lost approximately 20% of its wetlands. Current loss rates range from approximately 4,500 to 6,500 acres /year. This loss amounts to 130,000 acres during the next 20 years. One-third of the Terrebonne Basin's remaining wetlands would be lost to open water by the year 2040. Historic aerial photography indicates significant marsh loss in the project area west of Golden Meadow near Catfish Lake. Subsidence, canal dredging, saltwater intrusion, and altered hydrology (levees) are all important factors contributing to the loss of marsh habitat within and surrounding the project area. The most recent significant land loss in the area has been the recent hurricanes that have passed directly over or near the project area, including Hurricane Ida. The wetland loss rate for areas near the project area is -1.70%/year based on USGS hyper temporal data from 1984 to 2024.

Goals
The primary goal of this project is to establish a land bridge in the eastern Terrebonne Basin by restoring marsh southwest of Golden Meadow near the alignment of the Larose to Golden Meadow Hurricane Protection Levee extending west to Bayou Seven.

The specific goals of this project are to; 1) create/nourish approximately 416 acres (347 acres of marsh creation and 69 acres of marsh nourishment) of marsh with material dredged from Laurier Bayou and 2) create approximately 10,780 LF of earthen terraces (8 marsh acres).

Proposed Solution
The proposed solution would be to hydraulically pump sediment via pipeline from a large open water area south of the marsh creation areas (Laurier Bayou). That sediment will be pumped to a slurry height of +3.40 with a target marsh elevation of +1.0 ft and contained within earthen dikes. Those containment dikes will be degraded and gapped no later than three years post construction. Southern facing containment dikes will have a crown with of 10 feet to provide enhanced shoreline erosion protection. Earthen terraces will also be constructed (10,780 LF/ 8 acres of marsh) south of the marsh creation areas with in situ material to a height of +2.0 ft and with a 15 ft crown width to reduce erosion due to wind induced waves. The project will include planting along the terrace side slopes. This project would also be working with the newly funded Ducks Unlimited Golden Meadow Terraces.

Project Benefits:
The project would result in 310 net acres over the 20-year project life.

Project Cost
The total fully-funded cost is $47,343,384.

Preparer of Fact Sheet
Robert Dubois, FWS, 337-291-3127, robert_dubois@fws.gov

Eastern Terrebonne Landbridge
Marsh Creation Increment 1
(PPL34 Candidate)

Marsh Creation

Terrace Field

Enhanced Earthen Containment Dike

Project

Note: All features are proposed.

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USGS
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Map Produced By:
U.S. Department of the Interior

PPL34 South Isle de Jean Charles Landbridge Increment

Project Location
Region 3, Terrebonne Basin, Terrebonne Parish, South of the Isle de Jean Charles.

Problem
The marshes of Eastern Terrebonne Parish have suffered extensive damage from subsidence, erosion, saltwater intrusion, and sea level rise. The area is particularly vulnerable because waters from the Mississippi and Atchafalaya Rivers have the least amount of influence. Many of Terrebonne Parish's cultural heritage communities remain outside of the Morganza-to-the-Gulf Levee system and are increasingly threatened by wave fetch, tidal flooding, and storm surge. The Eastern Terrebonne basin has a total subsidence rate of 11.7 mm/y (i.e. median deep and shallow subsidence; Fitzpatrick et al. 2021). Based on USGS data (1984-2024), the land change within the extended boundary of the proposed project area is -1.61% per year.

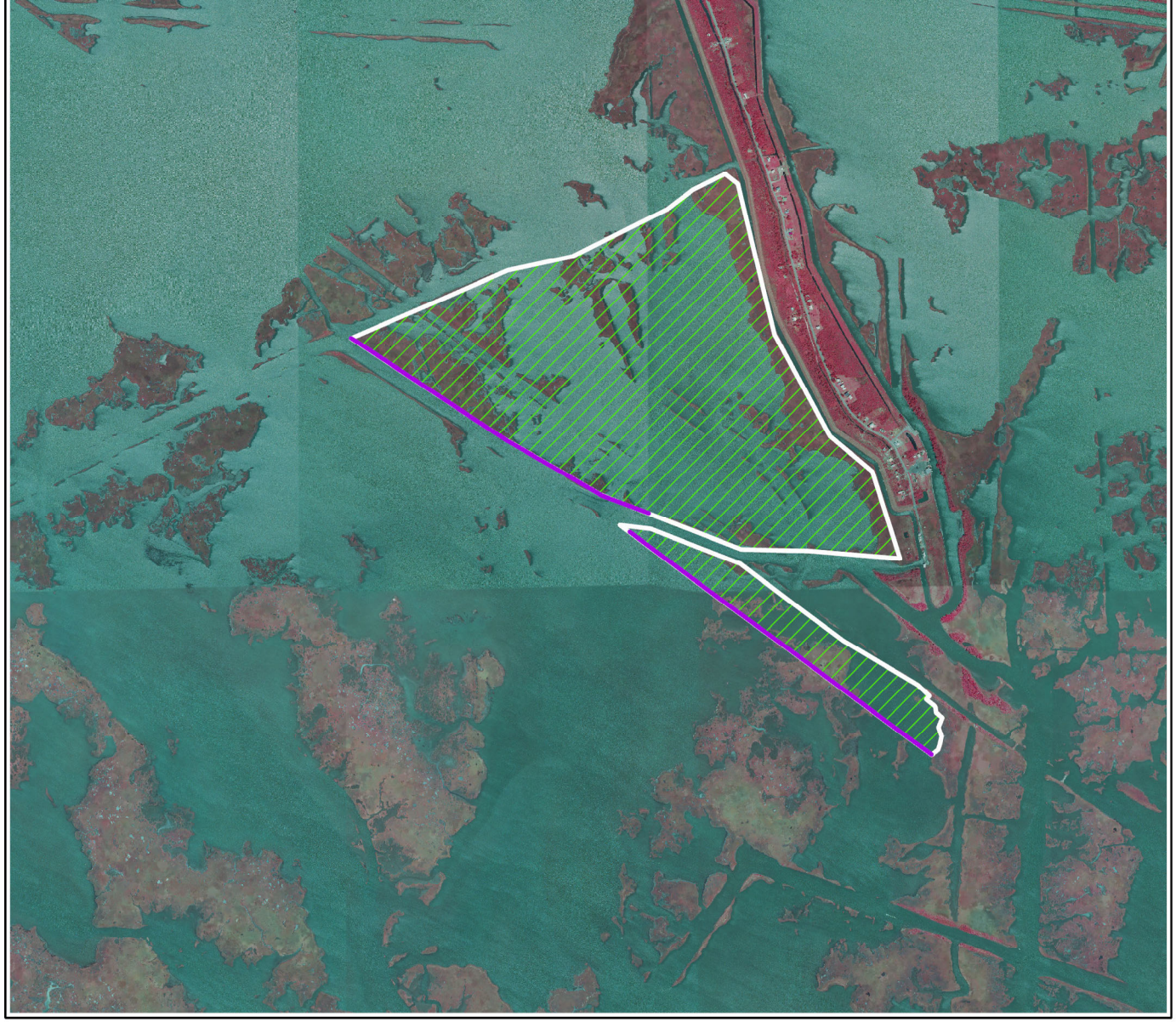
Goals
The primary goals of this project are to 1) create/nourish marsh habitat in degraded marsh and open water located immediately to the south and west of the historic Isle de Jean Charles ridge; 2) reduce the intensity of tidal movements through the degraded marsh by restoring a contiguous marsh expanse across areas where channelization has become prevalent; and 3) provide synergy with the TE-117 Island Road Marsh Creation Project by adding protection to the community of Isle de Jean Charles and aligning with future Eastern Terrebonne Landbridge projects (Louisiana's Coastal Master Plan 2023 calls for a landbridge alignment that spans from Bayou Terrebonne to Bayou Lafourche; Project ID: 335)

Proposed Solution
Hydraulically dredged sediments will be used to create/nourish a total of 431 acres of marsh (335 acres created and 96 acres nourished). The proposed borrow source for marsh fill is located approximately three miles south of the project area within Lake Tambour. Additionally, the project will reduce tidal intensity and channelization by including 9,204 LF of bank stabilization on the southern side of the two marsh creation cells. Sheet pile will be used to plug particularly deep channels, while temporary containment dikes will be constructed around the remaining marsh creation areas and gapped within three years of construction to allow greater tidal exchange and estuarine organism access.

Project Benefits
This project would result in 297 net acres over the 20-year project life.

Project Costs
The total fully-funded cost is $43,323,163.

Preparer(s) of Fact Sheet
Katie Percy, Biologist, NRCS, 225-955-2344, katie.percy@usda.gov Jacqueline Jones, Engineer, NRCS, 225-964-8719, jacqueline.jones@usda.gov



South Isle de Jean Charles Landbridge Increment (PPL34 Candidate)

N

Marsh Creation

Project Area

Bank Stabilization

Note: All features are proposed.

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Map Produced By:
U.S. Department of the Interior

PPL34 Grand Chenier Marsh Creation and Terracing

Project Location
Region 4, Mermentau Basin, Cameron Parish, South of Louisiana Highway 82 (LA 82) just south of Grand Chenier.

Problem
The marshes within the Hog Bayou watershed have severely deteriorated to mostly open water due to limited freshwater input/saltwater intrusion, storm damage, and land use practices. There is little marsh left over a broad area that stretches from the Gulf of Mexico up to LA 82, which makes the community of Grand Chenier extremely vulnerable to elevated tidal events, even during normal high tides and tropical storms. As a result, the effects have been catastrophic to the cheniers as evidenced by live oak "ghost forests" that line the highway. The regional loss rate is -0.87% per year according to the USGS evaluation of the extended boundary area. However, the historical land loss maps show most of the loss occurred from 1956 to 1973 with some continuing loss thereafter (Couvillion et al. 2011, 2017). The regional subsidence rate is 8.136 mm/yr (based on the 2023 Master Plan for Chenier Ridges).

Goals
The primary goals of this project are to create/nourish marsh habitat in an area located in the northern portion of the watershed that parallels and abuts LA 82. The project will be designed to be synergistic with the ME-20 South Grand Chenier and ME-32 South Grand Chenier (Baker Tract) projects providing additional protection to the community of Grand Chenier. Material will be borrowed from Upper Mud Lake, which the Mermentau River flows through, and has become heavily silted from river deposits. Dredging this location will provide mutual benefits of restoring depth to the interior lake while beneficially using the material to create much needed coastal marsh. The specific goals of this project are to: 1) create and nourish approximately 290 acres (276 acres of marsh creation and 14 acres of marsh nourishment) of marsh with material dredged from Upper Mud Lake, and 2) create approximately 3,000 linear feet (LF) of earthen terraces (1.9 marsh acres).

Proposed Solution
Sediments will be hydraulically dredged and pumped via pipeline from Upper Mud Lake to create/nourish approximately 290 acres of marsh. Approximately 3,000 LF of earthen terraces will also be constructed to the west of the marsh creation area.

Project Benefits
The project would result in 256 net acres over the 20-year project life.

Project Costs
The total fully-funded cost estimate is $26,152,156

Preparer(s) of Fact Sheet
Donna Rogers, NOAA, donna.rogers@noaa.gov
Eric Whitney, NRCS Engineer, (337) 200-0838, eric.whitney@usda.gov
Tommy McGinnis, NRCS, (337) 356-9348, thomas.mcginnis2@.usda.gov
Jason Kroll, NOAA Engineer, (225) 335-9659, jason.kroll@noaa.gov

Grand Chenier Marsh Creation and Terracing (PPL34 Candidate)

Marsh Creation

Terrace Field

Scale: 1:25,000

0.5 0 0.5 1 Kilometers

USGS science for a changing world

Map Produced By:
U.S. Department of the Interior

PPL34 Gulf Shoreline Protection West

Project Location
Region 4, Mermentau Basin, Cameron Parish, south of Rockefeller State Wildlife Refuge

Problem
The Gulf shoreline in the vicinity of Rockefeller Refuge has some of the highest shoreline erosion rates found anywhere in Louisiana. Gulf shoreline erosion rates between Josephs Harbor and Price Lake Road, have been estimated to be -45 feet per year (1998 to 2023). After recent hurricanes, erosion rates west of Price Lake Road, were estimated to be 53 feet per year (1998 to 2019). This is equivalent to nearly 11 acres of marsh/shoreline lost per year in the project area. Without protection, the Rockefeller Refuge shoreline will continue to retreat landward, which could have substantial impacts on the refuge (including resident endangered species) as well as the surrounding area. Without stabilizing the Gulf shoreline at Rockefeller Refuge, the shoreline may retreat over 900 ft (for a loss of 244 acres) within a 20-year timespan.

Goals
The project goal is to halt Gulf shoreline erosion along a critical 2-mile-long reach where continued erosion will threaten the integrity of Price Lake Road and the watershed within Rockefeller Refuge as well as the recently constructed CWPPRA project ME-20. A total of 182 acres of existing marsh would be protected by the project over 20 years.

Service goals include the protection of shoreline beaches designated as critical habitat for the threatened piping plover and beaches used by the threatened red knot. The project would also prevent the loss of back beach marshes which is highly likely to be occupied habitat for the recently listed black rail.

Proposed Solution
The proposed project is similar to the Rockefeller Refuge Gulf Shoreline Stabilization Project (ME-18). The project would construct 10,560 LF of foreshore rock dike breakwater with a light-weight aggregate core along the -3.5-ft (NAVD88) contour (approximately 150-ft offshore). It would extend west from the Rockefeller Shoreline Protection Project ME-37 project and parallel the shoreline with gaps every 1,500- ft. The project feature may trap sediments from the Gulf, which could result in accretion behind the breakwater as has occurred at ME-18.

Project Benefits
The project would result in 182 net acres over the 20-year project life.

Project Costs
The estimated fully funded cost is $59,189,890.

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

Gulf Shoreline Protection West (PPL34 Candidate)

Project Area

0.5 0 0.5 1

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Map Produced By:
U.S. Department of the Interior