Explore more on CPRA's website.
https://coastal.la.gov/our-plan/2023-coastal-master-plan/

# CHENIER PLAIN PROJECTS

## REGIONAL 2023 PROJECTS MAP

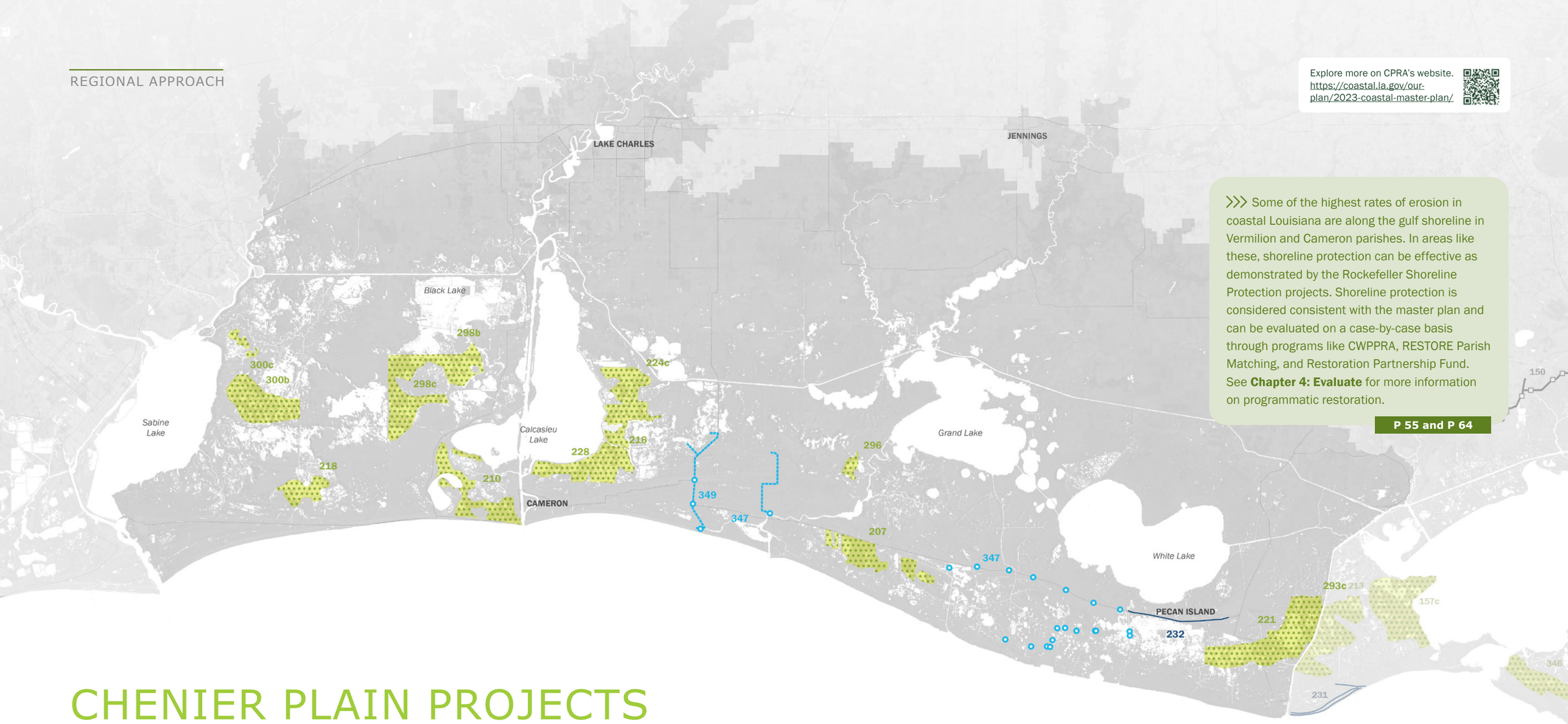
For the 2023 Coastal Master Plan, 16 projects were selected in the Chenier Plain region, including several marsh creation projects spread across the region. Through the help of the Chenier Plain Regional Workgroup, the locations of these marsh creation projects were chosen to address current and future land loss concerns, such as strengthening the shoreline of Calcasieu Lake and other important regional water bodies. Large-scale hydrologic restoration projects were also selected for the region. These projects were designed, with input from our advisory groups, to provide improved drainage in both the upper Mermentau Basin and the Cameron-Creole Watershed.

>>> Some of the highest rates of erosion in coastal Louisiana are along the gulf shoreline in Vermilion and Cameron parishes. In areas like these, shoreline protection can be effective as demonstrated by the Rockefeller Shoreline Protection projects. Shoreline protection is considered consistent with the master plan and can be evaluated on a case-by-case basis through programs like CWPPRA, RESTORE Parish Matching, and Restoration Partnership Fund. See **Chapter 4: Evaluate** for more information on programmatic restoration.

P 55 and P 64

>>> Opportunities for structural risk reduction measures vary across the coast, yet all regions face storm surge-based flood risk. For the 2023 Coastal Master Plan, $11B has been allocated to nonstructural risk reduction strategies, including in the Chenier Plain region. For more information on nonstructural risk reduction projects, see **Chapter 5: Take Action**.

P 90




Ridge Restoration
Marsh Creation
Hydrologic Restoration

Map 6.3: Chenier Plain 2023 Coastal Master Plan Projects.

N 0 2 4 8 MILES

| ID# | PROJECT NAME | DESCRIPTION | IP | COST |
|---|---|---|---|---|
| 347 | **Mermentau Basin Hydrologic Restoration** | A series of hydrologic features designed to facilitate drainage from the upper Mermentau Basin south to the Gulf of Mexico. Kings Bayou: Channel dredging and cleanout in Little Chenier Canal and Kings Bayou as well as improving three road crossings and increasing capacity at the Kings Bayou Control Structures with 15 60-inch flap gated culverts to increase drainage to the Mermentau River. Rockefeller: 105 60-inch flap gated culverts under Highway 82 and 120 60-inch flap gated culverts on the south and west boundaries of the Rockefeller management area to move water south across Highway 82. | 1 | $ 130M |
| 349 | **Cameron-Creole to the Gulf Hydrologic Restoration** | Hydrologic restoration increasing the capacity for drainage from the Cameron-Creole Watershed to the Gulf of Mexico through Creole Canal. Dredging and cleanout of Creole Canal; increasing cross-section at two road crossings; construction of a receiving pond in the western end of the Mermentau River; installing a 750 cfs pump station from the receiving pond to the Gulf to maintain the receiving pond stage at mean low water. | 1 | $ 59M |
| 207 | **South Grand Chenier Marsh Creation** | Creation of marsh within a footprint of approximately 6,900 acres south of Highway 82 near Grand Chenier to create new wetland habitat and restore degraded marsh. | 1 | $ 390M |
| 210 | **Mud Lake Marsh Creation** | Creation of marsh within a footprint of approximately 8,100 acres at Mud Lake south of West Cove Calcasieu Lake to create new wetland habitat, restore degraded marsh, and reduce wave erosion. | 1 | $ 330M |
| 216 | **Southeast Calcasieu Lake Marsh Creation** | Creation of marsh within a footprint of approximately 9,200 acres southeast of Calcasieu Lake to create new wetland habitat, restore degraded marsh, and reduce wave erosion. | 2 | $ 450M |
| 218 | **Cameron Meadows Marsh Creation** | Creation of marsh within a footprint of approximately 3,700 acres at Cameron Meadows north of Johnson Bayou to create new wetland habitat, restore degraded marsh, and reduce wave erosion. | 1 | $ 150M |
| 221 | **East Pecan Island Marsh Creation** | 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. | 1 | $ 650M |
| 224c | **East Calcasieu Lake Marsh Creation** | Creation of marsh in the western portion of marsh in the eastern Cameron-Creole watershed to create new wetland habitat, restore degraded marsh, and reduce wave erosion. | 1 | $ 340M |
| 228 | **Calcasieu Ship Channel Marsh Creation** | Creation of marsh within a footprint of approximately 3,200 acres south of Calcasieu Lake near Cameron to create new wetland habitat, restore degraded marsh, and reduce wave erosion. | 1 | $ 83M |
| 293c | **Freshwater Bayou North Marsh Creation** | 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. | 1 | $ 150M |
| 296 | **Little Chenier Marsh Creation** | Creation of marsh within a footprint of approximately 1,100 acres in Cameron Parish south of Grand Lake to create new wetland habitat, restore degraded marsh, and reduce wave erosion. | 2 | $ 51M |
| 298b | **West Brown Lake Marsh Creation - North** | Creation of marsh in the eastern portion of marsh in Cameron Parish south of Black Lake to create new wetland habitat, restore degraded marsh, and reduce wave erosion. | 2 | $ 410M |
| 298c | **West Brown Lake Marsh Creation - South** | Creation of marsh in the eastern portion of marsh in Cameron Parish south of Black Lake to create new wetland habitat, restore degraded marsh, and reduce wave erosion. | 1 | $ 240M |
| 300b | **West Sabine Refuge Marsh Creation** | Creation of marsh in the western portion of marsh in Cameron Parish east of Sabine Lake to create new wetland habitat, restore degraded marsh, and reduce wave erosion. | 2 | $ 640M |
| 300c | **West Sabine Refuge Marsh Creation - Central** | Creation of marsh in the western portion of marsh in Cameron Parish east of Sabine Lake to create new wetland habitat, restore degraded marsh, and reduce wave erosion. | 1 | $ 130M |
| 232 | **Pecan Island Ridge Restoration** | 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. | 1 | $ 20M |

Figure 6.4: Chenier Plain Project List.

Image: Cameron Meadows Restoration Project, 2020 (CPRA)

## HYDROLOGIC RESTORATION PROJECTS

The Chenier Plain Regional Workgroup proposed several candidate projects to address persistent marsh flooding and lack of drainage. The Mermentau Basin Hydrologic Restoration and Cameron-Creole to the Gulf Hydrologic Restoration projects were selected for inclusion in IP1 of the 2023 Coastal Master Plan.

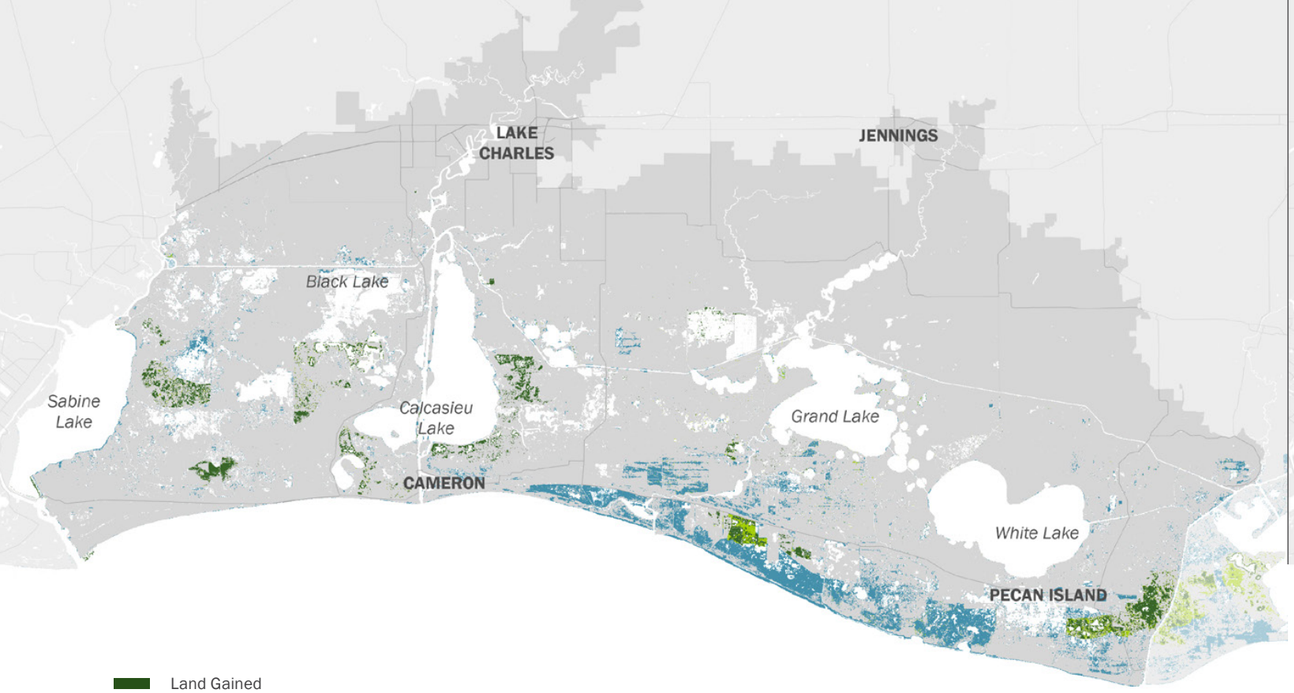
The Mermentau project moves water, by way of gravity drainage, southward across Highway 82 into the tidally connected canals throughout the Rockefeller National Wildlife Refuge, and the Cameron-Creole project reduces water levels by maintaining constant (via downstream pumps) mean low tide levels in the Creole Canal, allowing the Cameron-Creole system to efficiently gravity drain to the canal at all times. Combined, these projects relieve pressure on the Mermentau River allowing for more efficient drainage through existing waterways. This results in reduced water levels throughout the southern Mermentau and Cameron-Creole watersheds and healthier, more sustainable marshes in this area, as compared to FWOA.

These two hydrologic restoration projects will work in conjunction with the Calcasieu-Sabine Large-Scale Marsh and Hydrologic Restoration project currently being engineered and designed by CPRA to alleviate chronic inundation of marsh areas to the east of Calcasieu Lake.

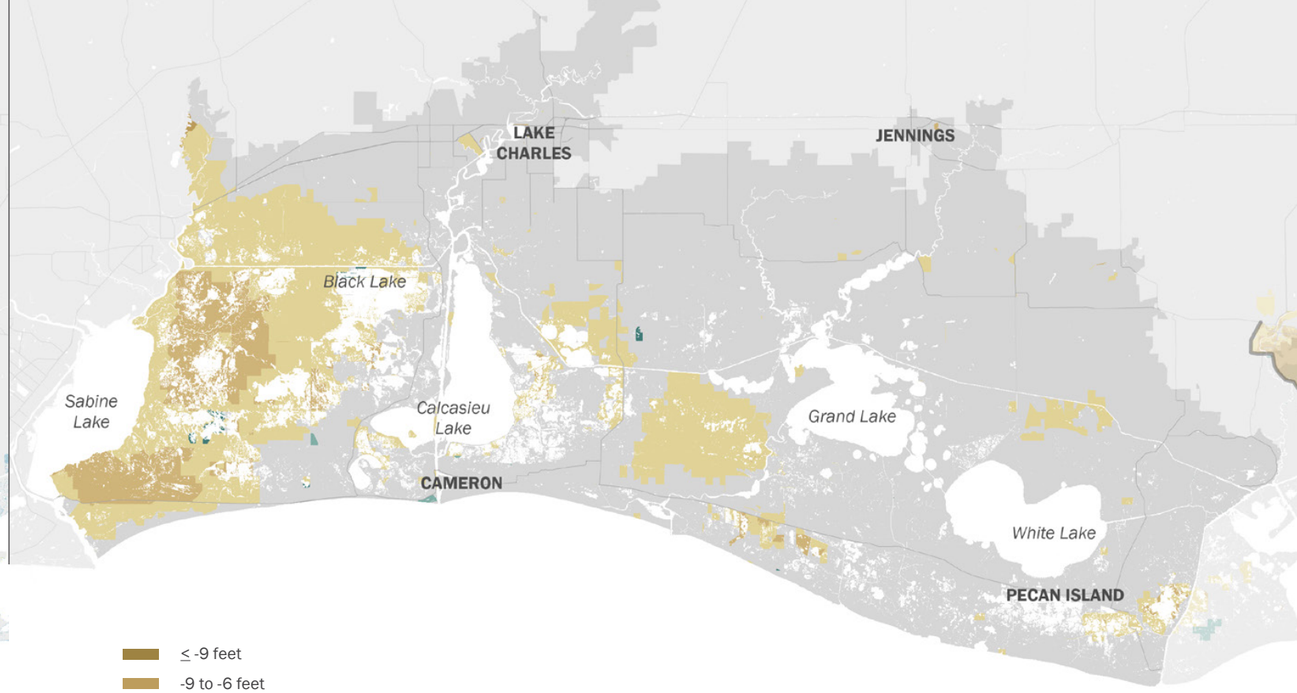
## REDUCING RISK

The areas of the Chenier Plain most exposed to storm surge are also the most rural, which leaves few cost-effective options for structural protection. Elevating homes and floodproofing businesses have been the standard for building in low-lying coastal communities for decades, yet there is still need and opportunity. CPRA is working with USACE to implement these critical projects through the Southwest Coastal project.

Restoring and maintaining the wetlands and ridges between the Gulf and the more populated areas has been a key concern from some communities further north. The restoration projects proposed in the master plan are projected to reduce EADD in Lake Charles by approximately 19% at Year 50.




Map 6.4: Chenier Plain, Land Change, Future With Action, Lower Scenario, Year 50.




Map 6.5: Chenier Plain, Flood Depths Difference between FWA and FWOA, 1% Annual Exceedance Probability, Lower Scenario, Year 50.

## REGIONAL PROJECT BENEFITS

With action, we build and maintain 23,000 acres of land in the lower environmental scenario and 35,000 acres in the higher scenario. Restoration in the region is focused on large-scale marsh creation and ensuring adequate drainage of wetlands in the Mermentau Basin. In the lower environmental scenario, the projects are successful in maintaining much of the land area and extensive intermediate marshes. Under the higher scenario, there is extensive land loss in the Mermentau Basin after 50 years and some increase in salinity, but the restoration projects are successful in maintaining extensive marsh both east and west of Calcasieu Lake. The hydrologic restoration projects and existing management projects help maintain intermediate marsh, although there is an increase in conversion to salt marsh in the last decade.

There were no structural risk reduction projects proposed in the Chenier Plain. The selected restoration projects do have an impact in attenuating storm surge and reducing risk. With the restoration projects on the landscape, the models show a reduction in risk. There is, of course, significant residual risk across the Chenier Plain, which illustrates the need for nonstructural risk reduction projects.

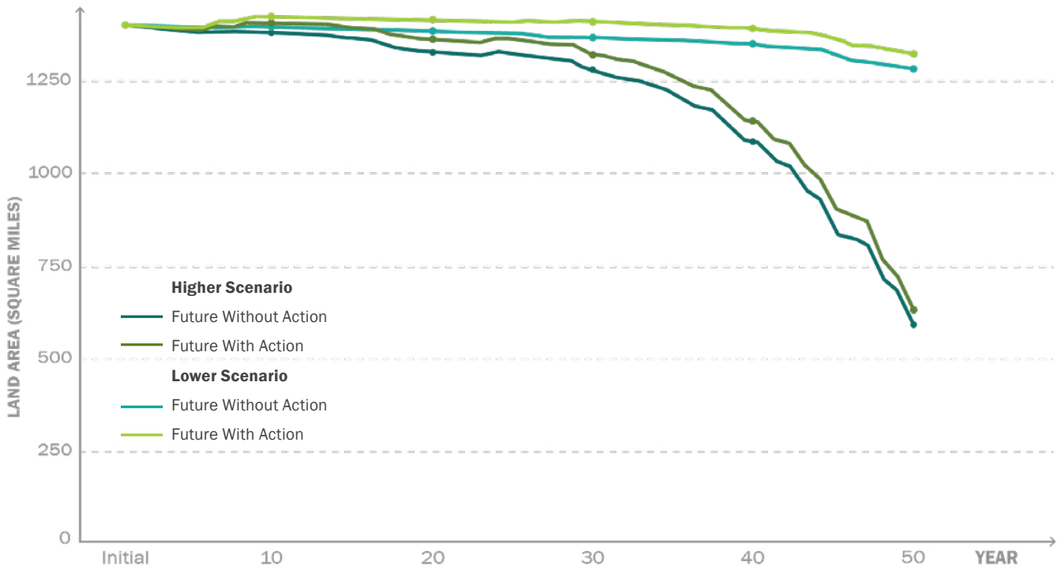



Figure 6.5: Chenier Plain Land Area Over 50 years, Future With and Without Action, Higher and Lower Scenario.

# CENTRAL COAST

**The Central Coast includes the areas around the Atchafalaya River Delta and adjacent bays, spanning from Freshwater Bayou to Fourleague Bay, including Abbeville and salt domes like Avery and Weeks Island. Notable features include Marsh Island, Point au Fer, and the Atchafalaya River and Wax Lake deltas. Hunting and fishing are popular in the area due to the productive marsh ecosystem.**

Figure 6.6: Aerial View of the Central Coast Region with the 2023 Coastal Master Plan Projects.

# ABOUT THE CENTRAL COAST

## AN INTRODUCTION

**Sometimes called "The Most Cajun Place on Earth," the Central Coast region is home to some of Louisiana's most iconic communities, cultures, and traditions. The landscape of the Central Coast supports bountiful agriculture and seafood industries, as well as one of the only land-building areas along the coast. The 2023 Coastal Master Plan proposes a number of projects to restore ecosystem function and reduce storm surge-based flood risk to communities within the Central Coast region.**

Extending from Freshwater Bayou to Fourleague Bay, the Central Coast of Louisiana is the "Gateway to the Atchafalaya Basin." It ranges inland to the lower reaches of the Atchafalaya Floodway, and encompasses communities along Bayou Teche, the outskirts of Lafayette, and agricultural land west of Abbeville. It includes parts of Iberia, Lafayette, St. Martin, St. Mary, and Vermilion parishes.

Sometimes called "The Most Cajun Place on Earth," the people and places of the Central Coast are a key component of the state's rich cultural heritage The Central Coast is also home to the Chitimacha Tribe of Louisiana, which maintains a reservation adjacent to Charenton in St. Mary Parish. The Chitimacha Tribe is the only tribe in Louisiana to still occupy a portion of their original homeland, which once encompassed the entire Atchafalaya Basin, lands westward toward Lafayette, southward to the Gulf, and eastward to the New Orleans area.

The landscape of the Central Coast is shaped by the Atchafalaya River, which branches off the Mississippi River and carries up to 30% of its flow below the Old River Control Structure. Because of the proximity to the Gulf and the influence of the Atchafalaya River, the ecosystems in this region are diverse, from freshwater swamps to saline marshes. The region includes the Atchafalaya Delta Wildlife Management Area, the Marsh Island and Rainey State Wildlife Refuges, the Bayou Teche National Wildlife Refuge, and the National Audubon Society's 26,000 acre Paul J Rainey Wildlife Sanctuary. The Central Coast is one area of the state that is building land through active growth of the Atchafalaya River and the Wax Lake deltas, supporting a growing research economy around the study of natural and constructed river diversions.

The Central Coast region is widely recognized for its fresh seafood, bountiful agriculture, and beautiful and useful waterways. Important ports include the Port of Morgan City, Port of Iberia, and the Port of West St. Mary, which utilize local waterways and their proximity to the GIWW and the Gulf. Intracoastal City is a hub for the local shrimp and pogie fleets on the GIWW near Vermilion Bay, and consistently ranks among the top six seafood ports in the country. Vermilion, Iberia, Lafayette, and St. Mary parishes among the top producing parishes for sugarcane in the state. Four of Louisiana's 11 operating raw sugar factories are located in the region in communities along Bayou Teche. Vermilion is also historically among the top producing parishes for rice. The region also boasts a thriving cultural and ecotourism industry, welcoming visitors drawing to the area's unique landscape and rich cultural heritage.

Despite these assets, the Central Coast faces challenges. The region's agriculture is, in many areas, impacted by subsidence and sea level rise, which make draining agricultural impoundments more difficult. This is expected to be more of a challenge with accelerating rates of sea level rise in the future. The region has also been impacted by numerous storm events in recent decades, including Hurricanes Laura and Delta (2020), Barry (2019), Lee (2011), Ike (2008), Gustav (2008), Rita (2005), Lili (2002), Bertha (2002), Allison (2001), and Andrew (1992). These storms resulted in economic damages, loss of property, loss of life, and repeated mandatory evacuation costs. The 2023 Coastal Master Plan proposes a number of projects to restore ecosystem function and reduce storm surge-based flood risk to communities within the Central Coast region.

Image: Sugarcane production in coastal Louisiana (Lindsey Janies)

**130K residents at risk from storm surge-based flooding**

**36% of Louisiana's sugarcane production**

**Includes Atchafalaya and Wax Lake deltas**

**Gateway to the Atchafalaya Basin**

**The Atchafalaya Basin is the largest contiguous bottomland hardwood forest in North America and is the largest overflow alluvial hardwood swamp in the United States.** The Atchafalaya River Delta is an area of active coastal land building and serves as a living laboratory where monitoring and research activities inform how conservation and restoration can be successfully implemented throughout coastal Louisiana. For more information on CPRA's Atchafalaya Basin Program see **Chapter 7**.

P 166

## HIGH TIDE FLOODING (HTF) IN DELCAMBRE

In addition to storm surge-based flood risk, Louisiana's coastal communities often contend with localized flooding, also known as high tide flooding which can impede day-to-day travel and activity as well as emergency services. The low-lying areas around Delcambre, especially those in unprotected areas, can expect to experience increased frequency and severity of this localized flooding over the next 50 years, as shown below. Although elevations and levee heights vary in the area, the average road elevation in the Delcambre area is only about half a foot above sea level. Some low-lying areas of Delcambre, especially along Delcambre Canal, are predicted to experience high tide flooding effects on more than 90% of days in 50 years, under the Lower Environmental Scenario.

| | YEAR 1 | YEAR 25 | YEAR 50 |
|---|---|---|---|
| **Bayou Carlin Cove** | <5% | <5% | 23% |
| **E Main St and S President St Low Area** | <5% | 26% | 93% |

Figure 6.7: Percentage of days that may see HTF at key locations in Delcambre, Lower Environmental Scenario. For more information see Attachment H3.


Image: Delcambre Shrimp Festival (Louisiana Sea Grant College Program)

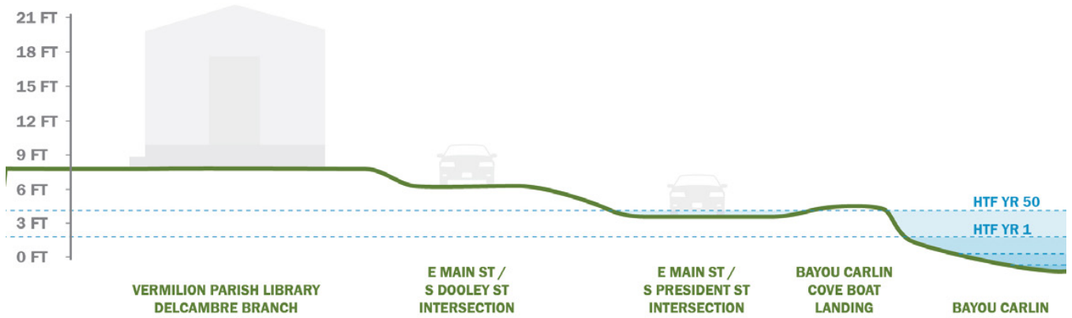
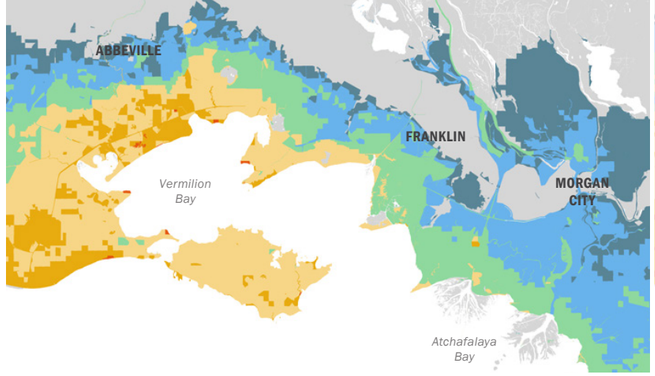
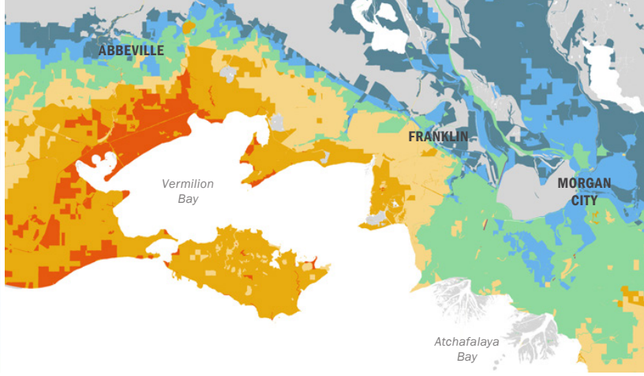



Figure 6.8: Representative HTF Elevations for Delcambre at Year 1 and 50 in the Lower Scenario.




Map 6.6: Hypothetical Hurricane Rita Impacts on Initial Conditions Landscape, Lower Scenario.




Map 6.7: Hypothetical Hurricane Rita Impacts on a Future Landscape, Future Without Action, Lower Scenario, Year 50.

1 to <4 feet
4 to <7 feet
7 to <10 feet
10 to <13 feet
13 to <16 feet
16 to <21 feet

N
0 3.5 7
MILES

## HURRICANE RITA

Hurricane Rita made landfall near the Louisiana/Texas border on September 24, 2005, less than one month after Hurricane Katrina. Hurricane Rita brought with it up to 15 ft of storm surge throughout southwest Louisiana, and severely damaged several coastal communities and tens of thousands of acres of coastal wetlands.

Storm surge in the Central Coast was measured at about 12 ft with much of Vermilion, Iberia, and St. Mary parishes south of Highway 14 and U.S. 90 inundated. We predict that at Year 50, without further restoration and protection efforts, an additional 2-5 ft of storm surge and nearly three times as much economic damage (in 2020 dollars) would be experienced in the communities of Franklin and Delcambre and surrounding agricultural areas south of Highway 14 and U.S. 90 for a storm similar to Hurricane Rita.

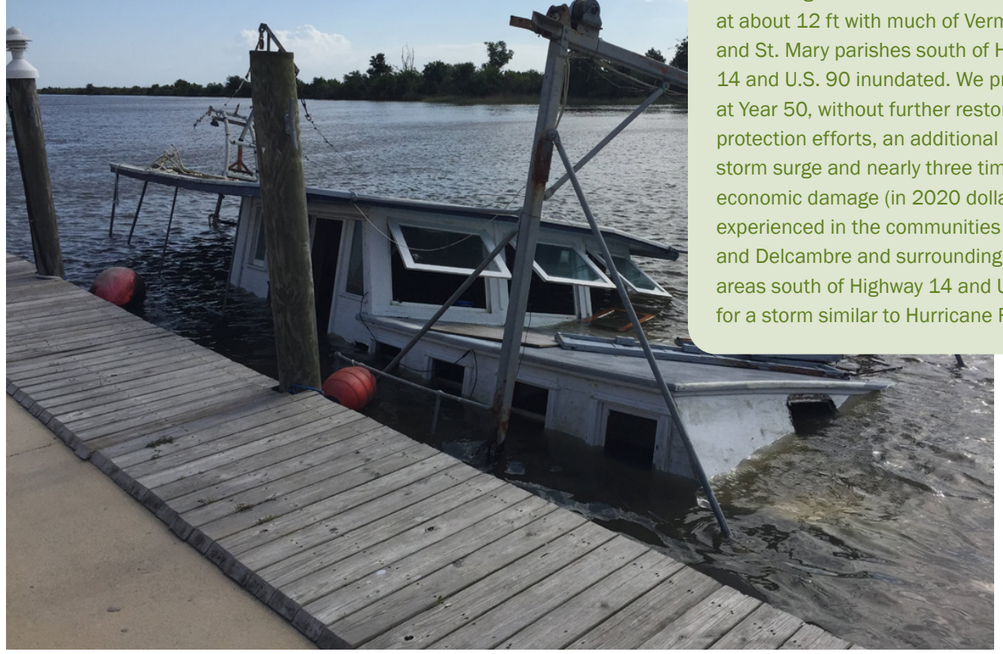


Image: Hurricane Damage (CPRA)

>>> Shoreline protection is considered consistent with the master plan and can be evaluated on a case-by-case basis through programs like CWPPRA, RESTORE Parish Matching, and Restoration Partnership Fund. Shoreline protection is, of course, most effective in areas with acutely high erosion rates, like the north side of Marsh Island, or when applied to maintain critical landscape features, such as Southwest Point. See **Chapter 4: Evaluate** for more information on programmatic restoration.

**P 55 and P 64**

>>> The Atchafalaya Basin is deeply tied to the Central Coast and western Terrebonne coastal basins; however, it is a distinctive river swamp system with unique goals and solutions for restoration and enhancement. The Atchafalaya Basin Program, which is administered by CPRA, has been established to help meet these specific challenges. See **Chapter 7: Beyond the Master Plan** for more.

**P 166**

Explore more on CPRA's website.
https://coastal.la.gov/our-plan/2023-coastal-master-plan/


# CENTRAL COAST PROJECTS

## REGIONAL 2023 PROJECTS MAP

For the 2023 Coastal Master Plan, 8 projects were selected for the Central Coast region. These projects include several large-scale marsh creation projects from West Rainey Marsh and across Marsh Island to Point au Fer. With the help of our Central Coast Regional Workgroup, several originally submitted project concepts were revised to avoid overlap and to focus on regional priorities, such as maintaining regionally important landforms. Structural risk reduction projects were also selected for the region that, in conjunction with nonstructural risk reduction measures, would reduce risk and damages from storm surge-based flooding in communities across the Central Coast.

Structural Risk Reduction
Ridge Restoration
Marsh Creation

Map 6.8: Central Coast 2023 Coastal Master Plan Projects.

N
0 2 4 8
MILES

| ID# | PROJECT NAME | DESCRIPTION | IP | COST |
|---|---|---|---|---|
| 157c | **East Rainey Marsh Creation** | 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. | 1 | $ 350M |
| 213 | **West Rainey Marsh Creation** | 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. | 1 | $ 400M |
| 344b | **Central Coast Marsh Creation - Point Au Fer** | Creation of marsh within a footprint of approximately 8,200 acres on Point Au Fer Island to create new wetland habitat, restore degraded marsh, and reduce wave erosion. | 1 | $ 270M |
| 346 | **Marsh Island Barrier Marsh Creation** | Creation of marsh within a footprint of approximately 16,000 acres on Marsh Island to create new wetland habitat, restore degraded marsh, and reduce wave erosion. | 1 | $ 710M |
| 231 | **Cheniere au Tigre Ridge Restoration** | 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. | 1 | $ 26M |
| 148 | **Franklin and Vicinity** | Improvements of a levee to an elevation between 12 and 18 feet NAVD88 from the Wax Lake Outlet to the Charenton Canal as well as the Bayou Sale polder. Project features approximately 210,000 feet of earthen levee, approximately 4,800 feet of T-wall, a 30-foot roller gate and two sluice gates. | 2 | $ 310M |
| 150 | **Iberia/St. Mary Upland Levee** | Construction of a levee to an elevation between 15.5 to 20 feet NAVD88 in Iberia and St. Mary parishes between the Delcambre Canal and the Charenton Canal. Project features approximately 150,000 feet of earthen levee, approximately 15,000 feet of T-wall, five 30-foot barge gates, three 110-foot barge gates, four 40-foot roller gates, 27 sluice gates and seven pump stations. | 1 | $ 1.7B |
| 292 | **Abbeville and Vicinity** | 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. | 2 | $ 610M |

Figure 6.9: Central Coast Project List.

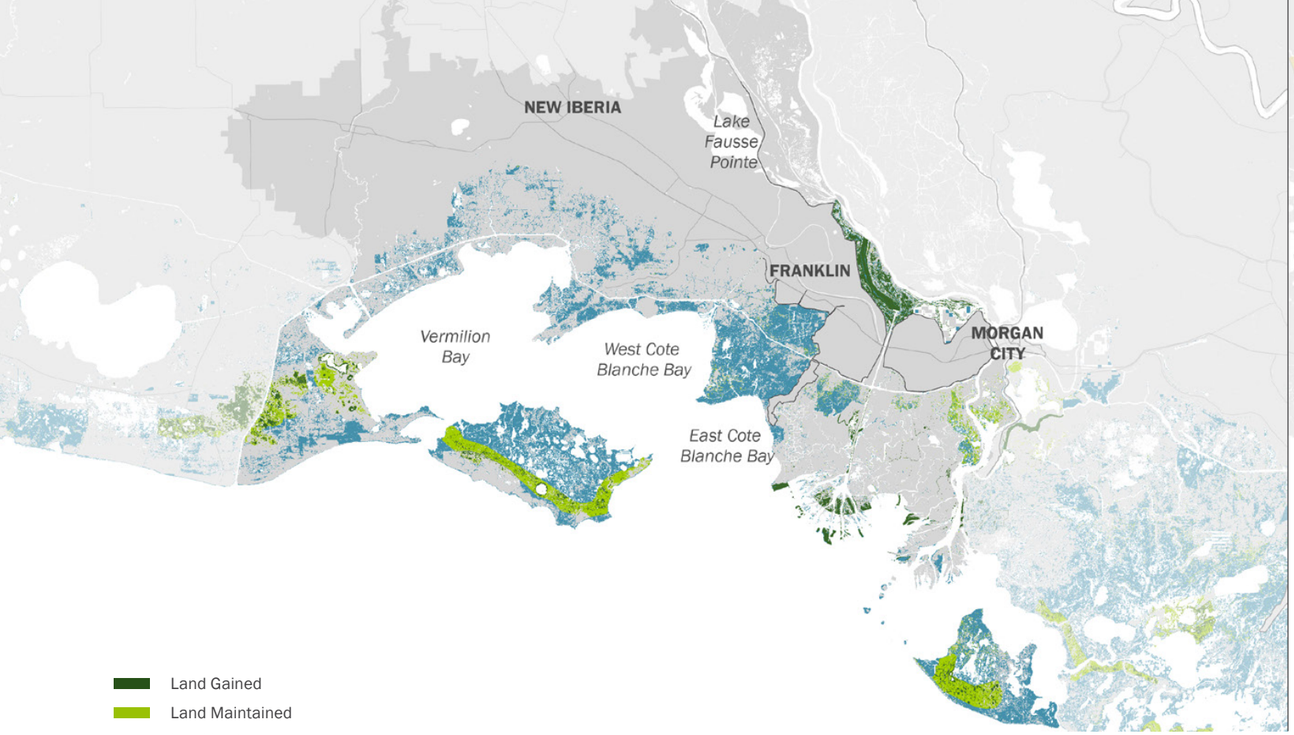
## IBERIA/ST. MARY UPLAND LEVEE

This project was selected in IP1 of the 2023 Coastal Master Plan and provides storm surge-based risk reduction for the community of New Iberia as well as areas further south, such as Jeanerette, Lydia, and the Port of Iberia. Much of the risk reduction provided by this project is realized in the later years of our model projections as sea level rise, subsidence, and continued land loss over the 50-year period are expected to lead to increased flood risk in areas north of U.S. 90, especially in New Iberia. A similar levee project was among several evaluated in USACE's South Central Coast Louisiana Study, which ultimately selected targeted nonstructural projects as the preferred alternative. CPRA will partner with USACE to implement the nonstructural risk reduction measures identified, as it is the most practical path to help these communities adapt to flood risk in the near-term.

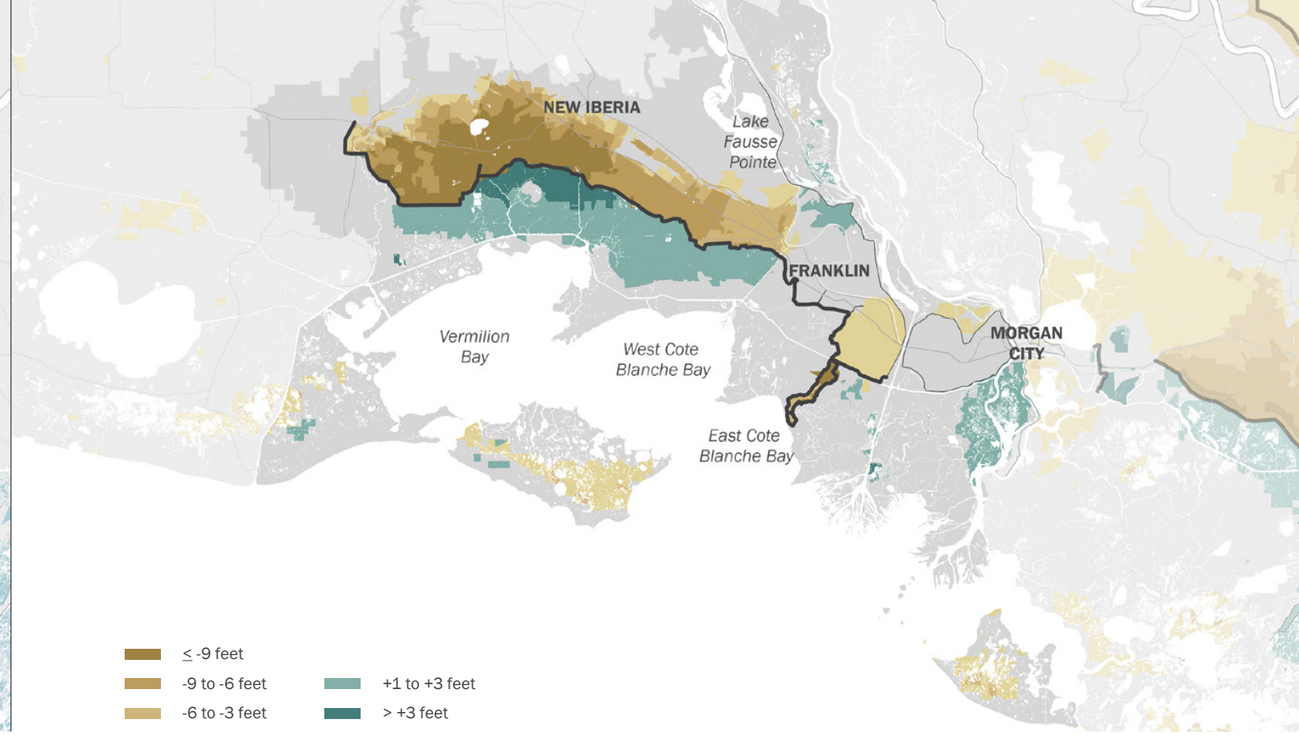
## MARSH CREATION PROJECTS

Starting in 2018, CPRA established Regional Workgroups to consider regional issues and to help develop new project concepts and refine past project ideas. Regional Workgroup members were asked to consider how to restore lost areas, take into account projections of land change and hydrologic conditions, and identify the key landscape features to maintain and protect. Workgroup members continually emphasized the importance of maintaining Marsh Island and Point au Fer as barriers between the Gulf and the region's population centers, recommending that we refine past master plan projects in the area to focus on east-west alignments. Both projects were evaluated and ultimately selected for the plan.

Image: Atchafalaya Basin (Louisiana Sea Grant College Program)




Map 6.9: Central Coast, Land Change, Future With Action, Lower Scenario, Year 50.




Map 6.10: Central Coast, Flood Depths Difference between FWA and FWOA, 1% Annual Exceedance Probability, Lower Scenario, Year 50.

## REGIONAL PROJECT BENEFITS

With action, we build and maintain 29,000 acres of land in the lower environmental scenario and 1,400 acres in the higher scenario. Restoration is focused on maintaining a 'barrier' of marsh between the open bays and the Gulf with marsh creation east of Freshwater Bayou, on Marsh Island, and on Point au Fer. These projects are successful over the next 50 years under the lower environmental scenario but some land loss occurs on Marsh Island and to the north of East Cote Blanche Bay. There is also some land gain in the Atchafalaya and Wax Lake deltas over the first three decades. The marsh creation 'barrier' is also successful in the higher environmental scenario, but the marshes degrade by year 50 and land loss increases markedly in the last decade. Freshwater flows from the Atchafalaya River keep the eastern part of the region fresh, while to the west there is dramatic decrease in intermediate marsh in the last two decades.

Three structural risk reduction projects were selected in the Central Coast region that together span from Abbeville to the Wax Lake Outlet Channel. These projects are predicted to reduce future surge-based flood risk in the region by 65%. These projects provide between $1 – $1.6 billion reduction in EADD at Year 50. Over half of that risk reduction is seen in the communities of Abbeville, Franklin, and New Iberia, which are projected to see dramatic increases in surge-based flood risk over the next 50 years without these projects.

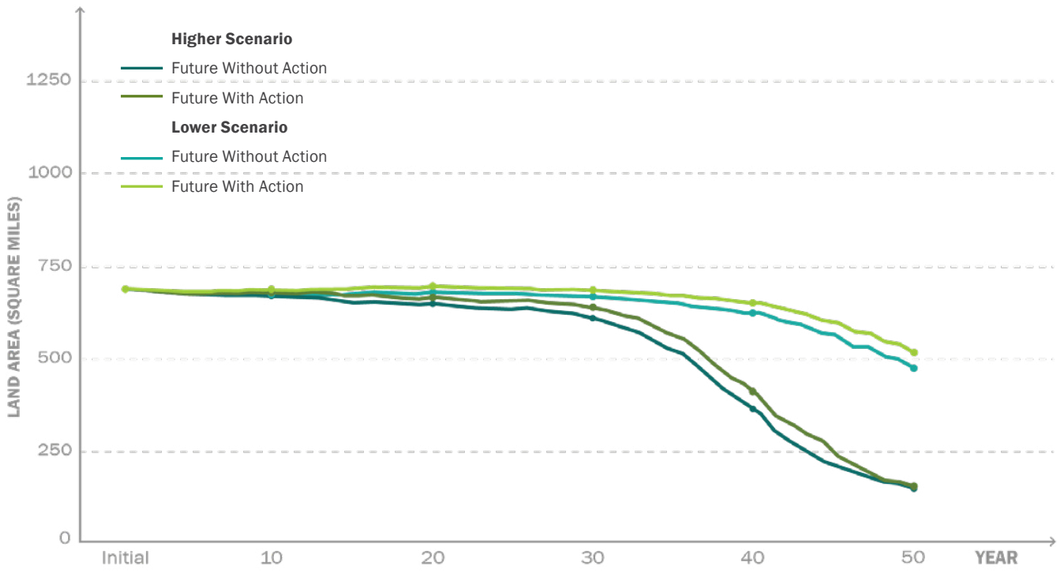



Figure 6.10: Central Coast Land Area Over 50 years, Future With and Without Action, Higher and Lower Scenario.

# TERREBONNE

**The Terrebonne region spans from Morgan City to Highway 1, including the communities of Houma and Dulac. The name derives from the French words “terre” and “bonne,” which together mean “good earth.” The region is filled with an interconnected web of bayous after which many of its small towns are named. The region has a series of barrier islands across the Terrebonne and Timbalier bays, including Timbalier Island and the Isles Dernieres.**

Figure 6.11: Aerial View of the Terrebonne Region with the 2023 Coastal Master Plan Projects.

# ABOUT TERREBONNE

## AN INTRODUCTION

**The Terrebonne region is known for its meandering bayous, blackwater swamps, and extensive marshes. This watery landscape supports some of the most productive commercial fisheries in the state. The region's relationship to water also poses challenges for residents, many of whom live outside of levee protection systems. The 2023 Coastal Master Plan proposes a variety of project types to reduce risk for these vulnerable communities.**

The Terrebonne Region extends from Bayou Lafourche in the east to the Atchafalaya Basin floodway, Fourleague Bay, and Oyster Bayou on the west. The region includes parts of seven parishes: Assumption, Ascension, Iberville, Lafourche, St. Martin, St. Mary, and Terrebonne. The area is often described as being "defined by water." Most communities are on higher land adjacent to natural bayous, such as Bayou Blue and Bayou Black, although thousands live in communities outside of levee protection systems.

The region is home to several groups of Indigenous peoples, including members of the Chitimacha Tribe. The Grand Caillou/Dulac Band of Biloxi-Chitimacha-Choctaw tribal peoples have been living in their ancestral traditional village of Grand Caillou/Dulac for centuries, living by trapping, fishing, hunting, and farming. Their ancestors were primarily of the historic Biloxi, Chitimacha, and Choctaw but also Atakapas and Acolapissa Tribes. To the east, the Pointe-au-Chien Indian Tribal Community is located in lower Pointe-aux-Chênes, a traditional village of their ancestors, the Chitimacha. The Pointe-au-Chien Indians also descend from the Biloxi, Acolapissa, and Atakapas Tribes. Terrebonne is also home to members of the United Houma Nation, a state-recognized tribe. Tribal members reside within a six-parish area along the southeastern coast of Louisiana. These peoples have strong cultural ties to the wetlands that are impacted by land loss, changing habitats, and erosion of key cultural sites, such as burial grounds. For these communities and others that call places like Pointe-aux-Chênes, Isle de Jean Charles, and Dulac home, land loss and rising sea levels pose an existential threat.

Ecosystems in the Terrebonne region include extensive bottomland hardwood and swamp forests in the Verret Basin and floating marshes in the Penchant Basin. Salt and brackish marshes are prevalent in eastern Terrebonne. The region includes the Elm Hall Wildlife Management Area in the Verret Basin and Pointe-aux-Chênes Wildlife Management Area in eastern Terrebonne, as well as the Isles Dernieres Barrier Islands Refuge and the Mandalay National Wildlife Refuge.

**200K residents at risk from storm surge-based flooding**

**Home of 26% of state's commercial shrimpers**

**Source of 20% of Louisiana's seafood production**

**Morganza to the Gulf to include 98 mi of hurricane protection levee**

Image: Timbalier Island Site Visit, 2021 (CPRA)

Resource-based industries are prevalent in the Terrebonne region's economy, with the energy industry and seafood production as primary sources of revenue. Residents of communities like Houma, Chauvin, Cocodrie, and Dulac contribute to the region's productivity, with the area accounting for over 20% of Louisiana's seafood production. Many of the outlying communities are important hubs for commercial fishing, including shrimp, oysters, and crabs. For example, in 2020, almost 34% of total statewide shrimp landings were from the Terrebonne Basin. In 2018, almost 26% of commercial fishers who landed shrimp in Louisiana lived in Terrebonne Parish. The region also has important public and private oyster-growing areas, including Lake Chien and Sister Lake. Other economic activities in the region include agriculture, ship building and fabrication, and support for the offshore energy industry. Major population centers, such as Morgan City, Houma, and Thibodaux, provide services, such as healthcare and retail, to surrounding communities.

Although beautiful, this region's geography and history of flooding and coastal land loss pose challenges for residents. Terrebonne residents and businesses have a long history of living with hurricanes and associated storm surge-based flooding. In recent decades Hurricanes Andrew (1992), Lili (2002), Rita (2005), Gustav and Ike (2008), and Ida (2021) have all caused extensive flooding. Land loss in the region was extensive during the 20th century in part due to ongoing deltaic subsidence, saltwater intrusion along the HNC and other canals, historic oil and gas activity, and natural deterioration of barrier islands, contributing to the area's vulnerability. Following Hurricane Juan in 1985, concerted efforts began to reduce the risk of flooding for bayou communities and the Houma area. The 2023 Coastal Master Plan identifies a number of projects to reduce storm surge risk in the region, including the Morganza to the Gulf project, which consists of a 98 mi hurricane risk reduction system of grass-covered earthen levees between U.S. 90 near Gibson to the west and Highway 1 near Lockport to the east.

## HIGH TIDE FLOODING (HTF) IN DULAC

In addition to storm surge-based flood risk, Louisiana's coastal communities often contend with localized flooding, also known as high tide flooding which can impede day-to-day travel and activity as well as emergency services. Communities are experiencing these issues today, and their residents have informal impact thresholds — areas they know to flood regularly — such as the Dulac Community Center's parking lot, which signals the threat of flooding. While the construction of the Morganza to the Gulf project has the potential to mitigate some high tide flooding, communities will still potentially be affected when the floodgates are open, allowing tidal flooding. The combined effects of sea level rise and coastal land loss will exacerbate the magnitude, frequency, and extent of these issues. As sea level rises and the geography of the coast changes, Dulac should continue to experience similar seasonal high to low tide fluctuations as it does now. However, the height of high tide, and thus the extent and magnitude of flooding will continue to increase due to these changes.

| | YEAR 1 | YEAR 25 | YEAR 50 |
|---|---|---|---|
| **Dulac Community Center** | 17% | 95% | 95% |
| **Shrimpers Row Rd / Bayou Guillaume Rd** | <5% | 92% | 95% |

Figure 6.12: Percentage of days that may see HTF at key locations in Dulac, Lower Environmental Scenario. For more information see Attachment H3.

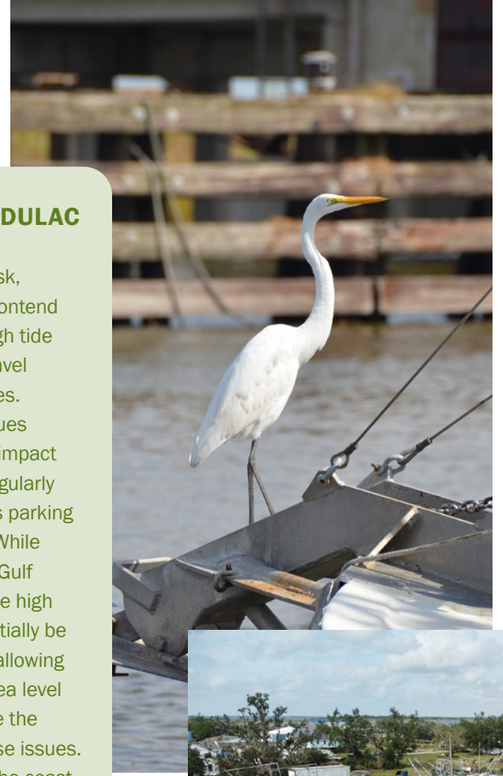


Image: Egret in Dulac (Louisiana Sea Grant College Program)

Image: Shrimpers Row, Dulac (Louisiana Sea Grant College Program)

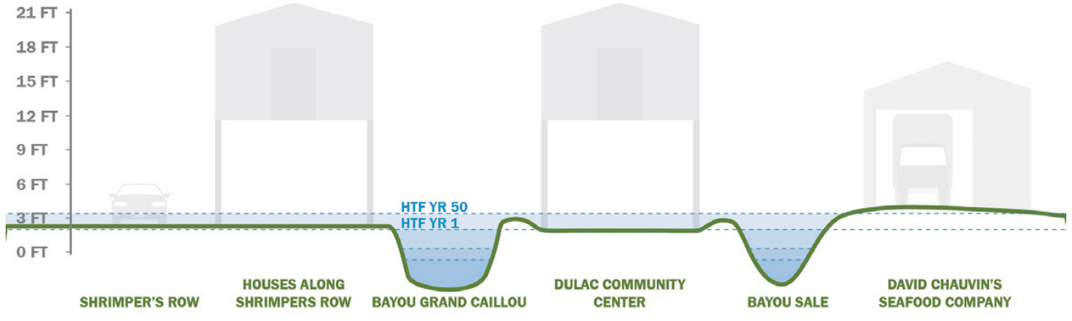



Figure 6.13: Representative HTF Elevations for Dulac at Year 1 and 50 in the Lower Scenario.

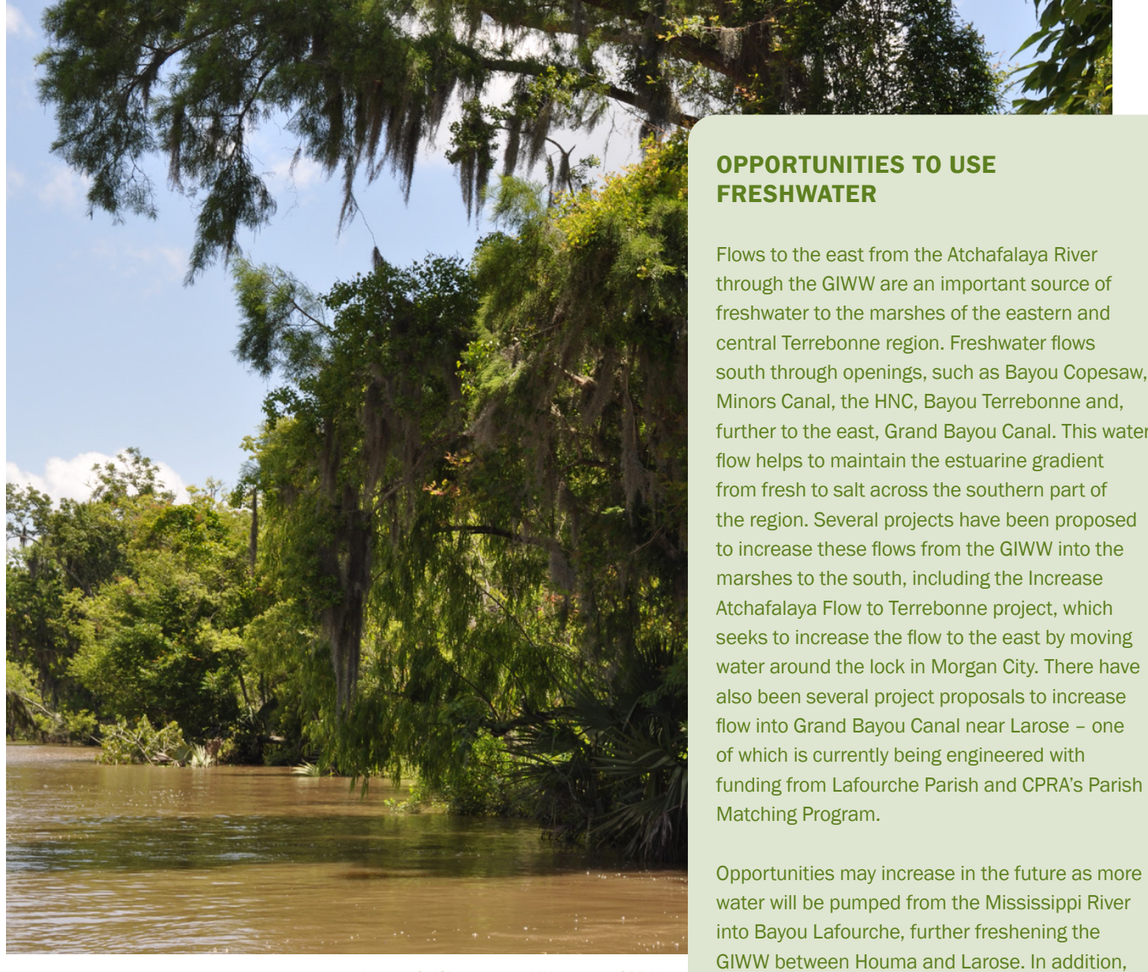


Image: Gulf Intracoastal Waterway (CPRA)

## OPPORTUNITIES TO USE FRESHWATER

Flows to the east from the Atchafalaya River through the GIWW are an important source of freshwater to the marshes of the eastern and central Terrebonne region. Freshwater flows south through openings, such as Bayou Copesaw, Minors Canal, the HNC, Bayou Terrebonne and, further to the east, Grand Bayou Canal. This water flow helps to maintain the estuarine gradient from fresh to salt across the southern part of the region. Several projects have been proposed to increase these flows from the GIWW into the marshes to the south, including the Increase Atchafalaya Flow to Terrebonne project, which seeks to increase the flow to the east by moving water around the lock in Morgan City. There have also been several project proposals to increase flow into Grand Bayou Canal near Larose – one of which is currently being engineered with funding from Lafourche Parish and CPRA's Parish Matching Program.

Opportunities may increase in the future as more water will be pumped from the Mississippi River into Bayou Lafourche, further freshening the GIWW between Houma and Larose. In addition, the expected construction of the HNC Lock and Floodgate complex will allow additional flexibility to manage freshwater flows through the HNC. Several projects selected in the 2023 Coastal Master Plan in the Terrebonne region will utilize freshwater from the GIWW to maintain the estuarine salinity gradient in the face of ongoing sea level rise and subsidence. These include the Eastern Terrebonne Landbridge; Central Terrebonne Hydrologic Restoration, which seeks to limit saltwater intrusion from the south; and the Bayou Decade and Mauvais Bois Ridge projects, which can limit exchanges from saline areas into the upper parts of the Penchant Basin.

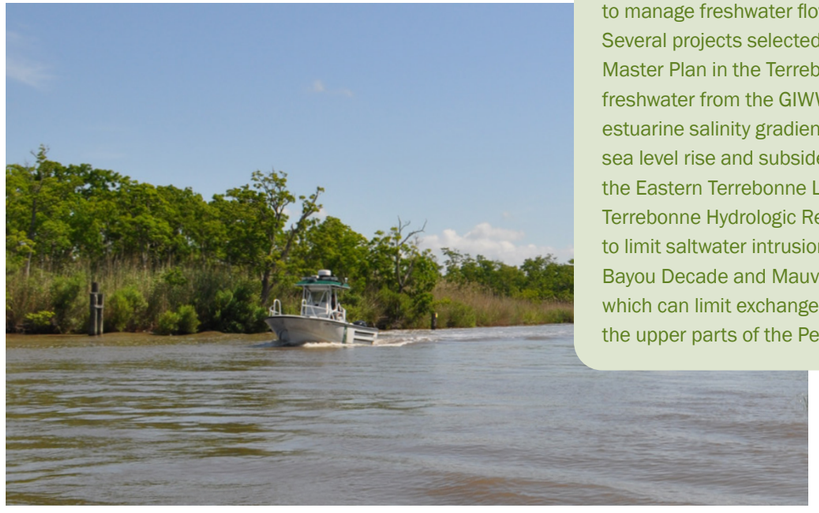


Image: Gulf Intracoastal Waterway (CPRA)