Vermilion Parish Coastal Master Plan

August, 2024

Vermilion Parish Police Jury

Vermilion Parish

Sellers & Associates, Inc.
ENGINEERS SURVEYORS

VERMILION PARISH COASTAL MASTER PLAN

Vermilion Parish Police Jury

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August, 2024

Chapter 1-Introduction

Vermilion Parish was established in 1844 after becoming another division of the original County of the Attakapas. In 1807, Attakapas County was changed to St. Martin Parish and in 1811, the lower eastern portion was designated as St. Mary Parish. In 1823, Lafayette Parish was carved out of the western portion of St. Martin Parish and in 1844 Vermilion Parish was created out of a portion of Lafayette Parish. Iberia Parish was subsequently created from St. Martin and St. Mary Parishes in 1868.

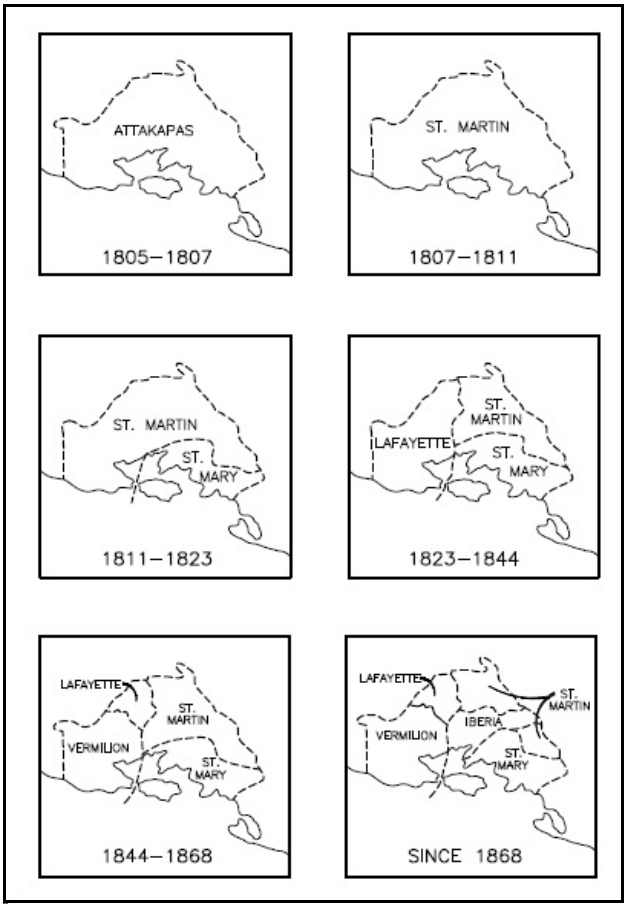


Figure 1-Divisions of the Original Attakapas County

Vermilion Parish is the fifth-largest parish in Louisiana by total area. According to the Natural Resource Conservation Service (Soil Survey of Vermilion Parish, 1996), the parish has a total area of 1,115,531 acres, of which 783,360 acres is land and 332,171 acres is large water areas consisting of lakes, bays and streams. The elevation ranges from sea level near the Gulf of Mexico to about 25 feet above mean sea level near the northern parish line. Most of the land in Vermilion Parish is marsh or agricultural with approximately 50 percent of the land being marshland and approximately 38 percent is used as cropland or pasture.

Vermilion Parish is known for its fresh seafood, bountiful agriculture, great access via road and waterways, and a rich history of cultural and eco tourism. This bilingual (English/French), coastal parish is large and diverse with wandering bayous and farmlands, authentic local cuisine, family-friendly festivals and Cajun towns connecting it all. Vermilion is centrally located in the southern part of Louisiana immediately adjacent to the Gulf of Mexico. This proximity to the Gulf makes the parish an ideal location for the numerous companies needed to serve this region's oil and gas industry. Vermilion Parish is home to the Henry Hub, which is a distribution hub on the natural gas pipeline system and is of national significance as the pricing point of natural gas futures contracts on the New York Mercantile Exchange (NYMEX).

Figure 2-Terraces at Belle Isle Lake (Audubon-Rainey)

The parish is the largest geography of the growing and prosperous Lafayette Metropolitan Statistical Area. The welcoming people, gorgeous sunsets and variety of home-grown businesses lend to the

Figure 3-Deep Lake Tall Terrace Restoration Project (2019)

parish's tradition and charm while the opportunity to grow exists with acres of property available for development in each of Vermilion's communities.

Vermilion Parish has the natural resources to support a large agricultural economy. A 2022 LSU Agriculture summary estimate provided the following agricultural numbers:

Crop	Number of Producers	Harvested Acres	Total Production	Unit of Measure	Gross Farm Value
Rice	47	55,030	3,521,920	hundred weight (cwt)	$56,280,282
Sugar Cane-Sugar	41	45,478	344,700,501	pounds	$74,455,308
Sugar Cane-Molasses			9,303,467	gallons	$4,930,837
Soybeans	14	7,560	301,000	bushels	$4,210,990
Hay	112	14,500	72,500	tons	$11,316,525
Home Gardens					$4,684,537
Other Crops					$720,735
Total Agriculture Gross Farm Value					**$156,599,214**

Figure 4-Accretion at Cheniere au Tigre Oyster Reefs

With regard to wildlife and fisheries, the same estimates in 2022 were as follows:

Wildlife & Fisheries	Number of Producers	Acres in Production	Total Production	Unit of Measure	Gross Farm Value
Crawfish	325	52,500	23,625,000	pounds	$36,618,750
Alligators (Farm)			44,221	number	$8,518,733
Alligators (Wild)			1,303	number	$310,505
Shrimp	127		7,623,922	pounds	$13,438,687
Crabs	76		1,436,721	pounds	$2,713,247
Commercial Finfish*	53		286,843,548	pounds	$34,794,122
Hunting Leases	350	350,000			$9,940,000
Other					$529,229
Total Wildlife & Fisheries Gross Farm Value					**$106,863,273**

* Includes Menhaden

Livestock estimates for 2022 are:

Livestock	Number of Producers	Units of Production	Units of Measure	Gross Farm Value
Cattle	590	30,200	# of cows	$23,407,298
Horses	1,509	5954	# of horses	$20,121,000
Other Livestock				$312,400
Total Livestock Gross Farm Value				**$43,840,698**

The Vermilion Parish marshes and coastal estuaries are vital to the production of the fisheries mentioned above and it is imperative that the parish protect these areas in order to sustain this critical portion of the parish's economy that generates over $300,000,000 in value through agriculture, wildlife and fisheries and livestock.

Vermilion Parish is also home to the rarest species of Louisiana iris, the Abbeville Red, Iris nelsonii. As Louisiana's only endemic plant it is restricted to a bald Cypress-Tupello Gum Swamp south of Abbeville. This extremely rare imperiled species of iris is another important reason to protect the coastal region of Vermilion Parish.

Figure 5-Freshwater Bayou Bank Stabilization (TV-11(EB)) (2014)

Vermilion Parish is home to a rich diversity of people, communities and cultural traditions with a deep connection to the land and water. Vermilion Parish's population, according to the 2020 Census, is 57,359. Maintaining a healthy and productive coast is of critical importance to the diverse and productive residents of Vermilion Parish as well as the many visitors to the parish.

Figure 6-Marsh Creation Fill Area West of Freshwater Bayou (ME-25) (2014)

In order to help protect and enhance coastal Vermilion Parish, parish leaders continue to cooperate with federal partners, state agencies, municipalities, drainage districts, levee districts, freshwater districts and businesses and individuals to form coalitions that help to identify, prioritize and eventually fund projects. Vermilion Parish actively partners with the state of Louisiana on many

projects through the Coastal Protection and Restoration Authority (CPRA). The recent release of the 2023 Louisiana's Comprehensive Master Plan for a Sustainable Coast by CPRA contains projects in the various stages of development throughout the state, including Vermilion Parish.

Figure 7-Aerial View Showing Oyster Reefs at Cheniere au Tigre (CIAP & GOMESA) (2023)

Another partner in Vermilion Parish's coastal efforts is the Rainey Conservation Alliance (RCA). The RCA is a collection of private landowners that share a vision of having sustainable coastal habitats that protects the economic, cultural, fisheries, and wildlife resources of the landscape. Collectively, the E. A. McIlhenny Enterprises LLC, Avery Island, Inc., McIlhenny Resources,

Figure 8 - Sheet Pile Cutoff Wall for Breaches in the North Shore of Vermilion Bay (2019)

Vermilion Corporation, Sagrera Family Estate, and National Audubon Society work together, disregarding property boundaries, to restore the ecological functions across 187,000 acres of coastal habitats. For more information about the RCA, refer to the Rainey Conservation Alliance Comprehensive Management Plan dated September, 2022.

This Vermilion Parish Coastal Master Plan discusses some of the issues facing the parish, details the projects completed to date and includes projects proposed for implementation.

Figure 9-Terraces in Christian Marsh prior to Vegetative Plantings (2012)

Chapter 2-Environmental Issues

In the recent past, Vermilion Parish has experienced many changes to the landscape and environment of the parish due to both natural and human-made impacts. Hurricanes, erosion, subsidence, sea level rise, oil and gas production, flood protection levee systems and wild hogs have all contributed in various degrees to the land loss issues (which contribute to a decline in the agricultural industry and population) and increased flooding risks which ultimately reduce the protection to inland parts of Vermilion, Lafayette, Iberia and Acadia parishes. Vermilion Parish has historically functioned as a gravity drainage area. Subsidence, sea level rise and increases to the tidal amplitude have all contributed to changes to the downstream portions of many drainage channels throughout the parish. Water is being pushed further and further upstream with higher tides and southern winds in all of the parish's gravity drainage channels resulting in reduced gradients which have a negative impact on drainage of all areas upstream of the coast. Many areas in Vermilion, Acadia, Iberia and Lafayette parishes are seeing water take longer and longer to drain as a result of the higher water surface elevations along the coastline. This ongoing issue has resulted in some areas converting from gravity drainage to pump-off systems.

Chapter 3-Vermilion Parish Projects

Completed and In Progress Projects

Vermilion Parish has been active in coastal restoration for many years and there have been numerous projects constructed. A Project Inventory Map of Completed Projects as well as projects in progress has been developed along with a list of the completed and in progress projects in Vermilion Parish. This Map and list are included in this chapter. This project inventory map also shows planting projects that have been completed by both the Vermilion Soil and Water Conservation District and SeaGrant volunteers. This project inventory map demonstrates the number of projects and the different types of projects that have been constructed in coastal Vermilion Parish to attempt to protect and enhance the parish coastal resources.

Figure 10-Terraces at Christian Marsh after Vegetative Plantings (2 013)

Parish Priority Projects

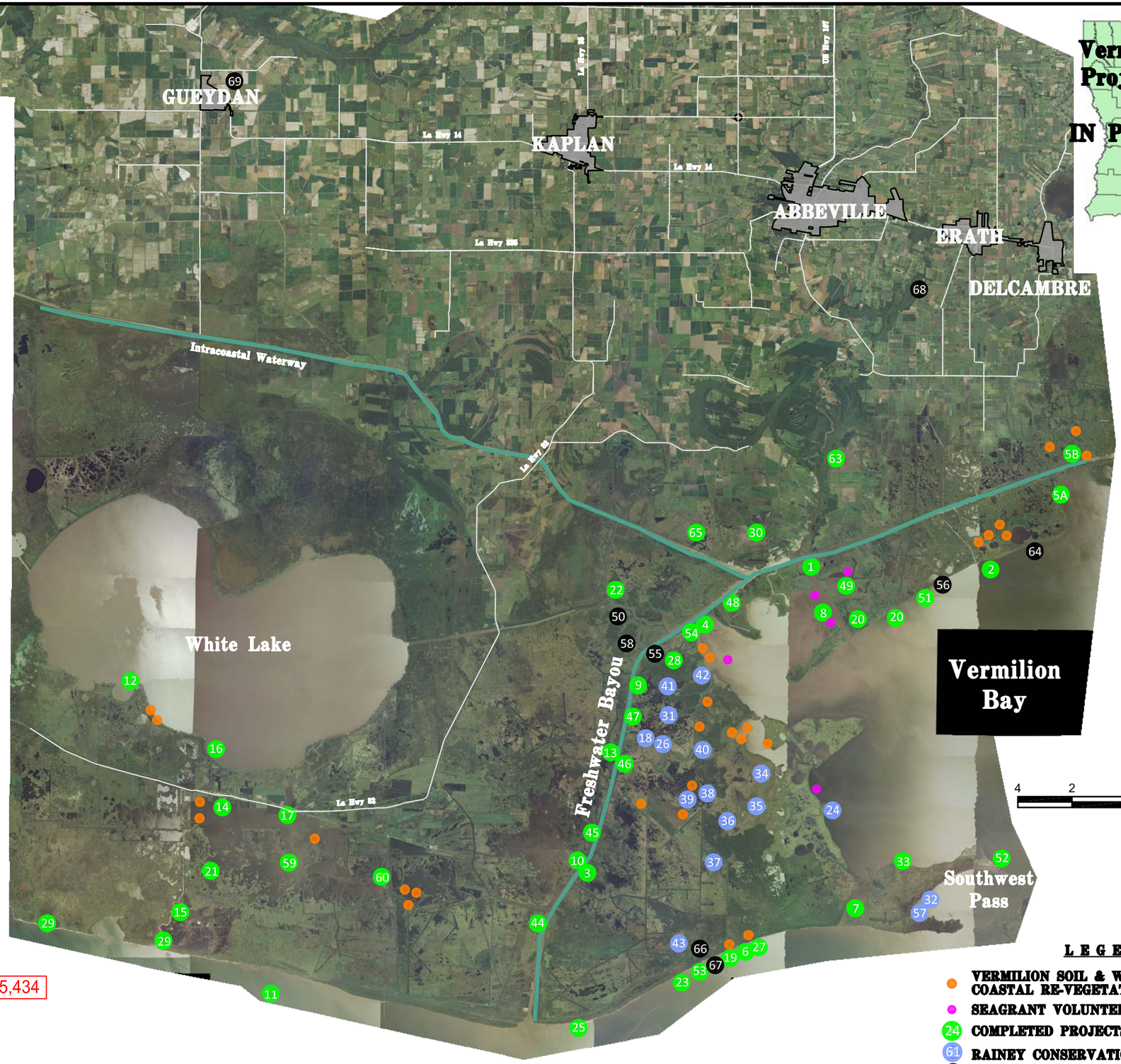
The Vermilion Parish Coastal Committee has developed a list of priority projects that are considered vital to the protection of the Parish's coastal assets that it would like to see funded in the near future. These projects are shown on the Project Inventory Map of Parish Priority Projects that is also included in this Chapter. It should be noted that the priority list is not listed in order of priority. The requirements of any future funding source will dictate which projects will be requesting funding first. Fact sheets have been developed for these projects and are included in Appendix A.

As noted in the priority project list, the parish has continued to focus on restoration and protective efforts on projects in the past. One of the key focuses for the parish moving forward is the Storm Risk Reduction System planning and implementation. For many years, there have been discussions about the construction of a levee system with flood control structures constructed in the drainage

VERMILION PARISH COASTAL PROJECTS Completed & In Progress

MAP #	PROJECT ID	NAME/DESCRIPTION	PROJECT TYPE	YEAR	COST
1	TV 03	**Vermilion River**/4 Mile Canal Cut	Bankline Protection	1996	$ 2,047,479
2	TV 09 PTV 18	**Boston Canal/Vermilion Bay**	Bankline Stabiliztion/Vegetative Planting	1995	$ 1,043,748
3	TV11-B-EB	**Fresh Water Bayou**	Shoreline Protection-*7 miles of rock in 4 critical areas*	2014	$ 13,568,804
4	TV 12 PTU 19	**Little Vermilion Bay**	Sediment Trapping	1999	$ 886,030
5A	TV 13-B	**Oaks/Avery**	Structures-low sill	2000	$ 3,107,735
5B	XTU 25i TV 13A	**Oaks/Avery** Canal Phase 1	Shoreline Protection	2002	$ 3,430,000
	TV 13-A	**Oaks/Avery** Canal Phase 2	Shoreline Protection	2002	$ 2,828,601
6	TV 16	**Cheniere au Tigre**	Shoreline Protection/Sediment Trapping-Demo *5 Breakwaters*	2001	$ 624,999
7	TV 17 PTV 20	**Lake Portage Landbridge**	Shoreline Protection	2004	$ 1,181,129
8	TV 18 XTV 30	**4 Mile Canal** - West Side	Terracing and Sediment Trapping	2004	$ 3,792,936
9	TV 11	**Fresh Water Bayou**	Bankline Stabilization North to Belle Isle *repair 1996 & 2001*	1994	$ 2,177,025
10	ME 4 XME 21	**Fresh Water Bayou**	Hydrologic Restoration, Shoreline Protection, Wetland Protection	1998	$ 9,890,000
11	ME8	**Dewitt/Rollover**	Vegetative Planting	1996	$ 92,012
12	LA 6	South **White Lake** Demo	Shoreline Protection Demo	2006	$ 1,055,000
13	ME 13	**Fresh Water Bayou**	Shoreline Protection/Bankline Stabilization	1998	$ 8,913,366
14	ME 14	South **Pecan Island** Terracing	Sediment and Nutrient Trapping-*Germain Tract*	2003	$ 2,485,502
15	ME 16	**Hwy. 82**	Fresh Water intro from White Lake along Hwy 82 across the Front Ridge	2006	$ 6,340,000
16	ME 22	South **White Lake**-Bear Lake to Will's Pt	Shoreline Protection	2006	$ 19,673,961
17	ME 1	**Pecan Island** - Morgan Property	Fresh Water Introduction	1992	$ 487,152
18		**Deep Lake**	Tall Terraces	2019	$ 451,541
19		**Cheniere au Tigre**	Cement Bags/Shoreline Protection	2005	$ 200,000
20		**4 Mile Canal** - East Side	Shoreline Protection	1990	$ 450,000
21		**Joe's Bayou**	Structure Repair	2016	$ 2,000,000
22	7570	**North Prong/Schooner Bayou**	Breach and Levee Repair	2010	$ 1,650,000
23		**Cheniere au Tigre**	2,500 ft Reef/Shoreline Protection	2013	$ 1,438,984
24		**Prein Weir** near Hog Bayou	Structure	2017	$ 926,768
25		**Tiger Point** Phase 1	Reef/Shoreline Protection	2014	$ 1,385,585
26		**Deep Lake**	Marsh Management	2021	$ 1,150,000
27	TV 64 CAT 1	**Cheniere au Tigre**	Shoreline Protection - 7 Breakwaters East of TV 16	2002-2005	$ 1,802,271
28	TV 63	**Coles Bayou** Marsh Creation	Hydrologic Restoration and Marsh Creation	2019	$ 26,631,225
29	ME 24	near **Rollover** Along Coast	Gulf Shoreline Protection		$ 11,954
30	DULA192-01	**Bayou Chein Restoration-Ph. 1**	Terracing	2023	$ 800,000
31		**Deep Lake** Phase 1	Structure/Breach Repair	2020	$ 1,150,000
32		**Tojan Island**	Shoreline Protection	before 2017	$ 450,000
33		**Indian Point-Hell Hole Area**	Shoreline Protection	before 2017	$ 200,000
34		**Tom's Bayou**	Rock weirs - Low water sill	2016	$ 911,812
35		**NMFS Lake**	Terracing	2005	
36		**Nick's Lake**	Terracing	2005	
37		**Audubon-Goose Pond**	Levee/structure repair	2010	
38		**Pierson's Pond**	Terracing	2005	$ 951,869
39		**Christian** Marsh on McIlhenny	Shoreline Protection/Terracing	2012	$ 1,501,000
40		**Belle Isle Lake**	Terracing	2005	
41		**North Canal Marsh Creation**	Small Dredge Demo	2016	$ 500,000
42		**Coles Bayou**	Terracing	2016	$ 300,000
43		**Cheniere au Tigre**	Hydrologic Restoration - *1/2 done*		$ 21,000
44	ME 25-SF	near **Fresh Water Bayou**	Marsh Creation south of Humble Canal	2015	$ 5,700,000
45	XME 29	**Fresh Water Bayou**	Bankline Stabilization	1993	$ 2,533,882
46	XME 21	**Fresh Water Bayou**	Wetland Restoration	1993	$ 2,923,123
47		**Fresh Water Bayou**	Bankline Protection	2015	$ 2,986,770
48	ME 76	**Fresh Water Bayou**	Marsh Creation & Bankline Protection	2016	$ 1,300,000
49		**Onion Lake**	Terracing	2004	
50	569-57-60	**Schooner Bayou** - *6 mile canal*	Saltwater Barrier Structures	1986	$ 1,200,000
51	8924	**N. Vermilion Bay** Breaches	Close 2 breaches	2019	$ 415,704
52	TV-0098	**SW Pass at SW Point**	Shoreline Protection	2023	$ 7,900,000
53	9156	**Cheniere au Tigre** Phase 2	Reef	2023	$ 2,895,300
54	TV-0082	**Surplus Freshwater Bayou**	Bankline Stabilization	2023	$ 3,600,000
55	TV-0079	**CPRA Restore Parish Matching Fresh Water Bayou**	Bankline Stabilization	2023	$ 4,391,000
56	TV-0077	**North Vermilion Bay**-Ph 1	Shoreline Protection	2024	$ 9,000,000
57		**Southwest Pass-Deadman's Islan**	Shoreline Protection	before 2017	$ 250,000
58	ME-0039	**Schooner Bayou - 6 mile canal**	Saltwater Barrier Structure Repairs	2024	$ 1,200,000
59		**Exxon Terracing**	Sediment & Nutrient Trapping		
60		**DU Terracing**	Sediment & Nutrient Trapping		
61		**Deep Lake**	Tall Terraces	2019	$ 451,514
62		**Deep Lake**	Marsh Management	2021	$ 1,150,000
63		**Vermilion River Structure**	Flood Control Structure-Modeling	2023	$ 32,831
64	TV-0090	**North Vermilion Bay**-Ph 2	Shoreline Protection	2024	$ 1,250,000
65	NR207217	**Lower Vermilion Watershed Plan**	Watershed Plan	2024	
66	TV-0097	**Cheniere au Tigre Ridge Restor.**	Ridge Restoration	2024	$ 1,000,000
67	TV-0096	**Cheniere au Tigre Gap Closure**	Gulf Shoreline Protection	2024	$ 2,250,000
68	9065	**Youngs Coulee Structure**	Flood Control Structure	2024	$ 10,000,000
69	9602	**Gueydan Flood Protection**	Pump Station Improvements	2024	$ 1,170,700
●		**Vegetative Plantings**	Vermilion Soil & Water Conservation	1994 on	$ 448,022
●		**Vegetative Plantings**	SeaGrant	1994 on	$ 127,100

Total Cost of Completed & In Progress Projects - $192,685,434



4 2 0 4 8

Scale: 1" = 4 Miles

LEGEND

- VERMILION SOIL & WATER CONSERVATION DISTRICT COASTAL RE-VEGETATION PLANTINGS
- SEAGRANT VOLUNTEER PLANTINGS
- 24 COMPLETED PROJECTS
- 61 RAINEY CONSERVATION ALLIANCE PROJECTS
- 55 IN PROGRESS PROJECTS

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Vermilion Parish Coastal Project Inventory Map - PARISH PRIORITY PROJECTS

Map ID	Project Name	Project Type
●	Bay Coast Hydrologic/ Marsh Restoration & Belle Isle Lake Landbridge Stabilization	Hydrologic / Marsh Restoration
●	Bayou Hebert, Boston & Oaks Canals Hydrologic Restoration	Hydrologic Restoration
●	Cheniere au Tigre Bayou Dredging	Hydrologic/ Marsh Restoration
□	4 Mile Canal Restoration	Canal Restoration
□	Phase I-Bank Line Protection	Bankline Protection
□	Freshwater Bayou Bank Line Protection	Bankline Protection
□	North Vermilion Bay-Phase III	Shoreline Protection
▬	Vermilion Parish Storm Risk Reduction System	
◆	Phase I-Bayou Tigre Flood Protection Structure/Pump Station	Flood Protection
◆	Phase II-Vermilion River Flood Control Structure	Flood Protection
◆	Vermilion River at GIWW Gates	Restrict Tidal Flow

NOTE: PROJECTS ARE LISTED ALPHABETICALLY AND NOT BY PRIORITY. THE OBJECTIVES OF THE DIFFERENT FUNDING SOURCES WILL DETERMINE PROJECT PRIORITIES.

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2 1 0 2 4
Scale: 1" = 2 Miles

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channels in the southern portion of the parish. In 2008, Vermilion Parish produced a Hurricane Protection Plan which promoted flood control structures on Four Mile Canal, Boston Canal, the Oaks Canal and Bayou Tigre; the Hebert Canal Watershed/Storm Protection system; and the construction of a marsh/upland interface levee system. Shortly after developing this plan, Vermilion Parish reached out to Iberia Parish to discuss the concept of a levee system meeting at the parish line. Since that time, Iberia Parish has produced a Master Plan with a levee alignment across their parish with a proposed connection to a Vermilion Parish levee system in the vicinity of Bayou Tigre. Vermilion Parish has seen numerous levee alignments that have been proposed, ranging from the north bank of the Gulf Intracoastal Waterway (GIWW) to the vicinity of LA Highway 330. The planning and implementation of this Storm Risk Reduction System is an important part of this Master Plan.

Figure 11-Schooner Bayou Area Saltwater Barrier Structure

The parish is continuing to identify project needs and reach out to various funding agencies to attempt to move these much needed projects forward. Appendix C provides the location and description of projects that have been identified for future consideration/construction. Most of the projects contained in Appendix C have been developed and proposed for various funding consideration over the years. Although they have not been selected for funding, they are still viable projects and intended to address or protect many critical areas of concern and they should continue to be considered for future Parish priority project lists. Fact sheets for many of these projects have been developed. Project features and current conditions will require updating.

Chapter 4-2023 CPRA Master Plan Projects

Vermilion Parish is included in two (2) separate regions as defined in the Louisiana Coastal Protection & Restoration Authority (CPRA) Master Plan, the Chenier Plain (which encompasses the area west of Freshwater Bayou) and the Central Coast (which contains the area east of Freshwater Bayou). Freshwater Bayou also divides two (2) basins in Vermilion Parish, the Mermentau Basin (west of Freshwater Bayou) and the Teche Vermilion Basin (east of Freshwater Bayou). The CPRA project numbering system utilizes the first two (2) digits to designate the basin that the project is located in (ME for the Mermentau Basin and TV for the Teche Vermilion Basin) and the numerical digits for the sequential project number.

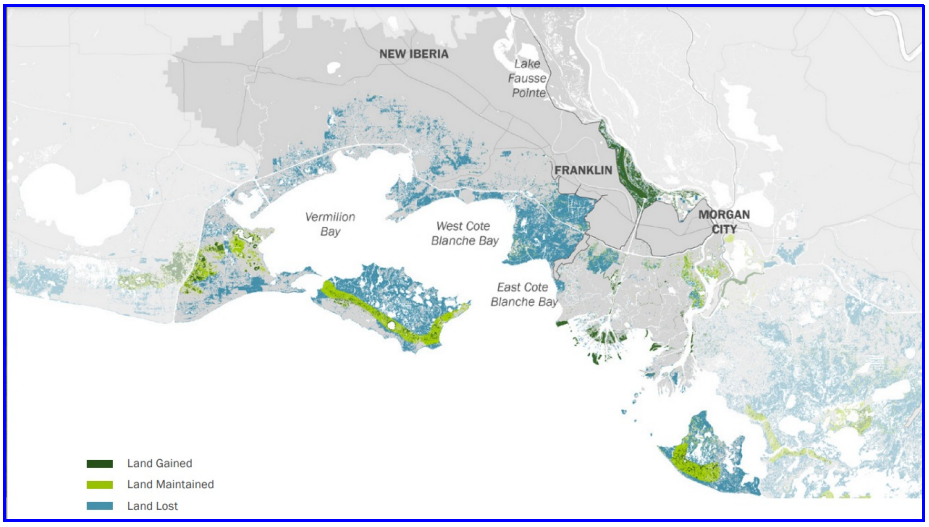

Figure 12-CPRA 2023 Master Plan-Central Coast, Land Change, Future Without Action, Lower Scenario, Year 50

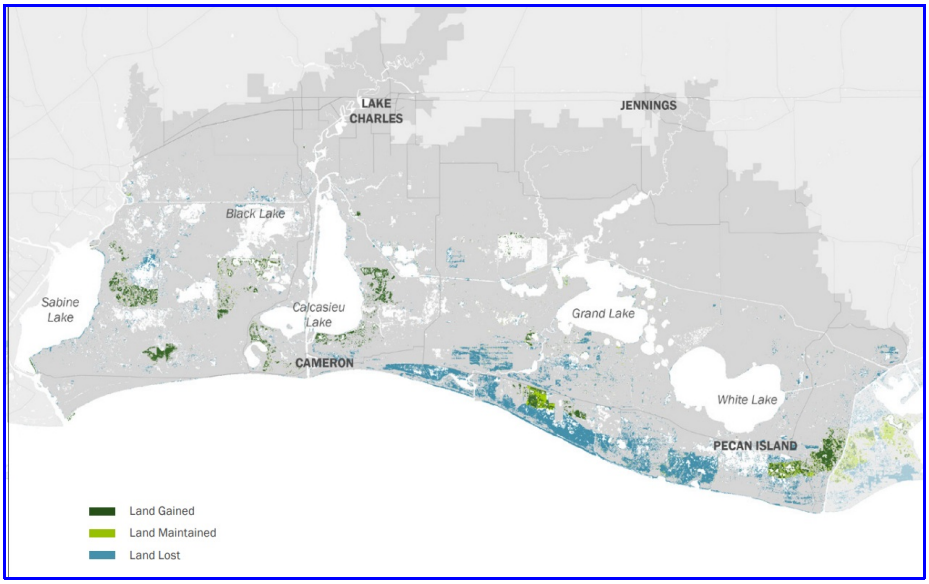

Figure 13-CPRA 2023 Master Plan-Chenier Plain, Land Change, Future Without Action, Lower Scenario, Year 50

The 2023 CPRA Master Plan shows what the future will look like without action and uses this baseline to predict changes to the landscape and storm surge-based risk and to select and prioritize projects that have the most impact. Figures 1 and 2, taken from the 2023 Master Plan, show the land change, without action in year 50 (2073) in both the Chenier Plain and the Central Coast.

The 2023 CPRA Master Plan includes seven (7) restoration projects and one (1) risk reduction project. The projects include:

East Rainey Marsh Creation
West Rainey Marsh Creation
East Pecan Island Marsh Creation
Cheniere au Tigre Ridge Restoration
Pecan Island Ridge Restoration
Freshwater Bayou North Marsh Creation
Mermentau Basin Hydrologic Restoration
Abbeville and Vicinity Risk Reduction

Refer to Appendix B for the project fact sheets for all eight (8) Vermilion Parish projects included in the 2023 CPRA Master Plan.

Figure 14-Restore Freshwater Bayou Shoreline Protection (TV-0079) (2023)

APPENDIX A

VERMILION PARISH PRIORITY PROJECT FACT SHEETS

VERMILION PARISH COASTAL MASTER PLAN
PRIORITY PROJECT FACT SHEETS

BAYOU HEBERT FRESHWATER INTRODUCTION

Marshes in this area are subject to losses from subsidence, a net sediment deficit, seasonal saltwater intrusion, shoreline erosion, altered hydrology from levees and increased connectivity with the Gulf Intracoastal Waterway (GIWW). The area is immediately adjacent to the GIWW where it is subjected to some of the heaviest boat traffic in the contiguous US. Boat traffic in the GIWW causes erosion within the identified area which results in a net export of material. Although much of the marsh in the area has been fairly stable, this location has been subject to losses due to the constant movement of water in and out of the project area as well as occasional high interior water levels.

The goals of the project will be to reconfigure the hydrology from a net sediment and nutrient export environment to a net import of material to facilitate the natural recovery of the marsh system along with reducing interior water levels.

A combination fixed crest weir with a boat bay and flap-gated culverts will be installed at a large opening to the GIWW to reduce the surge and withdrawal of water from barge traffic in the GIWW and overall volume transfer of water and export of material across the boundary separating the GIWW from the interior marsh. The one-way flap-gated culverts, which will be installed within the fixed-crest weir, will ensure a net positive flow of material into the marsh. Two sets of outlet culverts systems will be installed on the opposite ends of the marsh to pull this water through the system allowing for the trapping and deposition of material as it moves through the marsh. Interior channels will also be addressed by removing drains or plugs which prevent proper conveyance of water through the area as desired. Plugs which are assisting with the proper conveyance of water through the system will be installed or reinforced, if present.

DIRECTION OF FLOW

ENGINEER	T. VINCENT
DRAWN BY	J. FABRE
DATE	OCTOBER 2023
SCALE	1"=3,000'
PROJECT	9560-01
FILE NO.	9560-01factsheet

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BAYOU HEBERT
FRESHWATER INTRODUCTION

AERIAL PHOTOGRAPH OF PROJECT AREA

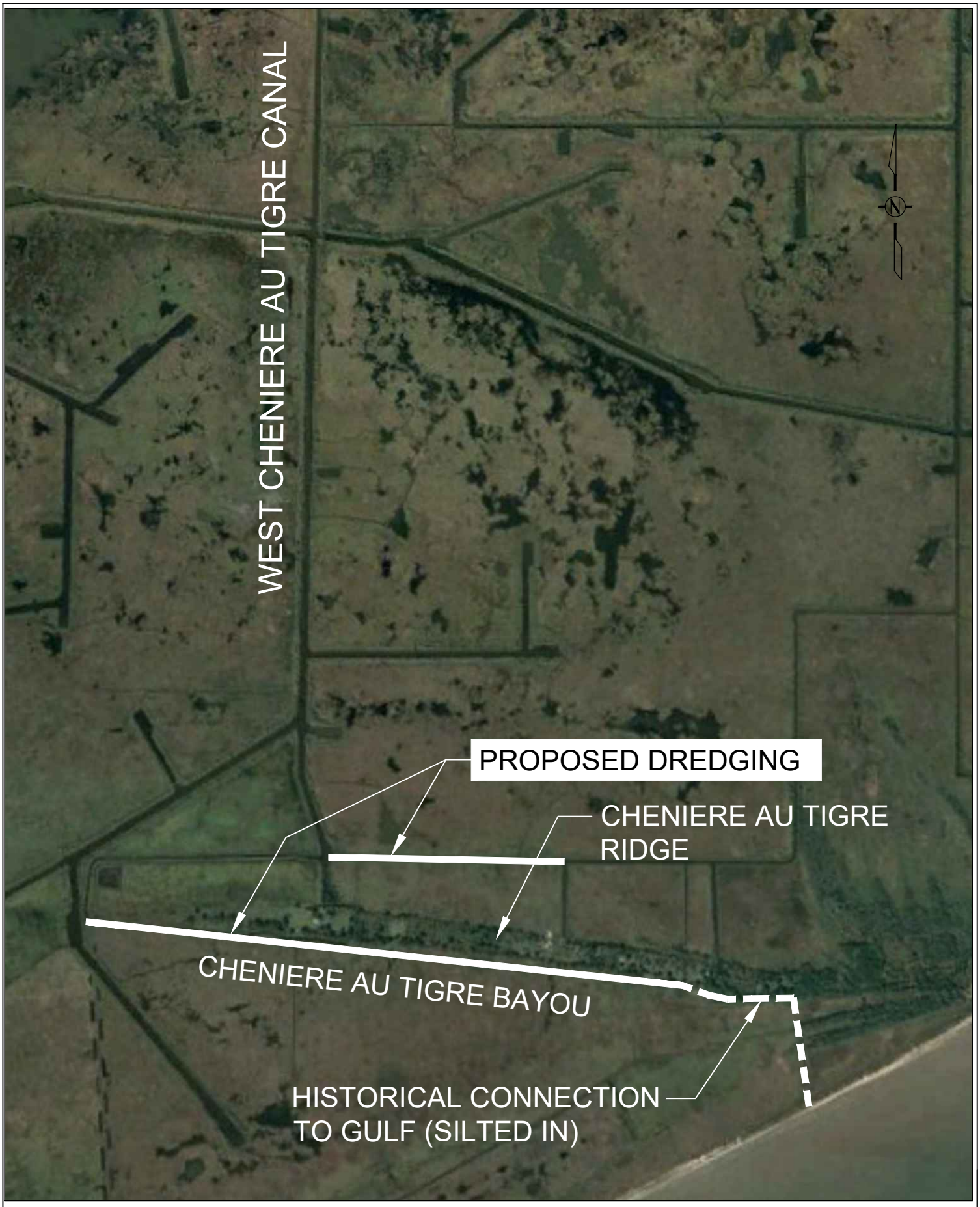
CLIENT	VERMILION PARISH POLICE JURY
PROJECT	VERMILION PARISH MASTER PLAN
LOCATION	VERMILION PARISH, LOUISIANA

SHEET NO. 1

VERMILION PARISH COASTAL MASTER PLAN
PRIORITY PROJECT FACT SHEETS

CHENIERE AU TIGRE BAYOU DREDGING

Historically, the bayou tide flowed in and out to the Gulf of Mexico. As a result of the Gulf outlet being completely silted in, the marsh south of the Cheniere Au Tigre ridge does not properly drain. The landowners (McIlhenny/Sagrera) connected the bayou to the west Cheniere Au Tigre Canal. This project proposes to maintenance dredge the bayou approximately 10,000 linear feet south of Cheniere Au Tigre to allow the marsh to drain properly and protect the integrity of the vegetation, wildlife and waterfowl while still maintaining storm protection for the Cheniere. Maintenance dredging of approximately 3,500’ on the north side of the Ridge will also be performed.



ENGINEER	T. VINCENT
DRAWN BY	J. FABRE
DATE	OCTOBER 2023
SCALE	1"=2,000'
PROJECT	9560-01
FILE NO.	9560-01factsheet

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CHENIERE AU TIGRE BAYOU
DREDGING

AERIAL PHOTOGRAPH OF PROJECT AREA

CLIENT	VERMILION PARISH POLICE JURY
PROJECT	VERMILION PARISH MASTER PLAN
LOCATION	VERMILION PARISH, LOUISIANA

SHEET NO. 1

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VERMILION PARISH COASTAL MASTER PLAN
PRIORITY PROJECT FACT SHEETS

BAY COAST HYDROLOGIC/MARSH RESTORATION AND BELLE ISLE LAKE LANDBRIDGE STABILIZATION

This project is located in Vermilion Parish, on the western flank of Vermilion Bay in the Bay Coast Water Management Unit (WMU).

A hurricane-damaged weir and a levee breach on the west side of the Bay Coast WMU created an east-west water exchange across the interior marsh to a degraded weir on the west side of the unit, with the severe cross-unit flow exacerbating interior intermediate marsh deterioration, resulting in a tripling of open water area since 2005. Additionally, terraces in Belle Isle Lake have been degraded and hurricane damaged over their 20-year existence leaving the low, narrow strip of land between Belle Isle Lake and Belle Isle Canal increasingly exposed to damaging storm energy. Should this landbridge fail, wave energy from the lake will put at risk the adjacent, unprotected shoreline and marshes of Deep Lake WMU.

The project goals are to:

1. Restore hydrologic balance within the interior marshes of the Bay Coast WMU by slowing cross marsh currents and moderating tidal/salinity ranges.
2. Protect the Vermilion Bay shoreline along the Bay Coast WMU to prevent breaching into adjacent location canals.
3. Protect the Belle Isle Lake landbridge from wave energy by rebuilding terraces and reinforcing the landbridge.
4. Increase the marsh health and integrity.

The proposed solution includes:

1. Replace or construct four water control structures to control tidal range/salinity within the Bay Coast WMU and stop cross unit flow between the levee breach on the west and the derelict weir on the east. Dredging for access to the weir on State Refuge provides an opportunity to create tall terraces for multiple benefits including shoreline protection and bird habitat.
2. Construct breakwaters along the Vermilion Bay shoreline.
3. Construct a breakwater on the canal side of the Belle Isle landbridge and rebuild terraces within Belle Isle Lake.
4. Dredge fill 48 acres of open water within the WMU to benefit 300 acres, increasing marsh integrity in the worst degraded areas

Total Estimated Project Cost:
$8 million

ENGINEER	T. VINCENT
DRAWN BY	J. FABRE
DATE	OCTOBER 2023
SCALE	1"=4,000'
PROJECT	9560-01
FILE NO.	9560-01factsheet

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BAY COAST HYDROLOGIC / MARSH RESTORATION AND BELLE ISLE LAKE LAND STABILIZATION

AERIAL PHOTOGRAPH OF PROJECT AREA

CLIENT	VERMILION PARISH POLICE JURY
PROJECT	VERMILION PARISH MASTER PLAN
LOCATION	VERMILION PARISH, LOUISIANA

SHEET NO. 1

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VERMILION PARISH COASTAL MASTER PLAN
PRIORITY PROJECT FACT SHEETS

VERMILION PARISH STORM RISK REDUCTION SYSTEM

PHASE I – BAYOU TIGRE FLOOD PROTECTION STRUCTURE/PUMP STATION

Vermilion Parish is located on the Louisiana Gulf Coast and is vulnerable to storm surge based flooding. The eastern side of the parish is more vulnerable to storm surges with low lying areas that have been experiencing tidal inundation. Hurricanes Rita and Ike demonstrated the vulnerability of these communities (Delcambre and Erath) and the surrounding areas to storm surge based flooding. The Louisiana Coastal Protection and Restoration Authority's (LA CPRA) 2023 Coastal Master Plan documents that Hurricane Rita produced a 15' storm surge, with much of the southern portions of Vermilion, Iberia and St. Mary Parishes being inundated, damaging tens of thousands of acres of coastal wetlands and several coastal communities. Vermilion Parish has enacted flood mitigation efforts since those flood events, primarily involving structure elevations. While these measures improve the resiliency of the individual homes and businesses, protection from storm surge is needed to increase the regional resilience and reduce damages to infrastructure, economic, and ecological investments in the area. To improve the resilience of Vermilion Parish, a levee with flood gates is proposed to be constructed along or near the marsh/upland interface of Vermilion Parish.

This project has been proposed in several studies and plans, including the Southwest Coastal Study, which was prepared in 2016 by the United States Army Corps of Engineers (USACE) in conjunction with the LA CPRA, as well as in the Louisiana 2023 Coastal Master Plan prepared by LA CPRA. This levee and flood gate system has been presented and recommended by local stakeholders but has yet to receive funding for any substantial planning effort. Preliminary alignments have been proposed in both aforementioned studies, which were conducted on the federal and state levels. Several other alignments have been proposed on the local level by stakeholders.

The Southwest Coastal Study proposed an alignment that included an earthen levee south of LA Highway 330 running in an east/west direction and when it got to the Vermilion/Iberia parish line, the protection system continued north through the Town of Delcambre to near Lake Peigneur with a concrete t-wall that increased the project cost tremendously. At the time, there were no plans for a flood protection system in Iberia Parish and that was the reason that the Vermilion system was continued to Lake Peigneur. Iberia Parish now has a plan to construct a levee system and this will allow the Vermilion system to connect to the Iberia system at the parish line, very near the Delcambre Canal/Bayou Carlin south of Delcambre. The Iberia Parish levee system is also included in the 2023 Coastal Master Plan. Iberia Parish has implemented some of its Plan's initial phases, including the construction of several flood control structures in coastal Iberia Parish. This

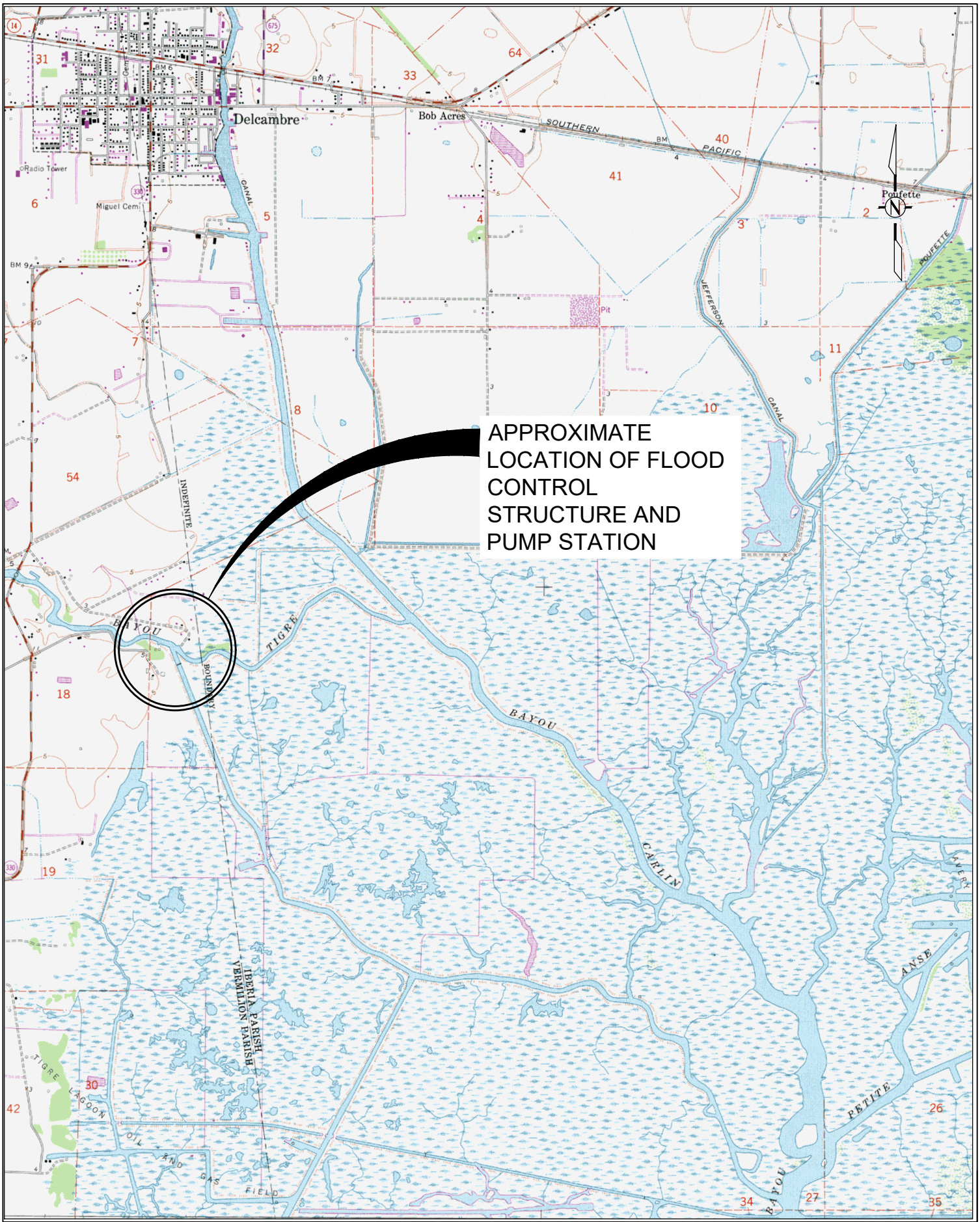
interconnectivity with Iberia Parish will make the Vermilion system more cost effective and provide seamless protection in both parishes.

The Vermilion Parish Police Jury, through the University of Louisiana at Lafayette's Department of Civil Engineering & Louisiana Watershed Flood Center, performed an assessment of installing a flood control structure with a pump system in the Vermilion River south of Abbeville. The Vermilion Parish Levee System would connect to this flood control structure and this structure would be included in the Vermilion Parish levee system project. The assessment included predictive hydrologic and hydraulic modeling to determine if a flood control structure could lower flood elevations during a storm event. The models simulated the storm surge from Hurricanes Barry and Laura in the Vermilion River. The assessment's conclusion summarizes that a floodcontrol structure in the Vermilion River has the potential to reduce water surface elevations during tropical storm events. The water surface elevations were reduced for the simulated storm surge and rainfall data produced by Hurricanes Barry and Laura. Specifically for Hurricane Laura which generated a larger storm surge than Hurricane Barry, the water surface elevation was reduced 3.67' and 0.73' at Palmetto Island (Vermilion Parish) and Surrey Street (Lafayette Parish), respectively.

The LA CPRA 2023 Coastal Master Plan evaluates the Expected Annual Damage in Dollars (EADD) and the Expected Annual Structure Damage (EASD) as metrics for risk reduction. The plan estimates that the "lower" scenario EADD losses avoided for years 20 and 50 are $63,000,000 and $130,000,000 respectively, with 73 and 150 structure losses avoided. The "higher" scenario EADD losses avoided for years 20 and 50 are $74,000,000 and $190,000,000 respectively, with 86 and 220 structure losses avoided. The figures below indicate the projected "lower" scenario flood depths for the with and without action scenarios, based on the predictive modeling performed by CPRA.

The first phase of the Storm Risk Reduction System is the construction of a flood control structure with a pump station located in Bayou Tigre, south of Delcambre. The design phase of this project was initiated by CPRA in 2014 but was cancelled in 2016 as a result of there not being a path forward to construct a levee in either Vermilion or Iberia Parishes to tie the structure into. This project would provide for the planning of an initial levee alignment through western and central Vermilion Parish as well as for the design and construction of the flood control structure and pump station on Bayou Tigre.

Total estimated project cost is $15-$20 million.



ENGINEER	T. VINCENT
DRAWN BY	J. FABRE
DATE	OCTOBER 2023
SCALE	1"=3,000'
PROJECT	9560-01
FILE NO.	9560-01factsheet

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BAYOU TIGRE FLOOD CONTROL STRUCTURE AND PUMP STATION

PROJECT LOCATION MAP

CLIENT	VERMILION PARISH POLICE JURY
PROJECT	VERMILION PARISH MASTER PLAN
LOCATION	VERMILION PARISH, LOUISIANA

SHEET NO. 1

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VERMILION PARISH COASTAL MASTER PLAN
PRIORITY PROJECT FACT SHEETS

4 MILE CANAL BANK LINE PROTECTION

4 Mile Canal, also referred to as the Vermilion River Cutoff, serves as a connection between the Vermilion River and Vermilion Bay, which ultimately discharges into the Gulf of Mexico. This channel is a vital connection to provide conveyance for the Vermilion River drainage basin. The banks of 4 Mile Canal have continued to erode as a result of boat wake-induced forces as well as wind-induced waves. The historical shoreline erosion rate has been documented (re: TV-03) to be on the order of 23 feet per year between 1955 and 1985. These incredible erosion rates continue to threaten the banks of the channel. One (1) section of shoreline on the east bank of 4 Mile Canal (adjacent to Onion Lake) was protected with a rock dike along the existing bankline in the 1990s by TV-03. The remainder of the banks of 4 Mile Canal have continued to erode with current channel widths in excess of 1,300 feet wide.

This project proposed to protect both banks of 4 Mile Canal with rock dikes as well as constructing a low water sill near Onion Bayou near the old reefs that were located in this area. Approximately 20,000 linear feet of rock dike is planned for the west bank of the Canal and approximately 13,000 linear feet of rock dike is planned for the east bank, for a total footage of 33,000 linear feet of rock dike.

Total estimated project cost is $20,000,000.

ENGINEER	T. VINCENT
DRAWN BY	J. FABRE
DATE	OCTOBER 2023
SCALE	1"=3,000'
PROJECT	9560-01
FILE NO.	9560-01factsheet

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4 MILE CANAL
RESTORATION

AERIAL PHOTOGRAPH OF PROJECT AREA

CLIENT	VERMILION PARISH POLICE JURY
PROJECT	VERMILION PARISH MASTER PLAN
LOCATION	VERMILION PARISH, LOUISIANA

SHEET NO. 1

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VERMILION PARISH COASTAL MASTER PLAN
PRIORITY PROJECT FACT SHEETS

FRESHWATER BAYOU BANK LINE PROTECTION

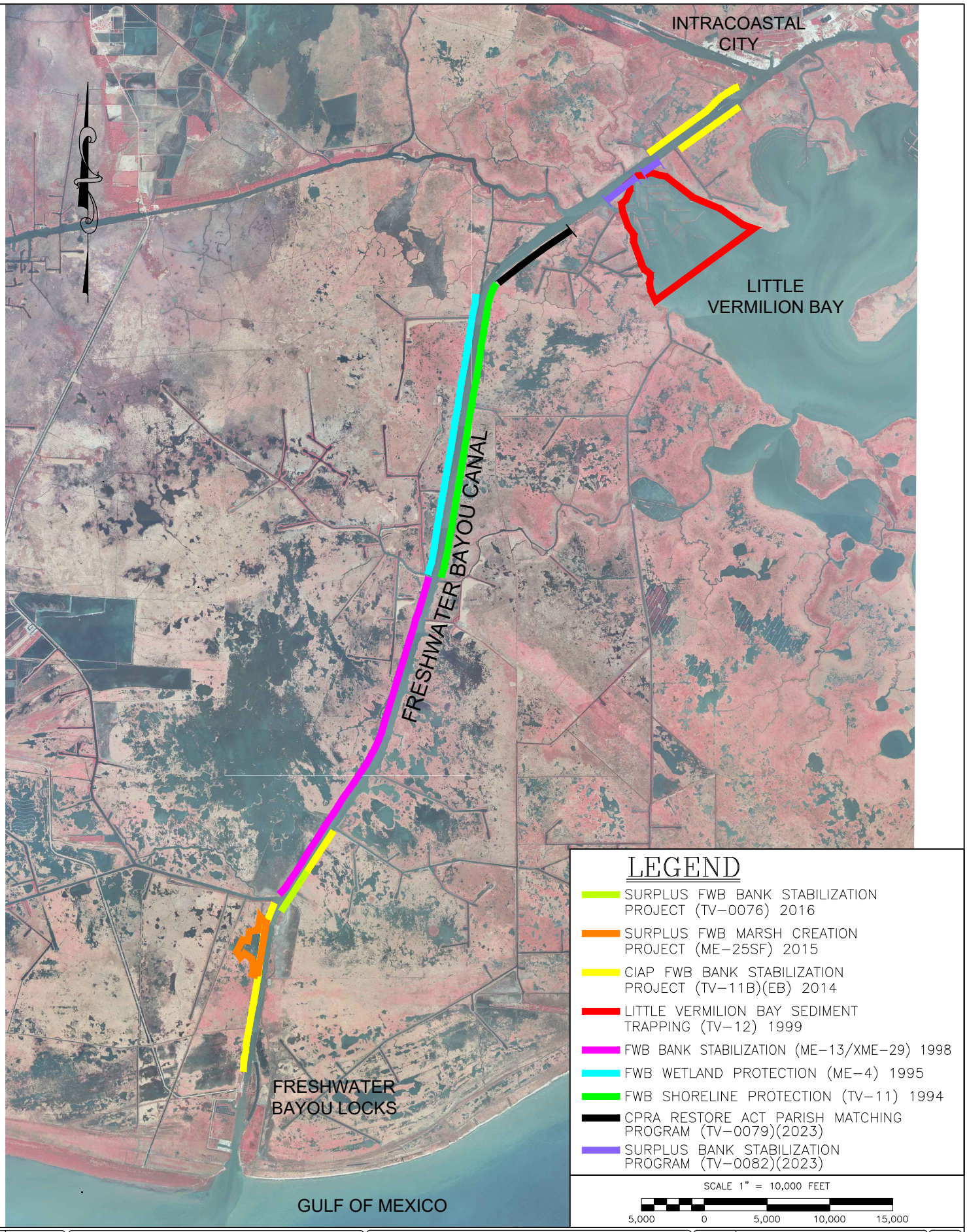
The banks of Freshwater Bayou have been subjected to vessel induced wave erosion since it was originally excavated. The bankline in Freshwater Bayou has retreated at an average of approximately 6.3-feet per year over the last 60 years. This retreat rate continues to threaten the marshes adjacent to the channel as the channel width continues to increase over time, with current widths in unprotected areas exceeding 1,200 feet.

Over time, Vermilion Parish and other stakeholders have managed to construct rock dikes along the banks of Freshwater Bayou to prevent further erosion of the channel bankline. As shown on the attached project inventory map, seven (7) different projects have accounted for protection of a substantial portion of Freshwater Bayou. After construction of TV-0082, which is planned for late 2023, there will still be over 60,000 linear feet of unprotected channel bankline.

This project proposes to continue the efforts to fully protect the banks of Freshwater Bayou to protect the fragile interior wetlands adjacent to the channel that provide vital fish and wildlife habitat.

In spite of the substantial progress made over the years protecting the bankline, there still remains over 60,000 linear feet of bankline to be protected. This project proposes to complete the rock dike construction along the banks of Freshwater Bayou to prevent further deterioration of the banks of the channel.

Total project estimated cost is $32,000,000.



LEGEND

- SURPLUS FWB BANK STABILIZATION PROJECT (TV-0076) 2016
- SURPLUS FWB MARSH CREATION PROJECT (ME-25SF) 2015
- CIAP FWB BANK STABILIZATION PROJECT (TV-11B)(EB) 2014
- LITTLE VERMILION BAY SEDIMENT TRAPPING (TV-12) 1999
- FWB BANK STABILIZATION (ME-13/XME-29) 1998
- FWB WETLAND PROTECTION (ME-4) 1995
- FWB SHORELINE PROTECTION (TV-11) 1994
- CPRA RESTORE ACT PARISH MATCHING PROGRAM (TV-0079)(2023)
- SURPLUS BANK STABILIZATION PROGRAM (TV-0082)(2023)

SCALE 1" = 10,000 FEET

5,000 0 5,000 10,000 15,000

ENGINEER	T. VINCENT
DRAWN BY	J. FABRE
DATE	OCTOBER 2023
SCALE	AS SHOWN
PROJECT FILE NO.	9560-01 PROJECT INV.

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FRESHWATER BAYOU CANAL
VERMILION PARISH, LOUISIANA

PROJECT INVENTORY

CLIENT	VERMILION PARISH POLICE JURY
PROJECT	VERMILION PARISH MASTER PLAN
LOCATION	VERMILION PARISH, LOUISIANA

SHEET NO. 1

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VERMILION PARISH COASTAL MASTER PLAN
PRIORITY PROJECT FACT SHEETS

NORTH VERMILION BAY SHORELINE PROTECTION-PHASE III

The project is located in Vermilion Parish, Louisiana on the north bank of Vermilion Bay, commencing at Champlain Point and extending northeasterly to the Vermilion/Iberia Parish Line, which is at the mouth of Bayou Petite Anse.

Problem

The shoreline of Vermilion Bay is critical to the protection of interior marshes located around the perimeter of the Bay in Iberia and Vermilion Parishes which serves as an initial defense for inland communities from storm surge. Of particular importance is the north shoreline, which protects the fragile marshlands located between Vermilion Bay and the Gulf Intracoastal Waterway.

Shoreline erosion has created a significant loss of land along the north shore of Vermilion Bay. Shoreline retreat rates of the north shore of Vermilion Bay have been documented to be between 3.3 and 6.3 feet per year, with an average rate of 4 feet per year within the project area.

Restoration Strategy

The objective of this project is to prevent further wetland loss through the reduction of bank erosion, subsequent scour, and further degradation of shoreline marshes.

Approximately 46,500 linear feet is currently included in Phases I and II. Phase III proposes an additional 16,000 linear feet of shoreline protection to prevent further wetland loss. The type of shoreline protection will be evaluated and determined during the design process. Rock dikes, oyster rings and other shoreline protection measures will be considered during the project design phase.

Project Cost

The Total Estimated Project Budget (Engineering and Construction) is $10,000,000.

ENGINEER	T. VINCENT
DRAWN BY	J. FABRE
DATE	OCTOBER 2023
SCALE	1"=3,000'
PROJECT	9560-01
FILE NO.	9560-01factsheet

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NORTH VERMILION BAY
SHORELINE PROTECTION PHASE 3

AERIAL PHOTOGRAPH OF PROJECT AREA

CLIENT	VERMILION PARISH POLICE JURY
PROJECT	VERMILION PARISH MASTER PLAN
LOCATION	VERMILION PARISH, LOUISIANA

SHEET NO. 1

VERMILION PARISH COASTAL MASTER PLAN
PRIORITY PROJECT FACT SHEETS

VERMILION RIVER AT GIWW GATE STRUCTURE

The Vermilion River discharges into the Gulf Intracoastal Water Way (GIWW) and then into 4 Mile Canal. Vessel and wind induced erosion has eroded the banks of the Vermilion River at this location resulting in an opening width in excess of 1,000 feet. This wide opening width allows the southern winds and normal tidal exchange to raise the water surface of the Vermilion River.

This project proposes to construct a structure on the west bank of the Vermilion River, near the Intracoastal Canal, which will reduce the channel width of the Vermilion River at this location. Openings in the structure with flap gates will prevent flow from the south but will allow for discharge of upstream drainage when needed.

ENGINEER	T. VINCENT
DRAWN BY	J. FABRE
DATE	OCTOBER 2023
SCALE	1"=3,000'
PROJECT	9560-01
FILE NO.	9560-01factsheet

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VERMILION RIVER AT GIWW GATES

AERIAL PHOTOGRAPH OF PROJECT AREA

CLIENT	VERMILION PARISH POLICE JURY
PROJECT	VERMILION PARISH MASTER PLAN
LOCATION	VERMILION PARISH, LOUISIANA

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APPENDIX B

CPRA 2023 MASTER PLAN
PROJECT FACT SHEETS

VERMILION PARISH

Parish Location

About the Parish

Vermilion Parish is located in south central Louisiana and includes the communities of Abbeville (parish seat), Delcambre, Erath, Gueydan, Kaplan, and Maurice. The parish is known for its fresh seafood, bountiful agriculture, and a rich history of cultural and eco-tourism. Vermilion Parish is immediately adjacent to the Gulf of Mexico, making it ideal for the numerous companies needed to serve the region's oil and gas industry.

~46K
Population

43%
Low to Moderate Income Percentage of Population

This parish includes:

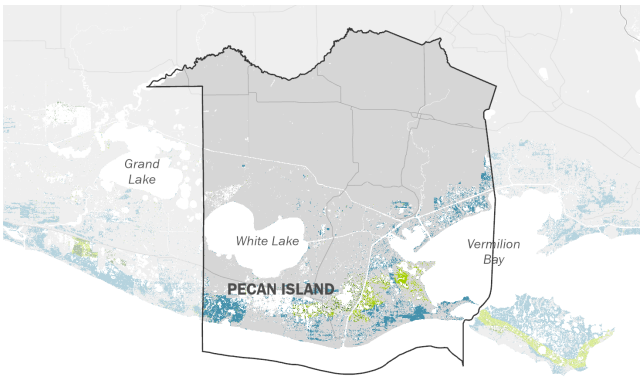
Agricultural Communities

Traditional Fishing Communities

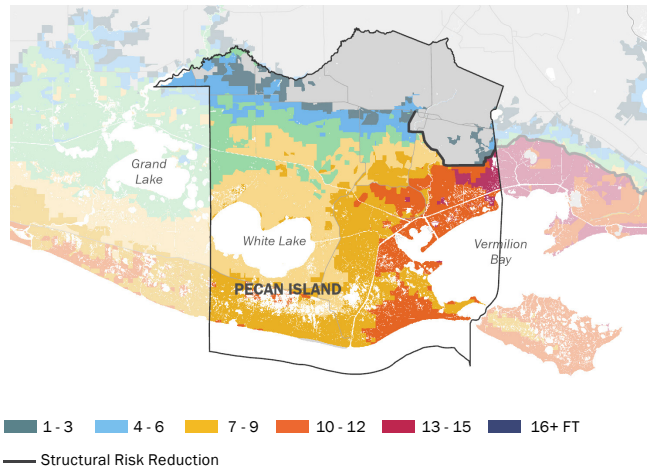
Oil and Gas Communities

Challenges for the Parish

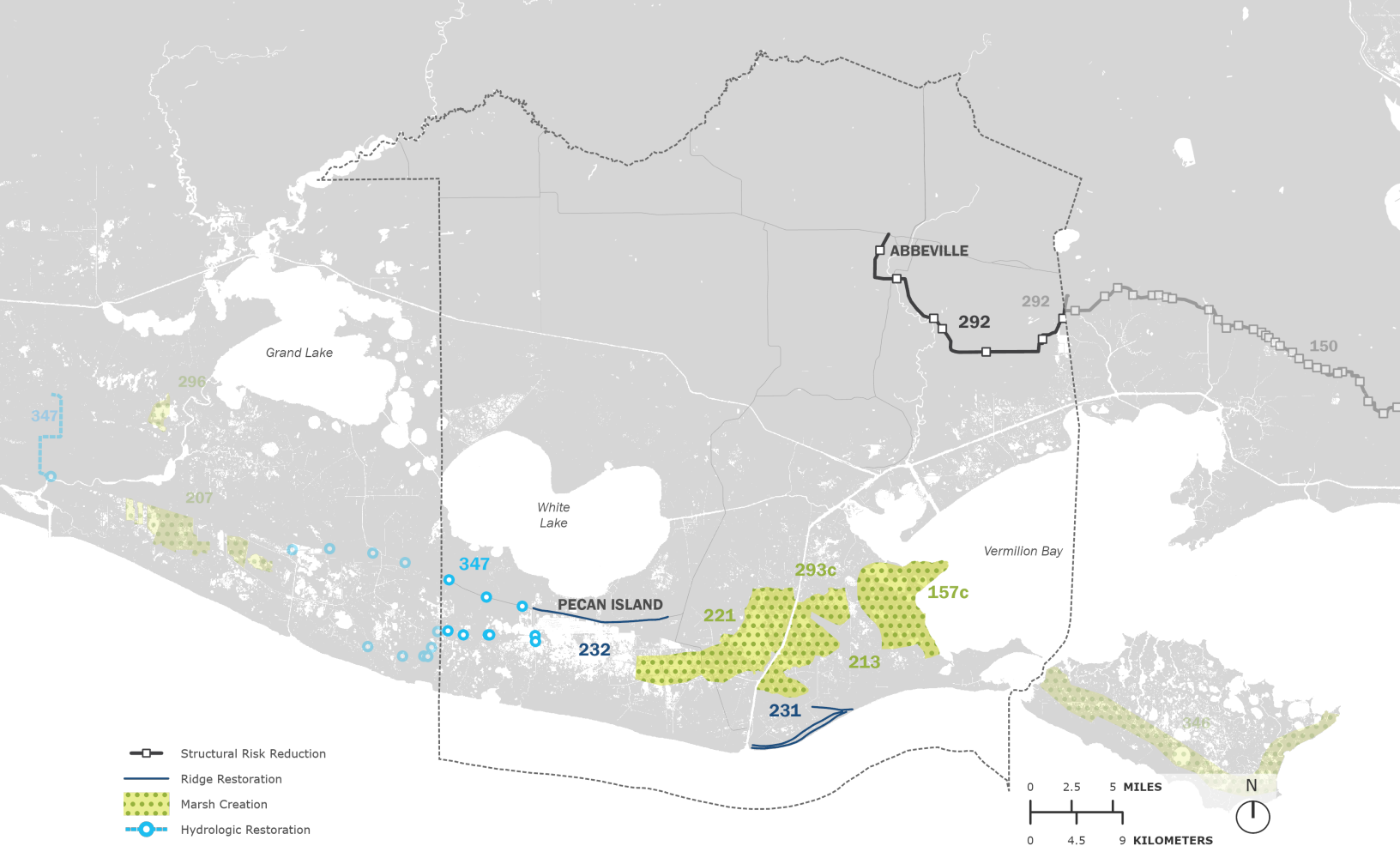
Vermilion Parish faces increased wetland loss over the next 50 years under the lower environmental scenario. In addition, with no further action, the southern portion of the parish faces significantly increased future storm surge-based flood risk where 100-year flood depths increase to 16 feet and above in the areas around Pecan Island and Intercoastal City over the next 50 years (under the lower environmental scenario). Additionally, flood risk increases further inland as storm surge encroaches on communities such as Abbeville and Kaplan.



Map: Land Change, Future With Action, Lower Scenario, Year 50



Map: Flood Depths, Future With Action, 1% Annual Exceedance Probability, Lower Scenario, Year 50



A Future With Action

The 2023 Coastal Master Plan features projects that will benefit the residents and communities of Vermilion Parish. With changing climate and environmental conditions, storm surge based-flooding and land loss will continue to impact this parish. Hydrologic restoration projects (347) will benefit the parish and region.

Structural risk reduction such as Abbeville and Vicinity (292) can reduce storm surge-based flood risk. For more information on the impact of the master plan in Vermilion Parish, visit the Master Plan Data Viewer via the CPRA website. (https://coastal.la.gov/our-plan/2023-coastal-master-plan/)

Restoration Projects:

157c	East Rainey Marsh Creation
213	West Rainey Marsh Creation
221	East Pecan Island Marsh Creation
231	Cheniere au Tigre Ridge Restoration
232	Pecan Island Ridge Restoration
293c	Freshwater Bayou North Marsh Creation
347	Mermentau Basin Hydrologic Restoration

Risk Reduction Projects:

292	Abbeville and Vicinity

Year 1 - 20

Year 21 - 50

EAST RAINEY MARSH CREATION

PROJECT ID: 157C / IMPLEMENTATION PERIOD 1

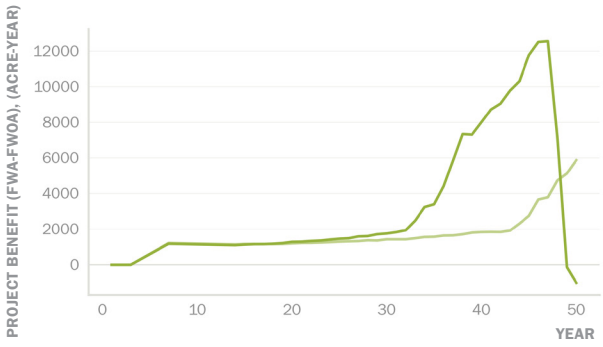
Project Location

Vermilion Parish

Description

Creation of marsh in the northern portion of marsh in the eastern portion of Rainey Marsh to create new wetland habitat, restore degraded marsh, and reduce wave erosion.

Project Benefits



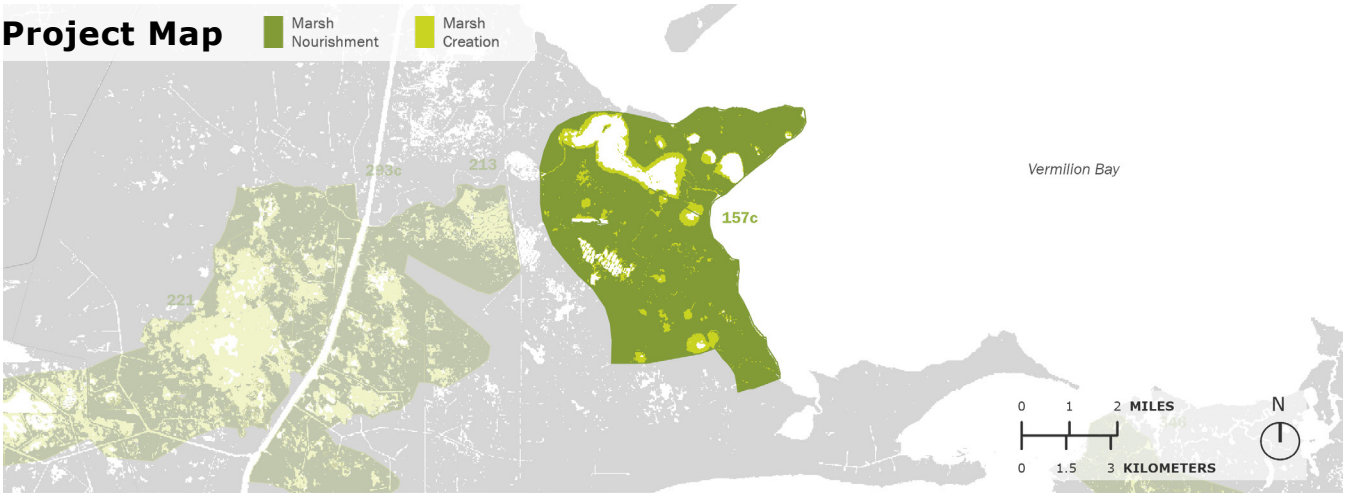
PROJECT BENEFITS TABLE

	Lower Scenario	Higher Scenario	Average
Max. Annual Benefit (Acre)	5.9K	13K	9.2K
Min. Annual Benefit (Acre)	0	-1.0K	-510
Years of Pos. / Neg. Benefit	47 / 0	45 / 2	46 / 1

Estimated Cost and Duration

	Planning, Engineering & Design	Construction	Operations, Maintenance & Monitoring	**Total**
Cost	$23M - $30M	$280M - $370M	$9.7M - $13M	**$310M - $410M**
Duration	3	4	43	---

Project Map



WEST RAINEY MARSH CREATION

PROJECT ID: 213 / IMPLEMENTATION PERIOD 1

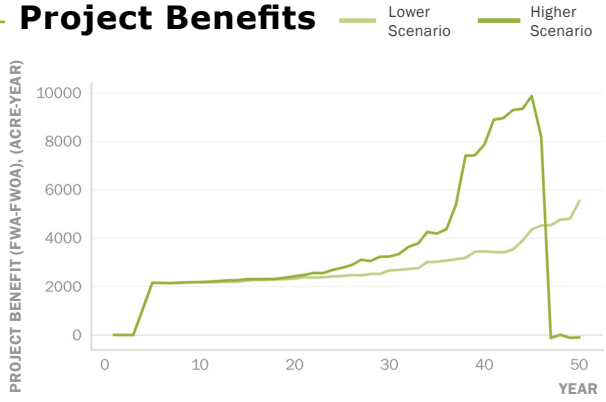
Project Location

Vermilion Parish

Description

Creation of marsh within a footprint of approximately 10,000 acres at Rainey Marsh near the southeast bank of the Freshwater Bayou Canal to create new wetland habitat, restore degraded marsh, and reduce wave erosion.

Project Benefits



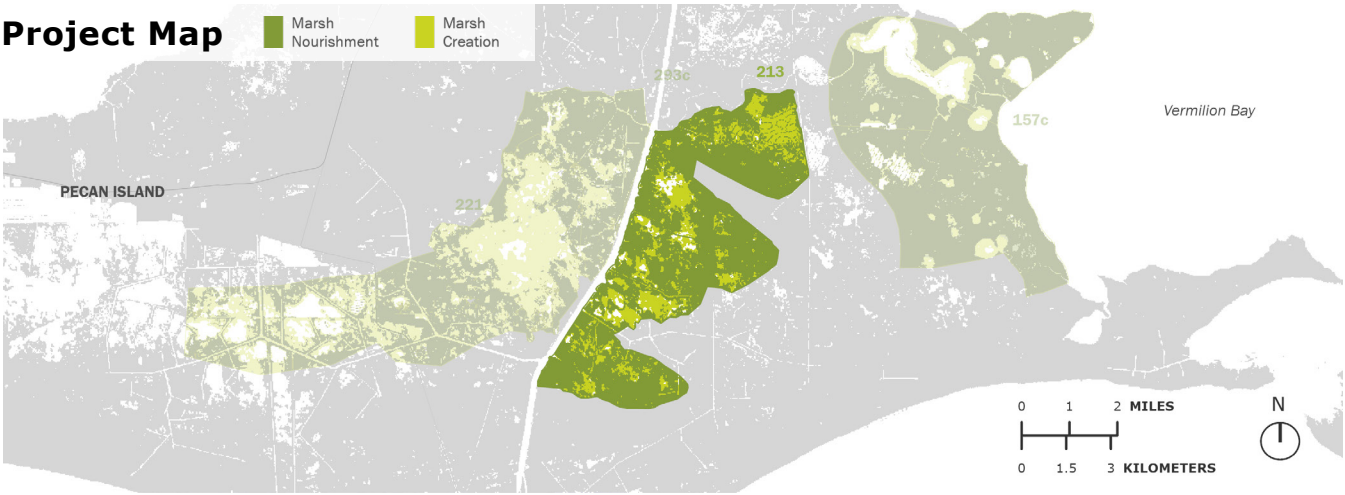
PROJECT BENEFITS TABLE

	Lower Scenario	Higher Scenario	Average
Max. Annual Benefit (Acre)	5.5K	9.9K	7.7K
Min. Annual Benefit (Acre)	0	-120	-61
Years of Pos. / Neg. Benefit	47 / 0	44 / 3	46 / 2

Estimated Cost and Duration

	Planning, Engineering & Design	Construction	Operations, Maintenance & Monitoring	**Total**
Cost	$26M - $32M	$330M - $400M	$12M - $14M	**$360M - $450M**
Duration	3	2	45	---

Project Map



EAST PECAN ISLAND MARSH CREATION

PROJECT ID: 221 / IMPLEMENTATION PERIOD 1

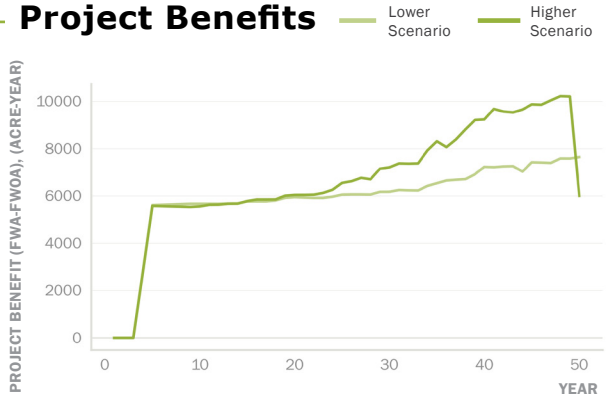
Project Location

Vermilion Parish

Description

Creation of marsh within a footprint of approximately 12,000 acres of the eastern portion of marsh between Pecan Island and the west bank of the Freshwater Bayou Canal to create new wetland habitat, restore degraded marsh, and reduce wave erosion.

Project Benefits



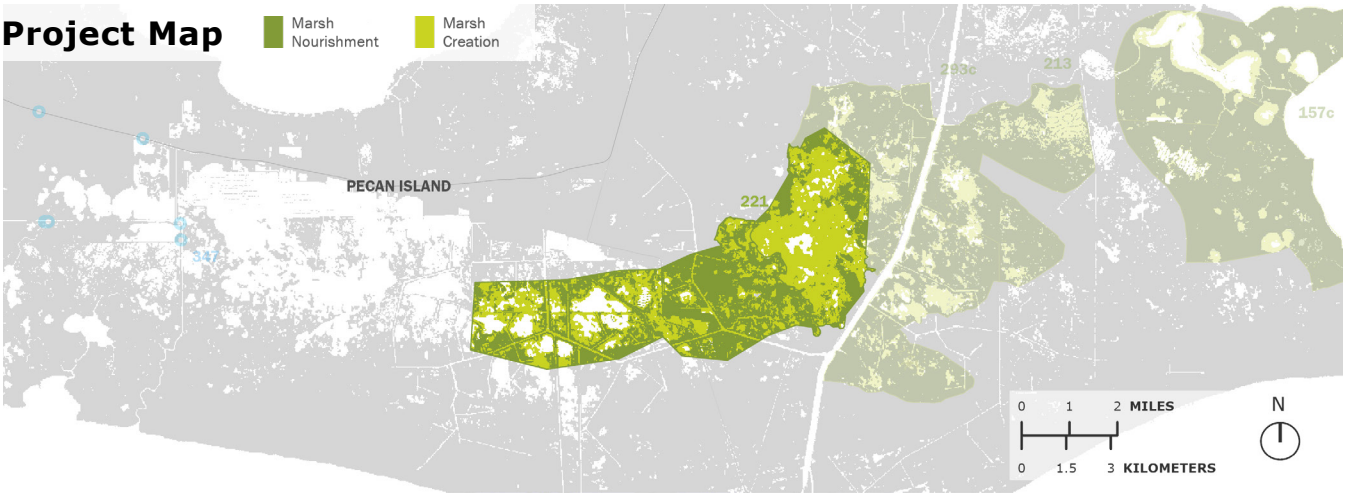
PROJECT BENEFITS TABLE

	Lower Scenario	Higher Scenario	Average
Max. Annual Benefit (Acre)	7.6K	10K	8.9K
Min. Annual Benefit (Acre)	0	0	0
Years of Pos. / Neg. Benefit	47 / 0	47 / 0	47 / 0

Estimated Cost and Duration

	Planning, Engineering & Design	Construction	Operations, Maintenance & Monitoring	**Total**
Cost	$42M - $52M	$520M - $650M	$19M - $23M	**$580M - $720M**
Duration	3	2	45	---

Project Map



CHENIERE AU TIGRE RIDGE RESTORATION

PROJECT ID: 231 / IMPLEMENTATION PERIOD 1

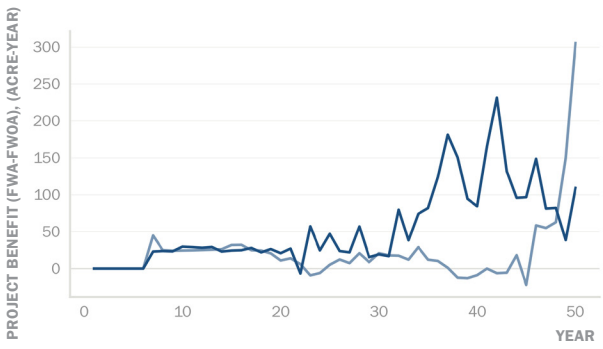
Project Location

Vermilion Parish

Description

Restoration of approximately 78,000 feet of Bill and Cheniere au Tigre Ridges to an elevation of 5 feet NAVD88 to provide coastal upland habitat, restore natural hydrology, and provide wave and storm surge attenuation.

Project Benefits



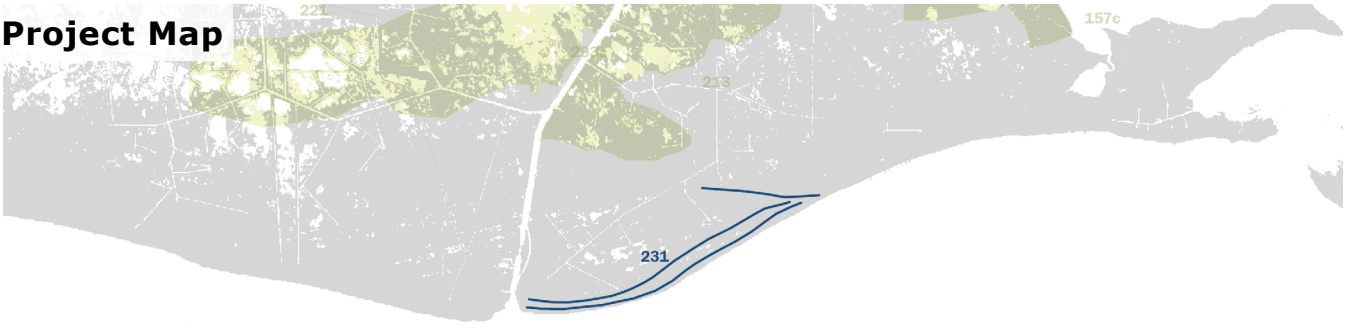
PROJECT BENEFITS TABLE

	Lower Scenario	Higher Scenario	Average
Max. Annual Benefit (Acre)	310	230	270
Min. Annual Benefit (Acre)	-22	-7	-15
Years of Pos. / Neg. Benefit	35 / 8	43 / 1	39 / 5

Estimated Cost and Duration

	Planning, Engineering & Design	Construction	Operations, Maintenance & Monitoring	**Total**
Cost	$1.7M - $2.M	$21M - $25M	$740K - $860K	**$24M - $28M**
Duration	3	4	43	---

Project Map



Gulf of Mexico

0 1 2 MILES
0 1.5 3 KILOMETERS
N

PECAN ISLAND RIDGE RESTORATION

PROJECT ID: 232 / IMPLEMENTATION PERIOD 1

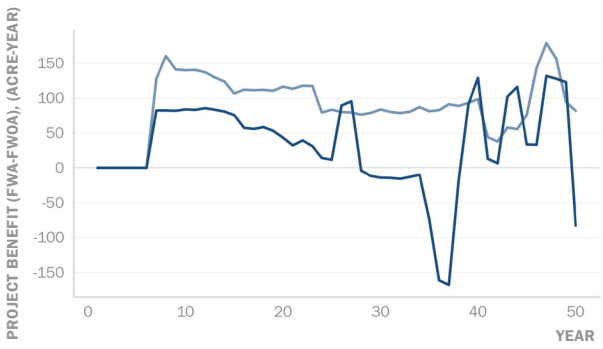
Project Location

Vermilion Parish

Description

Restoration of approximately 44,000 feet of historic ridge in Pecan Island to provide coastal upland habitat, restore natural hydrology, and provide wave and storm surge attenuation.

Project Benefits



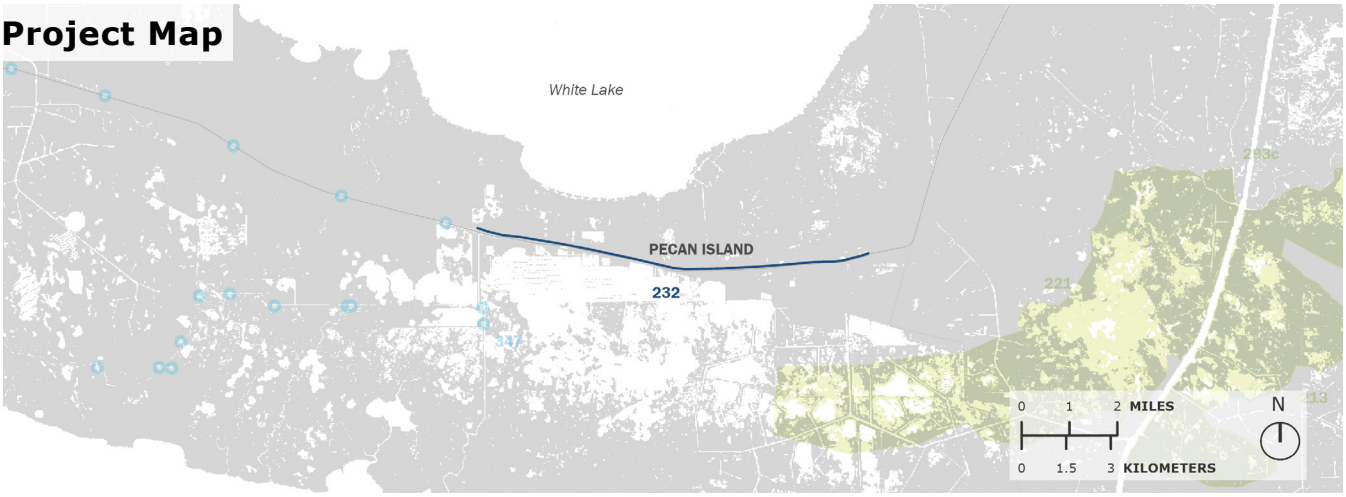
PROJECT BENEFITS TABLE

	Lower Scenario	Higher Scenario	Average
Max. Annual Benefit (Acre)	180	130	160
Min. Annual Benefit (Acre)	0	-170	-84
Years of Pos. / Neg. Benefit	44 / 0	32 / 12	38 / 6

Estimated Cost and Duration

	Planning, Engineering & Design	Construction	Operations, Maintenance & Monitoring	**Total**
Cost	$1.3M - $1.6M	$17M - $20M	$580K - $680K	**$19M - $22M**
Duration	3	4	43	---

Project Map



FRESHWATER BAYOU NORTH MARSH CREATION

PROJECT ID: 293C / IMPLEMENTATION PERIOD 1

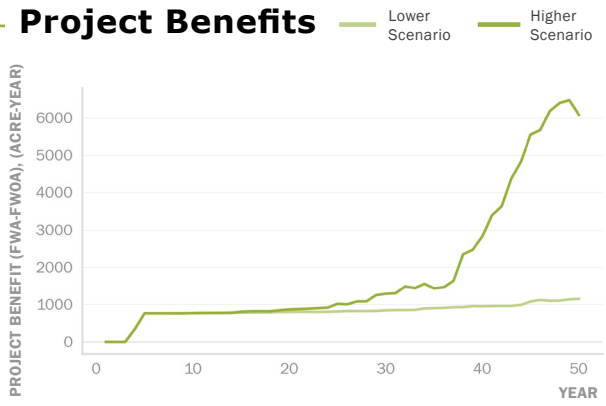
Project Location

Vermilion Parish

Description

Creation of marsh in the northern portion in Vermilion Parish west of Freshwater Bayou to create new wetland habitat, restore degraded marsh, and reduce wave erosion.

Project Benefits



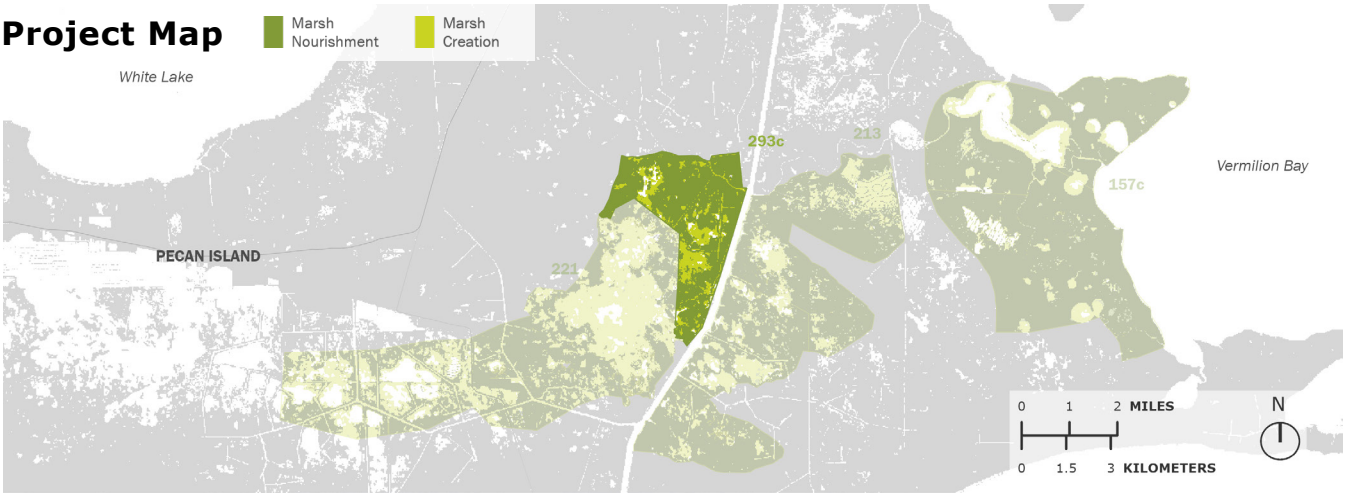
PROJECT BENEFITS TABLE

	Lower Scenario	Higher Scenario	Average
Max. Annual Benefit (Acre)	1.2K	6.5K	3.8K
Min. Annual Benefit (Acre)	0	0	0
Years of Pos. / Neg. Benefit	47 / 0	47 / 0	47 / 0

Estimated Cost and Duration

	Planning, Engineering & Design	Construction	Operations, Maintenance & Monitoring	**Total**
Cost	$9.5M - $12M	$120M - $150M	$4.3M - $5.5M	**$130M - $170M**
Duration	3	2	45	---

Project Map



MERMENTAU BASIN HYDROLOGIC RESTORATION

PROJECT ID: 347 / IMPLEMENTATION PERIOD 1

Project Location

Cameron Parish, Vermilion Parish

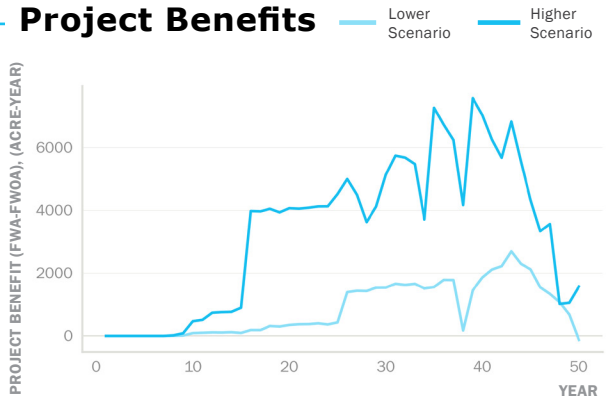
Description

A series of hydrologic features to facilitate drainage from the upper Mermentau Basin to the Gulf of Mexico. Kings Bayou: Channel dredging and cleanout in Little Chenier Canal and Kings Bayou, improving three road crossings, and increasing drainage capacity to the Mermentau River at the Kings Bayou Control Structures. Flap gated culverts under Highway 82 and on the south and west boundaries of the Rockefeller management area to move water south across Highway 82.

Estimated Cost and Duration

	Planning, Engineering & Design	Construction	Operations, Maintenance & Monitoring	**Total**
Cost	$8.7M - $10M	$110M - $130M	$3.7M - $4.3M	**$120M - $140M**
Duration	3	5	42	---

Project Benefits



PROJECT BENEFITS TABLE

	Lower Scenario	Higher Scenario	Average
Max. Annual Benefit (Acre)	2.7K	7.6K	5.1K
Min. Annual Benefit (Acre)	-130	0	-64
Years of Pos. / Neg. Benefit	42 / 1	43 / 0	43 / 1

Project Map

ABBEVILLE AND VICINITY

PROJECT ID: 292 / IMPLEMENTATION PERIOD 2

Project Location

Iberia Parish, Vermilion Parish

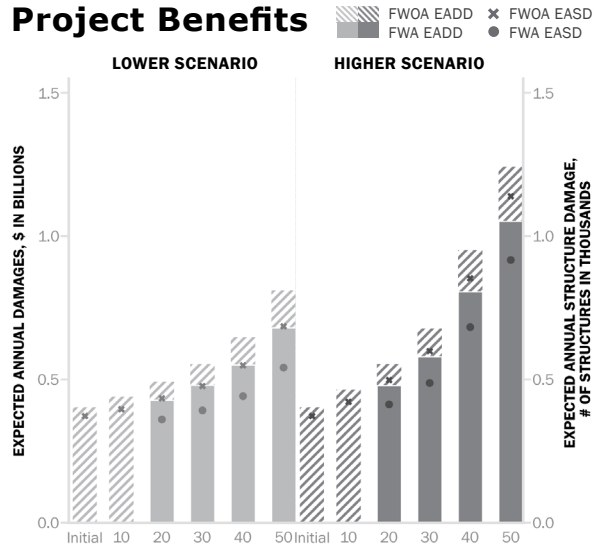
Description

Construction of a levee to an elevation between 15.5 and 20 feet NAVD88 in the area south of Delcambre, Erath, and Abbeville roughly following Highway 330. Project features approximately 100,000 feet of earthen levee, approximately 2,800 feet of T-wall, two 56-foot barge gates, two 20-foot stop log gates, two 30-foot stop log gates, and a sluice gate.

Estimated Cost and Duration

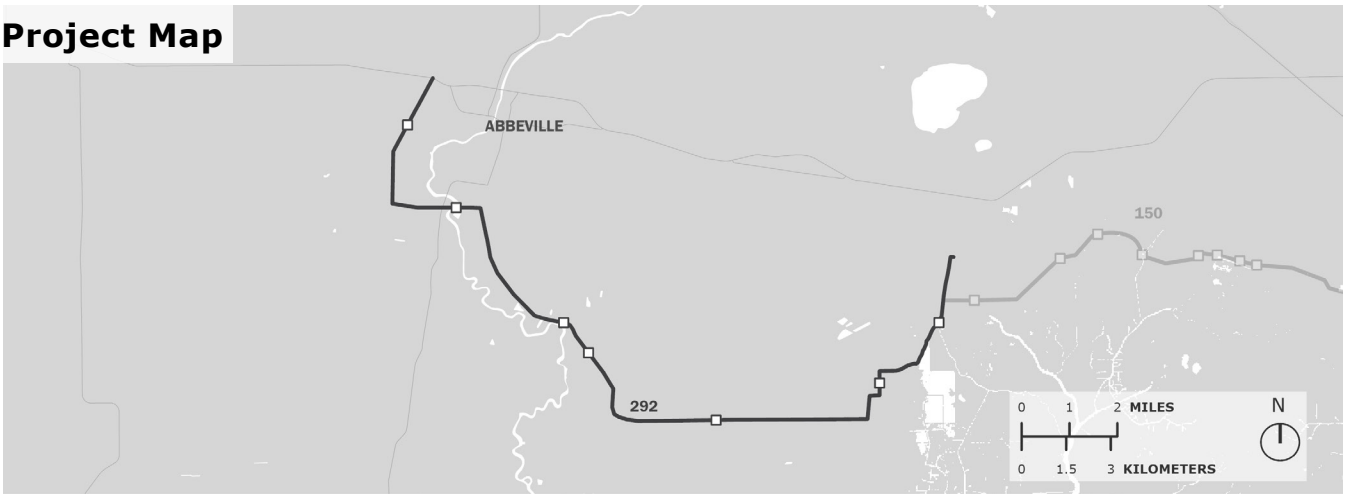
	Planning, Engineering & Design	Construction	Operations, Maintenance & Monitoring	**Total**
Cost	$37M - $44M	$500M - $600M	$18M - $22M	**$560M - $660M**
Duration	3	4	23	---

Project Benefits



EADD and EASD are two different metrics used to measure risk. This graph shows the total risk without action (FWOA) and the remaining risk if the project is implemented (FWA). The difference is the project benefit.

Project Map

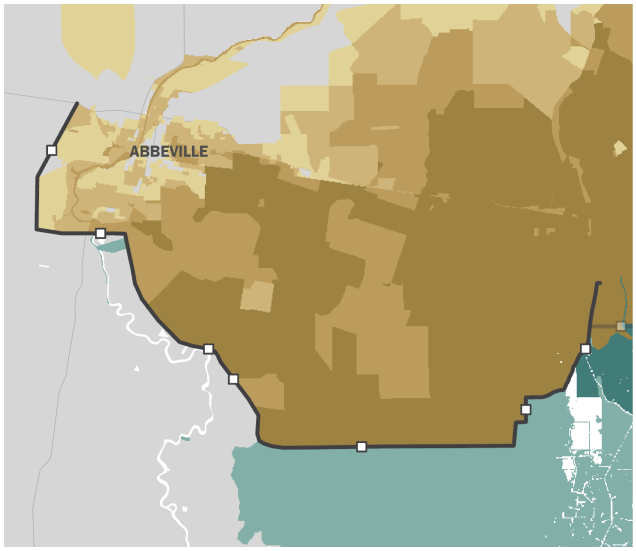


Explanation of Project Benefits

Expected Annual Damage in dollars (EADD) and Expected Annual Structure Damage (EASD) are two metrics by which the impact of modeled storms and master plan risk reduction projects can be evaluated. The graphs show the reduction in damage, both EADD and EASD, provided by the Abbeville and Vicinity structural risk reduction project at Year 20 for storms with varying Annual Exceedance Probability (AEP) as compared to damage without the project implemented. One goal of the master plan is to reduce storm surge-based flood risk, which varies based on location and over time. In order to select projects that reduce that risk, the master plan uses EADD and EASD as metrics that can be used in the evaluation of project performance.

52K **Estimated Current Population**

39% **Percentage of Population who are Low-to-Moderate Income**



Flood Depth Reduction with the master plan at Year 50

- ≤ -9 feet
- -9 to -6 feet
- -6 to -3 feet
- -3 to -1 feet
- +1 to +3 feet
- > +3 feet
- Structural Risk Reduction

Flood Risk In Project Area

Storm surge-based flooding is and will continue to be a risk for coastal Louisiana communities. The table below shows EADD and EASD for the project area now, and at years 20 and 50, both with and without the Abbeville and Vicinity project implemented. Damage avoided because of the project is also provided.

	Initial Conditions	FWOA (YR20/50)	FWA (YR20/50)	Losses Avoided (YR20/50)
Lower Scenario				
EADD ($)	$400M	$490M/$810M	$430M/$680M	$63M/$130M
EASD (#Structures)	370	440/690	360/540	73/150
Higher Scenario				
EADD ($)	$400M	$550M/$1.2B	$480M/$1.1B	$74M/$190M
EASD (#Structures)	370	500/1.1K	410/920	86/220

Assets and Exposure

Communities and individuals experience the impacts of storm surge in a variety of ways. While the master plan looks at damage in the project selection process, other considerations like impacts on residential structures, public services, and other assets are also important to understand. The Abbeville and Vicinity project provides a barrier to storm surge that provides an increased level of protection for the assets shown below.

	Residences	Schools & Daycares	Hospitals	Nursing Homes	Emergency Services	Water Supply	Electrical Substations & Power Plants	Gas Stations
Total	18K	24	1	5	15	56	27	8
Protected	4.2K	21	1	5	9	32	10	6

APPENDIX C

VERMILION PARISH POTENTIAL COASTAL PROJECTS MAP

Vermilion Parish Coastal Project Inventory Map - PROPOSED (APPENDIX OR POTENTIAL)

VERMILION PARISH COASTAL PROJECTS Proposed (Appendix or Potential)

Map Number	Project Number	Project Name	Project Type
1	292 / Period 2	Abbeville and Vicinity Levee CPRA 292 (Master Plan 2023)	Hurricane & Flood Protection
2	PPL 18	Caldwell Reef Restoration	Hurricane & Flood Protection
3		Vermilion River Live Oak Hydrologic Restoration & Shoreline	Hydrologic Restoration
4	PPL 23	Belle Isle Marsh Creation & Nourishment	Marsh Creation (East of FWB)
5	PPL 32	FWB (East) Marsh Restoration	Marsh Creation (East of FWB)
6		Rainey (North) Freshwater Introduction & Bank Protection	Marsh Creation (East of FWB)
7	213 / Period 1	West Rainey	Marsh Creation (East of FWB)
8	PPL 24	Big Marsh (North) Restoration Project	Marsh Creation (East Pecan Island West FWB)
9	221/ Period 1	East Pecan Island	Marsh Creation (East Pecan Island West FWB)
10	PPL 23 & PPL 24	Pecan Island (East) Marsh PPL 22	Marsh Creation (East Pecan Island West FWB)
11	PPL 23	Platform 1 Marsh Creation & Freshwater Diversion	Marsh Creation (East Pecan Island West FWB)
12	PPL 32	PPL 32 FWB Marsh Creation Increment 2	Marsh Creation (East Pecan Island West FWB)
13	DU-LA-184-1	DU - South Pecan Island	Marsh Creation (Front Ridge South Pecan Island)
14	CDBG	Front Ridge Chenier Terracing Protection	Marsh Creation (Front Ridge South Pecan Island)
15	PPL 22	Front Ridge Freshwater Introduction & Terracing	Marsh Creation (Front Ridge South Pecan Island)
16	8990-40	Marsh Creation & Terracing South Pecan Island	Marsh Creation (Front Ridge South Pecan Island)
17	ME-23	South Pecan Island Freshwater Introduction	Marsh Creation (Front Ridge South Pecan Island)
18	PPL 24	Pecan Island (SE) Marsh Creation & Freshwater Enhancement	Marsh Creation (Front Ridge South Pecan Island)
19	PPL 21	Pecan Island Marsh Creation Project PPL 21	Marsh Creation (Front Ridge South Pecan Island)
20	PPL 32/ ME-07	PPL 32 Pecan Island Marsh Restoration	Marsh Creation (Front Ridge South Pecan Island)
21	PPL 20	S Pecan Island Freshwater Introduction PPL 20-2010	Marsh Creation (Front Ridge South Pecan Island)
22	PPL 33/ TV-03	PPL 33 West Vermilion Marsh Creation & Shoreline Protection	Marsh Creation (Lake Fearman Redfish Point State Wildlife Refuge)
23	PPL 19	State Wildlife Chenier & Marsh Creation PPL 19 - 2009	Marsh Creation (Lake Fearman Redfish Point State Wildlife Refuge)
24	PPL 22	South Little Vermilion Bay - Shoreline Vegetative Planting & Terracing	Marsh Creation (Northwest Vermilion Bay)
25	PPL 18	NW Vermilion Bay Vegetative Planting & Maint	Marsh Creation (Northwest Vermilion Bay)
26	PPL 19/ R3, TV-01	NW Vermilion Bay Vegetative Planting & Maint	Marsh Creation (Northwest Vermilion Bay)
27	PPL 22/ R3, TV-01	NW Vermilion Bay Vegetative Planting & Maint	Marsh Creation (Northwest Vermilion Bay)
28	PPL 25	Vermilion Bay Fearman Lake Marsh Creation PPL 25	Marsh Creation (Northwest Vermilion Bay)
29	Rainey West	Greater Bob Gill overview	Marsh Creation (Rainey Alliance)
30	PPL 15	FWB - North Prong Protection PPL 15 - 2005	Marsh Creation (West of FWB)
31		Humble (North) Marsh Creation 2007 Image	Marsh Creation (West of FWB)
32	ME-31	ME -31 Freshwater Bayou Marsh Creation	Marsh Creation (West of FWB)
33	PPL 32/ ME-03	PPL 32 Mulberry Island Marsh Creation	Marsh Creation (West of FWB)
34	8990-40	Marsh Creation along Freshwater Bayou 2021	Marsh Creation
35		White Lake Marsh Creation	Marsh Creation
36	SWCD	Bayou Tigre Flood Protection & Freshwater Development	Neighboring Projects (Bayou Tigre Water Shed)
37	150 / Period 1	Iberia Levee	Neighboring Projects
38	347 / Period 1	Mermentau Basin	Neighboring Projects
39	USACE-SWCLS	Chenier Restoration	Ridge Restoration
40	231 / Period 1	Cheniere au Tigre Ridge Restoration	Ridge Restoration
41	232 / Period 1	Pecan Island Ridge Restoration	Ridge Restoration
42	7898-02	4 Mile Canal Control Structure	Shoreline or Bankline Protection (4 Mile Canal)
43	PPL 17	4 Mile Canal Freshwater Redistribution	Shoreline or Bankline Protection (4 Mile Canal)
44	PPL 17	4 Mile Canal Low Water Sill - PPL 17 2007	Shoreline or Bankline Protection (4 Mile Canal)
45		4 Mile Canal Shoreline Protection 1994	Shoreline or Bankline Protection (4 Mile Canal)
46	PPL 18	4 Mile Canal Shoreline Protection and Weir	Shoreline or Bankline Protection (4 Mile Canal)
47	PPL 20	Boston Canal & GIWW Bankline Protection	Shoreline or Bankline Protection (GIWW Target Areas)
48		GIWW Bankline Protection Oaks Canal to Iberia Parish Line	Shoreline or Bankline Protection (GIWW Target Areas)
49	USACE-SWCLS	Gulf Shoreline Calcasieu River to Freshwater Bayou 2	Shoreline or Bankline Protection (Gulf Shoreline)
50	USACE-SWCLS	Gulf Shoreline Calcasieu River to Freshwater Bayou 3	Shoreline or Bankline Protection (Gulf Shoreline)
51	USACE-SWCLS	Gulf Shoreline Calcasieu River to Freshwater Bayou	Shoreline or Bankline Protection (Gulf Shoreline)
52	PPL 16/ ME-24	ME-24 Gulf Shoreline Protection - Rollover 2006	Shoreline or Bankline Protection (Gulf Shoreline)
53	PPL 15	Redfish Point Shoreline Protection PPL 15	Shoreline or Bankline Protection (Lake Fearman Redfish Point State Wildlife Refuge)
54		Secretive Marsh	Shoreline or Bankline Protection (Lake Fearman Redfish Point State Wildlife Refuge)
55	PPL 24	Vermilion Bay (S&W) Shoreline Protection	Shoreline or Bankline Protection (Lake Fearman Redfish Point State Wildlife Refuge)
56	PPL 15	Bird Island PPL 15	Shoreline or Bankline Protection (Southwest Pass Area) Bird Island
57	PPL 15	Bird Island SW Pass Marsh Creation and Shoreline Protection Project	Shoreline or Bankline Protection (Southwest Pass Area) Bird Island
58	PPL 23/TV-06	Bird Island SW Pass Shoreline Protection and Marsh Creation	Shoreline or Bankline Protection (Southwest Pass Area) Bird Island
59	PPL 24/	Tojan Island Shoreline Protection PPL 24	Shoreline or Bankline Protection (Southwest Pass Area)
60	PPL 23	White Lake (NE) Shoreline Protection PPL 23	Shoreline or Bankline (White Lake Area)
61	PPL 17	White Lake (SE) Shoreline Protection and Marsh Creation	Shoreline or Bankline (White Lake Area)
62		AAA Ditch (Front Ridge)	Storm Damage to Drainage

Sellers & Associates, Inc.
ENGINEERS
Lafayette – Abbeville
SURVEYORS
Louisiana

2 1 0 2 4

Scale: 1" = 2 Miles

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