



# St. Charles Parish SHIELD Plan

Stabilizing Habitats through  
Infrastructure, Ecology, and  
Land Defense

2025





# MESSAGE FROM PARISH PRESIDENT JEWELL

St. Charles Parish is proud to present the Stabilizing Habitats through Infrastructure, Ecology, and Land Defense plan (SHIELD), a locally developed strategy to guide restoration efforts, protect our vital resources, and strengthen the long-term resilience of our communities. This plan reflects our continued commitment to preserving the wetlands, ecosystems, and coastlines that define our parish and support our way of life.

Our parish is vital to Louisiana's working coast, contributing to navigation, industry, and ecological health. The plan identifies high-priority projects and parish-wide initiatives such as shoreline protection, marsh creation, freshwater reintroduction, and expanded recreational opportunities. These efforts align with the state's Coastal Master Plan and position us to secure critical funding at both the state and federal levels.

As we move from planning to implementation, one of our most important responsibilities is maintaining strong and consistent engagement with the Coastal Protection and Restoration Authority (CPRA). I am dedicated to continuing my work as the CPRA board member for the Barataria Basin to ensure that St. Charles Parish's priorities are clearly represented and supported. Working closely with CPRA and its network throughout the state will help with funding allocations to construct coastal projects that will positively impact flood protection for generations to come.

This plan lays out a clear path by identifying priority projects and the funding needed to take the next step toward making them a reality, beginning with engineering and design. Its success will depend on collaboration, persistence, and strong public support. With this plan in place and your continued partnership, we can protect the natural resources that sustain our community.

Sincerely,



Matthew Jewell  
St. Charles Parish President



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# LIST OF ACRONYMS

**CFR** – Code of Federal Regulations

**CM** – Construction Management

**CPRA** – Coastal Protection and Restoration Authority

**CPS** – Coastal Political Subdivisions

**CUP** – Coastal Use Permit

**CWPPRA** – Coastal Wetlands Planning, Protection and Restoration Act

**CZM** – Coastal Zone Management

**DWH** – Deepwater Horizon

**E&D** – Engineering and Design

**EMU** – Environmental Management Unit

**FPL** – Funded Priorities List

**GIWW** – Gulf Intracoastal Waterway

**GOMESA** – Gulf of Mexico Energy Security Act

**HNC** – Houma Navigation Canal

**IHNC** – Inner Harbor Navigation Canal

**JPA** – Joint Permit Application

**LA TIG** – Louisiana Trustee Implementation Group

**LCA** – Louisiana Coastal Area

**LDEQ** – Louisiana Department of Environmental Quality

**LDENR** – Louisiana Department of Energy and Natural Resources

**LDWF** – Louisiana Department of Wildlife and Fisheries

**MRGO** – Mississippi River Gulf Outlet

**NGO** – Non-Governmental Organization

**NOAA** – National Oceanic and Atmospheric Administration

**NRDA** – Natural Resource Damage Assessment

**NFWF** – National Fish and Wildlife Foundation

**O&M** – Operations and Maintenance

**PDARP/PEIS** – Programmatic Damage Assessment and Restoration Plan and Programmatic Environmental Impact Statement

**PPL** – Priority Project List

**RESTORE** – Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act

**RESTORE Council** – Gulf Coast Ecosystem Restoration Council

**RESTORE Trust Fund** – Gulf Coast Restoration Trust Fund

**SHIELD** – Stabilizing Habitats through Infrastructure, Ecology, and Land Defense

**SLR** – Sea Level Rise

**USACE** – United States Army Corps of Engineers

**WMA** – Wildlife Management Area

**WQT** – Water Quality Trading

**WRDA** – Water Resources Development Act

# INTRODUCTION

Louisiana currently experiences greater coastal wetland loss than all other states in the contiguous United States combined, due to a variety of compounding factors, including sea-level rise (SLR), subsidence, storms, sediment deprivation, oil and gas extraction, navigation infrastructure, saltwater intrusion, and altered hydrology (Couvillion et al., 2017). As one of Louisiana's coastal parishes, St. Charles Parish is deeply familiar with the issues and challenges that come with living and working in the coastal system. Recognizing the importance of addressing these issues via proactive planning and restoration implementation, the St. Charles Parish Government, through its Department of Planning and Zoning, and acting on approval from the St. Charles Parish Council, has developed this Stabilizing Habitats through Infrastructure, Ecology, and Land Defense (SHIELD) plan.

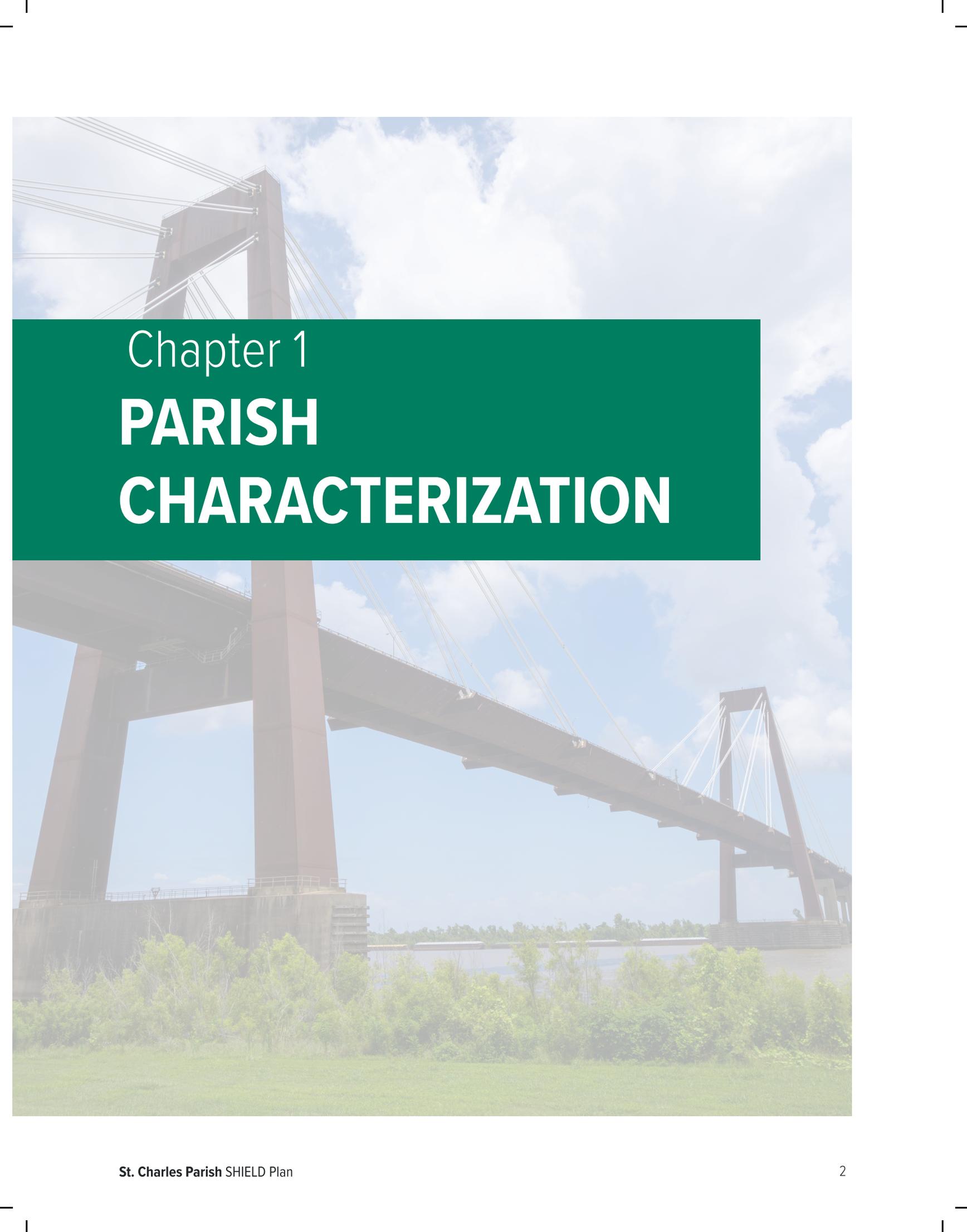
The purpose of the SHIELD plan is to maximize the parish's ability to advance its coastal restoration efforts and set the stage for the inclusion of parish projects in the Coastal Protection and Restoration Authority's (CPRA) future Louisiana's Comprehensive Master Plan for a Sustainable Coast (Coastal Master Plan). Specifically, the SHIELD plan objectives are as follows:

- Identify St. Charles Parish priority coastal projects that address ecological restoration needs and improve community resilience
- Develop planning-level information for each Priority Project
- Identify and describe large-scale and programmatic opportunities
- Identify existing programs and sources for project funding

Having a parish coastal restoration plan in place will allow for projects to be more competitively and strategically advanced and submitted to a wide variety of funding sources for engineering and design, and implementation dollars.

The SHIELD plan leverages and complements other restoration projects, programs, and plans. Specifically, it aligns with the Local Coastal Program document developed by the parish in 2015 and is structured to provide a compilation of Priority Projects for the parish to focus on. In addition to these Priority Projects, the plan also includes programmatic concepts that target parish-wide initiatives such as increasing opportunities for recreation and access on public lands and waters, invasive species management, reforestation, and abandoned vessel removal. Furthermore, the SHIELD plan is consistent with the Goals and Objectives of the Coastal Master Plan, which provides a source of funding against which to leverage more limited parish dollars. The SHIELD plan also identifies freshwater reintroduction as a priority for the parish, focusing on large scale diversion projects that are being proposed at the state and federal levels. While these projects are outside of the parish's capacity to plan, design, and implement, documenting the parish's support for these efforts is critical for understanding the landscape of current and future coastal restoration.

The SHIELD plan represents the parish's continued commitment to protecting and restoring its coastal habitats into the future. The SHIELD plan builds upon previous planning efforts and provides a foundation to protect existing wetlands, infrastructure, and communities; create and restore critical coastal habitats; reduce hurricane-related storm risks; promote recreation and education; and maximize restoration funding opportunities.

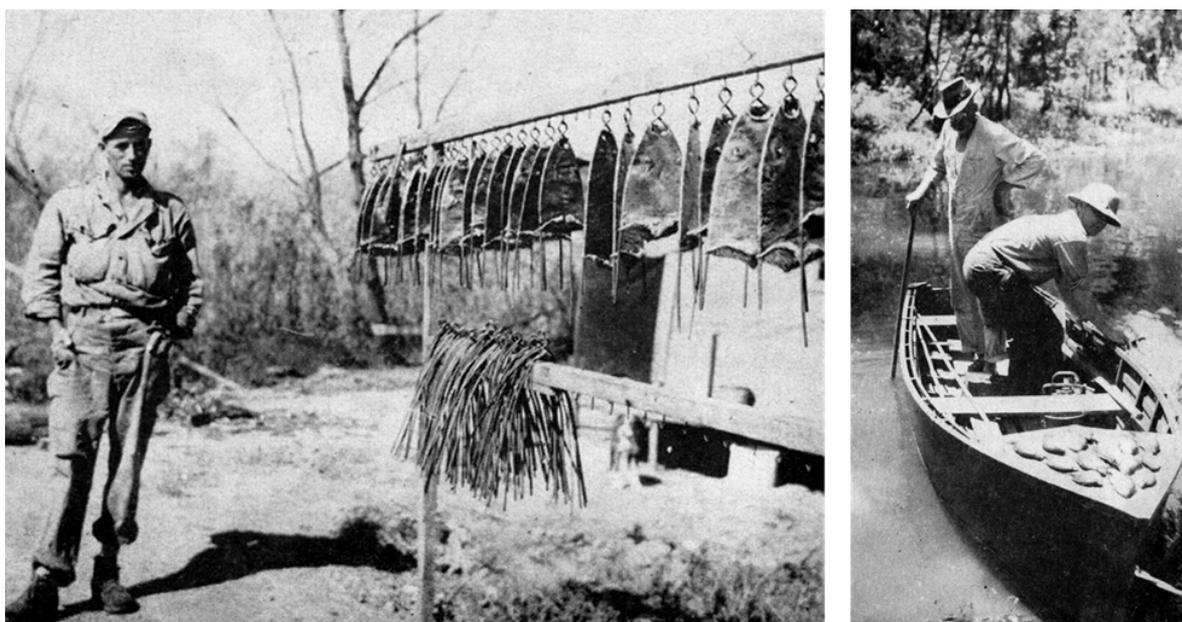


Chapter 1  
**PARISH  
CHARACTERIZATION**

# HISTORY AND THE CURRENT HUMAN ENVIRONMENT

## HISTORY

European colonization of St. Charles Parish began in the early 1700s with French settlements in the Louisiana territory. In 1721, German settlers arrived in the territory, recruited by John Law, a Scottish banker and finance minister to the Duke of Orleans. This small group moved to the area that is now St. Charles Parish, also known as the Côté des Allemands (German Coast), named after these early German residents. In 1765 and 1766, the first Acadians arrived in the area and joined the Germans along the river (Figure 1). These early settlers of St. Charles Parish were given small plots of land to farm for their own needs and regularly produced enough surplus grain, vegetables, eggs, and other agricultural products to support the New Orleans market, often using pirogues to ferry their goods to and from the market (Merrill, n.d.).



*Figure 1. A muskrat trapper dries pelts (left) and fishing harvests (right) in St. Charles Parish circa 1940 (St. Charles Parish Museum and Historical Association, n.d.-c).*

The German Coast became known for its plantations, such as Destrehan and Ormond, which produced indigo, rice, corn, tobacco, and eventually sugar cane in the 1790s after several natural disasters and crop failures led to a shift away from indigo (Merrill, n.d.). In the late 1790s, a plantation owner from north of New Orleans, Etienne de Bore, discovered a method to extract sugar from Louisiana cane and made a substantial profit off his first crop. His success attracted attention from other landowners, and by the 1800s, sugar cane was the main crop of the area (St. Charles Parish Museum and Historical Association, n.d.-a). Small villages were also established in the parish's wetlands, including the village of Bois Choctaw, which was settled in the 1850s in the marshland west of Lake Salvador. These smaller communities relied heavily on trapping, hunting, and fishing for subsistence. Some families utilized houseboats or "chalands" to follow the seasonality of the game species they relied on more easily (St. Charles Parish Museum and Historical Association, n.d.-b).

Beginning in the late 1800s, lumber emerged as a significant export of the area, as canals and rivers made transportation feasible. The success of lumber was the beginning of industry in the parish, with the first sawmill opening in 1907 in Taft. By 1908, the Louisiana Cypress Company was harvesting cypress throughout the Parish's wetlands. With the completion of the Cousins Canal, lumber could be moved quickly, and by 1912, 100,000 feet of board was floated on the canal (SCPG, n.d.-b).

Not long after the success of the lumber industry, oil was discovered in Jennings Field. Destrehan Plantation became the property of the Mexican Petroleum Company, marking the first plantation to transition into industrial ownership. Refineries and other related industries followed with an oil export terminal in St. Rose in 1922 and two more in Good Hope in 1925. Further oil discoveries in Bayou Des Allemands, Paradis, Lake Salvador, and Bayou Couba wetlands expanded the oil industry even further and led to the establishment of other industries, including chemical and fertilizer plants, and grain elevators (SCPG, n.d.-b). Although this set the stage for the modern-day economic dominance of the petrochemical and manufacturing industries in the parish, the plethora of remnant oil exploration and lumber extraction canals has directly contributed to many of the coastal challenges facing the parish's wetlands today, including habitat loss, hydrologic regime modification, and saltwater intrusion.

The 19<sup>th</sup> and 20<sup>th</sup> centuries brought significant advances in parish infrastructure from railroad construction to flood control structures. Development of railroad and interstate systems throughout the parish provided critical commerce and trade connections to major cities, such as New Orleans, and helped to support the parish's economic growth. The construction of the Illinois Central Railroad traversing the Labranche wetlands was one of the first railways completed in the area. It marked the first of several large-scale infrastructure projects, such as Interstate 10 and 310, that would be completed in the Labranche wetland area. The railroad and roadways were and continue to be critical transportation corridors; however, they also altered the natural water flow of the Labranche wetlands. These changes led to increased saltwater intrusion, marsh degradation, and conversion of wetlands to open water (NRCS, n.d.). Following the Great Mississippi Flood of 1927, the U.S. Congress passed the Flood Control Act of 1928, authorizing the Mississippi River and Tributaries Project. As part of this initiative, the Bonnet Carré Spillway was constructed between 1929 and 1931 in the Labranche wetland area. The spillway serves as a controlled outlet for excess Mississippi River water to flow into Lake Pontchartrain, thereby reducing pressure on downstream levees and mitigating flood risks for New Orleans and surrounding areas (SCPG, n.d.-b).

## CURRENT HUMAN ENVIRONMENT

St. Charles Parish remains strongly linked to its historic industrial roots, with manufacturing, transportation and warehousing, and wholesale trade being among the parish's top ten employing job sectors (LWC, 2025). Major manufacturing companies with industrial centers in the parish include New Orleans Refining Company, Shell, Dow, and Bayer (SCPG, n.d.-c). The prevalence of industry in the parish is also reflected in overall land use and development trends (Figure 2 and Figure 3). From 2011 to 2022, agricultural land use in the parish declined, while industrial land use increased, becoming the predominant use at 9,773 acres compared to 7,107 acres for agriculture (SCPG, 2022).

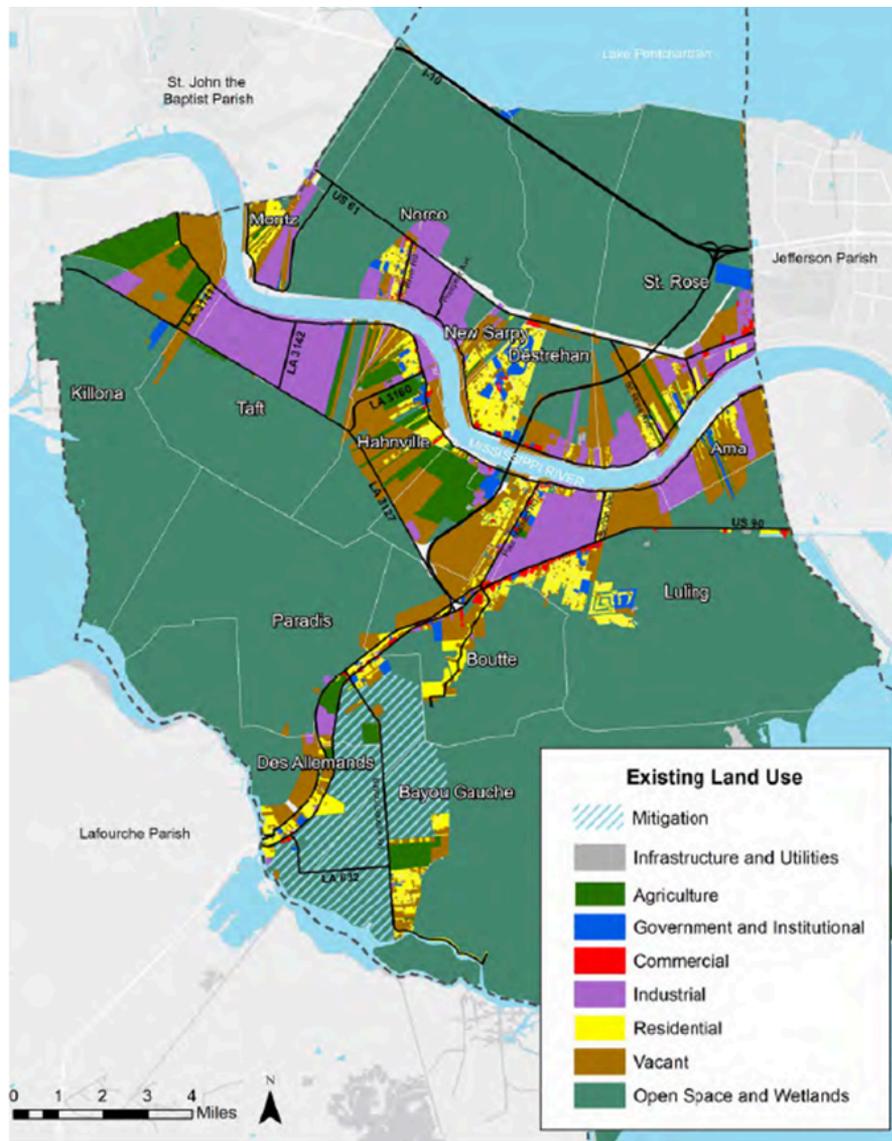


Figure 2. Existing Land Use Map (2022) from the St. Charles Parish 2030 Comprehensive Plan Update.

This trend is likely to continue, as the increasing availability of large agricultural tracts of land attracts further industrial interests looking to develop in the parish. However, with over 50% of the parish land area covered in wetlands and only 8% of the parish’s remaining land area classified as developable, the availability of land for future growth opportunities is limited (SCPG, 2022).

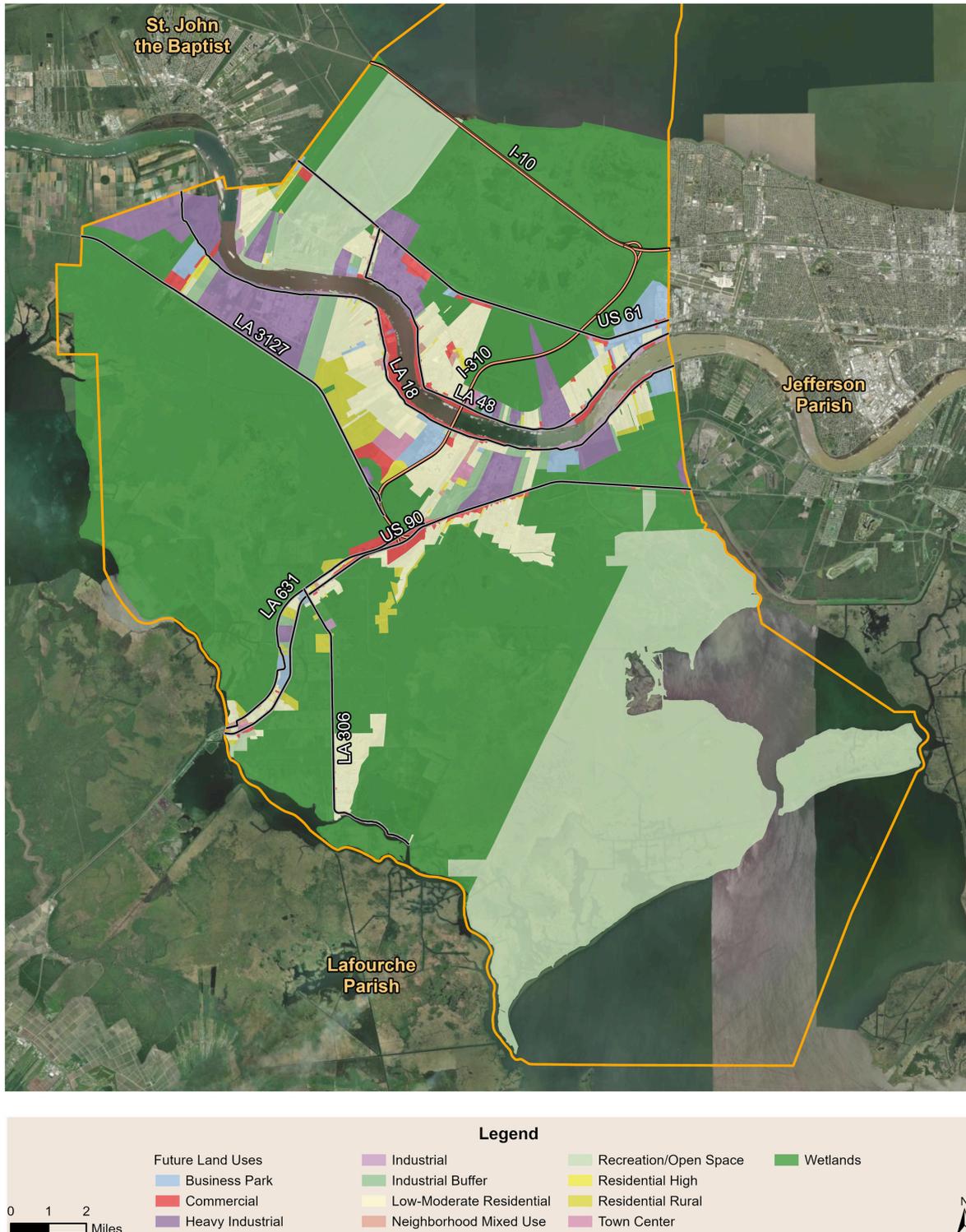


Figure 3. Future Land Use map from St. Charles Parish 2020 Comprehensive Plan Update.

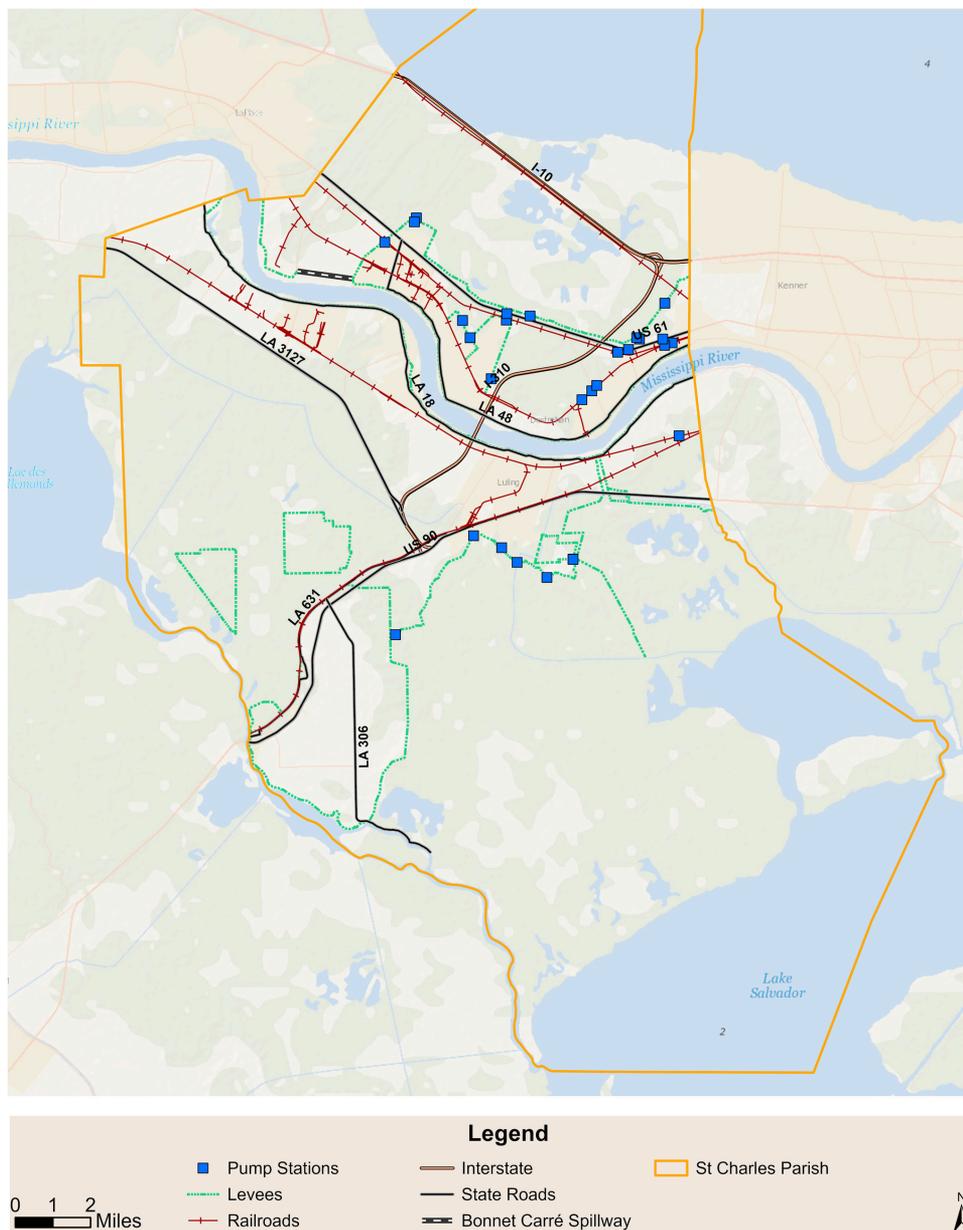


Figure 4. Major infrastructure in the parish including levee systems, roads, railroads, and other flood protection structures.

The protection of the parish’s levee systems is also a significant factor influencing predicted areas for future land development and current population distribution trends (Figure 4). Communities with the highest population densities, such as Luling, Destrehan, St. Rose, and Norco, are situated within the levee protection systems, as is the majority of all developed and developable land (SCPG, 2022). The St. Charles Parish levee system consists of Upper and Lower Guide levees, which divert floodwater to Lake Pontchartrain via the Bonnet Carré Spillway, federal hurricane protection levees on each bank of the Mississippi River, and a network of other smaller levees and pump stations throughout the parish which together help protect the parish’s main population and development centers from tidal flooding (SCPG, 2022). Due to large gaps in the current levee system, the portion of St. Charles Parish on the Mississippi River’s West Bank is particularly vulnerable to heavy rainfall events, hurricane-related tidal surges, and associated damages to industrial, commercial, residential, agricultural, and environmental facilities. Unprotected stretches in this portion of the parish have been declared federal disaster areas 14 times in the last 30 years due to named storm events (SCPG, n.d.-a).

The Upper Barataria Risk Reduction project proposed in the 2023 Coastal Master Plan would fill these gaps in the West Bank system and create a comprehensive, continuous system of coastal protection, extending from the West Bank Hurricane Protection System at Davis Pond to just south of Raceland (Figure 5). While progress has been made on several elements of the project, funding for the full suite of project features is still being secured. If fully implemented, the project could reduce flood depths in the Paradis, Boutte, and Luling areas by over 5 feet over the next 50 years (CPRA, 2023a).

Although the prevalence of wetlands and water in the parish presents challenges to development, it also provides opportunities for recreation and large swaths of undeveloped space for the parish's two Wildlife Management Areas (WMAs). The Salvador WMA is located to the northwest of Lake Salvador, and the Timken WMA is located on Couba Island between Lake Salvador and Lake Cataouatche (Figure 5). Managed by the Louisiana Department of Wildlife and Fisheries (LDWF), the two WMAs contain 34,520 acres of fresh marsh and provide recreational opportunities such as hunting, trapping, fishing, boating, birding, and wildlife viewing (LDWF, n.d.). However, because the WMAs are only accessible by boat, the ability of residents to take advantage of these recreational opportunities is limited. There are three private and six public boat launches in the parish, with Pier 90, Bayou Gauche, and Bayou des Allemands launches being the closest access points to the WMAs in the parish. Other major recreational areas include the Bonnet Carré Spillway Recreation Area and the Wetland Watchers Park, both of which are in the East Bank wetland areas south of Lake Pontchartrain.



Figure 5. Vicinity map of St. Charles Parish.

# COASTAL ENVIRONMENT

St. Charles Parish is part of the Mississippi River Delta, a region characterized by low-lying wetlands, marshes, and waterways. The parish is bisected by the Mississippi River, creating divisions of the parish known locally as the West Bank (south of the Mississippi River) and the East Bank (north of the Mississippi River). The Mississippi River also defines the split between the parish's two hydrologic basins, the Pontchartrain Basin and the Barataria Basin (Figure 6) (CWPPRA, n.d.-b; CWPPRA, n.d.-c).

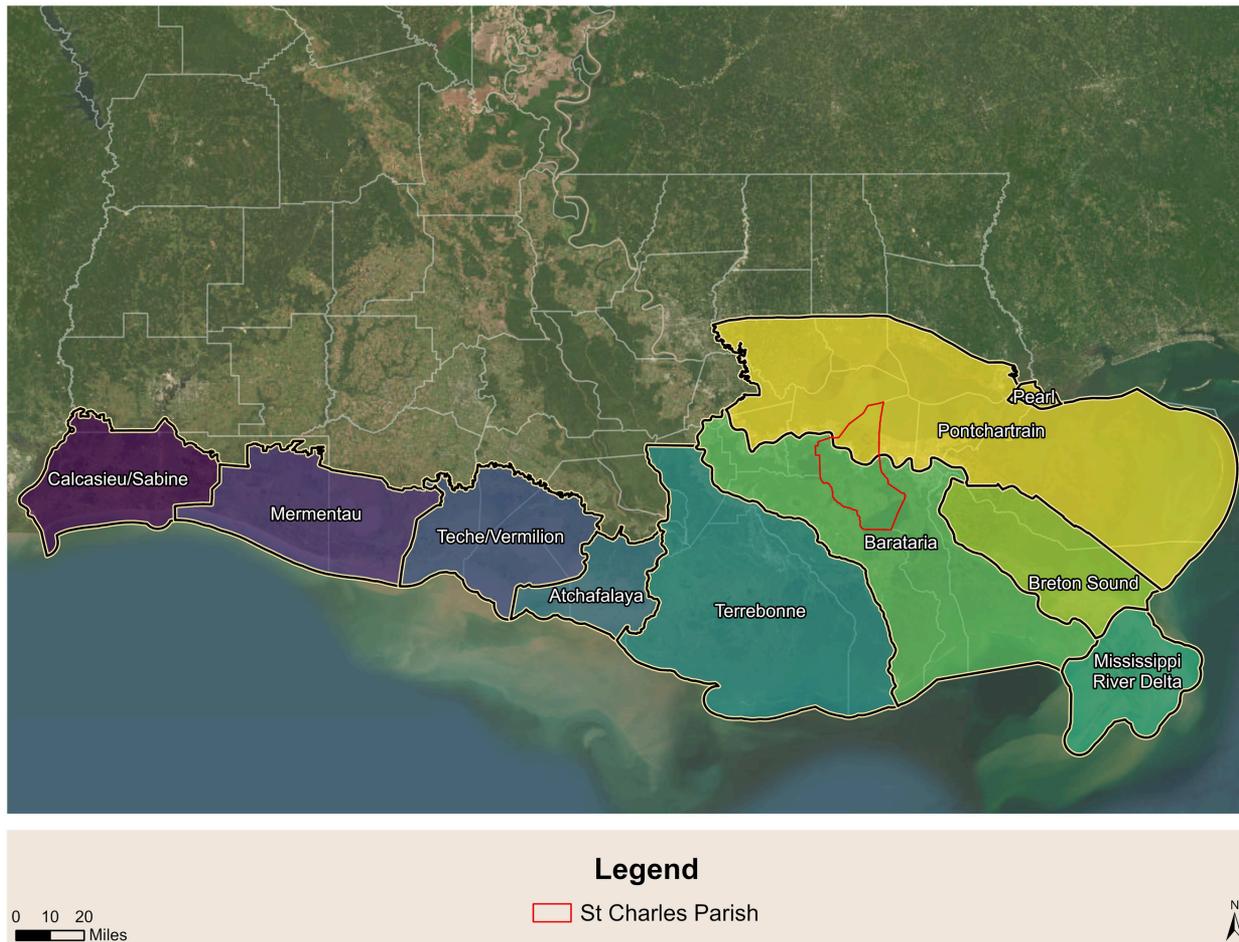


Figure 6. Louisiana's coastal hydrologic basins.

Other major waterbodies in and immediately adjacent to the parish include Lake Pontchartrain to the north, Lake Salvador and Lake Cataouatche to the south, and Bayou des Allemands and Lac des Allemands to the southwest and west, respectively (Figure 5). Many smaller waterways and man-made canals traverse the parish's interior, influencing overall hydrology and drainage.

The Barataria and Pontchartrain Basins are considered intertributary basins of the larger Mississippi River Delta formation, which was created as the Mississippi River shifted course, depositing sediment and sequentially creating and abandoning delta lobes over the last 6,000 years (Day et al., 2021). The Barataria Basin is bounded by the natural levees of the Mississippi River and Bayou Lafourche. It is characterized by fresh wetlands and cypress-tupelo swamp in the north and intermediate to saline wetlands in the southern portion of the basin. In the Mid-Barataria Basin, which lies between Highway 90 and the Gulf Intracoastal Waterway (GIWW), freshwater primarily flows from Bayou des Allemands into Lake Salvador and exits into the lower basin through Bayous Rigolettes and Perot. Other freshwater sources include rainfall runoff and the Davis Pond Diversion, which channels Mississippi River water into Lake Cataouatche. Water levels in the Upper and Mid-Barataria Basin are minimally impacted by astronomical tides. Instead, rainfall, wind, weather fronts, and seasonality are the main drivers of water level variability in these portions of the basin (Day et al., 2021).

St. Charles Parish wetlands that fall within the Mid-Barataria Basin are primarily fresh to low-salinity marshes, with pockets of cypress-tupelo swamp forests (Figure 7). Fresh marsh in the Lake Salvador area is frequently described as floating or “flotant” marsh (Carpenter et al., 2007, Mississippi River Delta Restoration Program, 2021). Flotant marshes are a distinctive wetland type found in Louisiana’s coastal regions and are characterized by mats of vegetation that float atop the water’s surface. The buoyancy of these mats is due to the dense network of plant roots and organic material, such as peat, which trap gases and create a spongy, floating substrate. This unique structure allows the marsh to rise and fall with water levels, providing resilience against flooding and storm surges (Mississippi River Delta Restoration Program, 2021). However, these fresh marsh ecosystems are increasingly vulnerable to saltwater intrusion as sea levels continue to rise and wetlands are lost in the lower basin.

The East Bank of the parish falls within the Pontchartrain Basin, which is defined by the Mississippi River to the west, the Pearl River to the east, Chandeleur Sound and the Gulf of America to the southeast, and the watersheds of rivers in Mississippi that drain into lakes Pontchartrain and Maurepas to the north. The basin is characterized by fresh, intermediate, and swamp forested wetlands in the upper Basin, including St. Charles Parish, with vegetation shifting to more brackish and saline marsh in the lower Basin (Nyman et al., 2022).



Figure 7. Vegetation types in St. Charles Parish (Nyman et al. 2022).

The primary hydrologic components of the Pontchartrain Basin include Lakes Maurepas, Pontchartrain, Borgne, and the Chandeleur Sound. Lake Pontchartrain is connected to Lake Maurepas on the west and Lake Borgne on the east through passes that cross natural land bridges. Direct access to the Gulf of America from Lake Pontchartrain is provided by the Inner Harbor Navigation Canal (IHNC) and the Mississippi River Gulf Outlet (MRGO). Historically, freshwater flowed into the basin via Bayou Manchac and through natural crevasses in the Mississippi River's levees, a process that ceased with the construction of the man-made levees in the 1930s. Today, freshwater enters the basin through various pathways, including the Amite, Tickfaw, and Tangipahoa rivers, as well as the Bonnet Carré Spillway, when operational, the IHNC Lock, the Violet Siphon, and a network of smaller rivers and bayous. Additionally, rainfall and urban stormwater runoff contribute to overall discharges into Lake Pontchartrain (CWPPRA, n.d.-c). In the Labranche area of the basin, wetlands are tidally influenced and experience wind-driven fluctuations in the water level.

# COASTAL CHALLENGES

The Barataria and Pontchartrain Basins have experienced significant subsidence and land loss since the 1930s, with net losses of 277,000 acres and 131,000 acres, respectively (Couvillion et al., 2017; CPRA, 2018).

Specifically, in St. Charles Parish, projections indicate that the parish could lose an additional 13 square miles, or 13% of its land area, over the next 50 years without further restoration and protection actions being taken (CPRA, 2017c).

Wetland losses are attributed to a combination of natural and human influenced factors, including sea level rise, subsidence, shoreline erosion, herbivory, channelization of waterways, and levee construction (LCWCR Task Force, 2018).

On the West Bank, wetlands around Lake Salvador and Lake Cataouatche are primarily threatened by shoreline retreat and pervasive hydrologic modifications from levees and oil and gas activities. The western shoreline along Lake Salvador is particularly vulnerable to shoreline erosion due to long fetch across the lake from southerly winds, the presence of flotant marsh, and unconsolidated bottoms. Erosion rates along the Salvador shoreline average approximately 13 feet per year, resulting in breaches of the shoreline, which allow wave energy to erode the fragile interior marsh (Curole et al., 2002). Couba Island is a critical barrier to storm surge and is also subject to similar erosional forces and subsequent interior marsh loss. Aerial analysis of Couba Island's southern shoreline from 2022 to 2024 indicates that the shoreline is retreating, with erosional hot spots having lost over 400 feet of land (Figure 8).



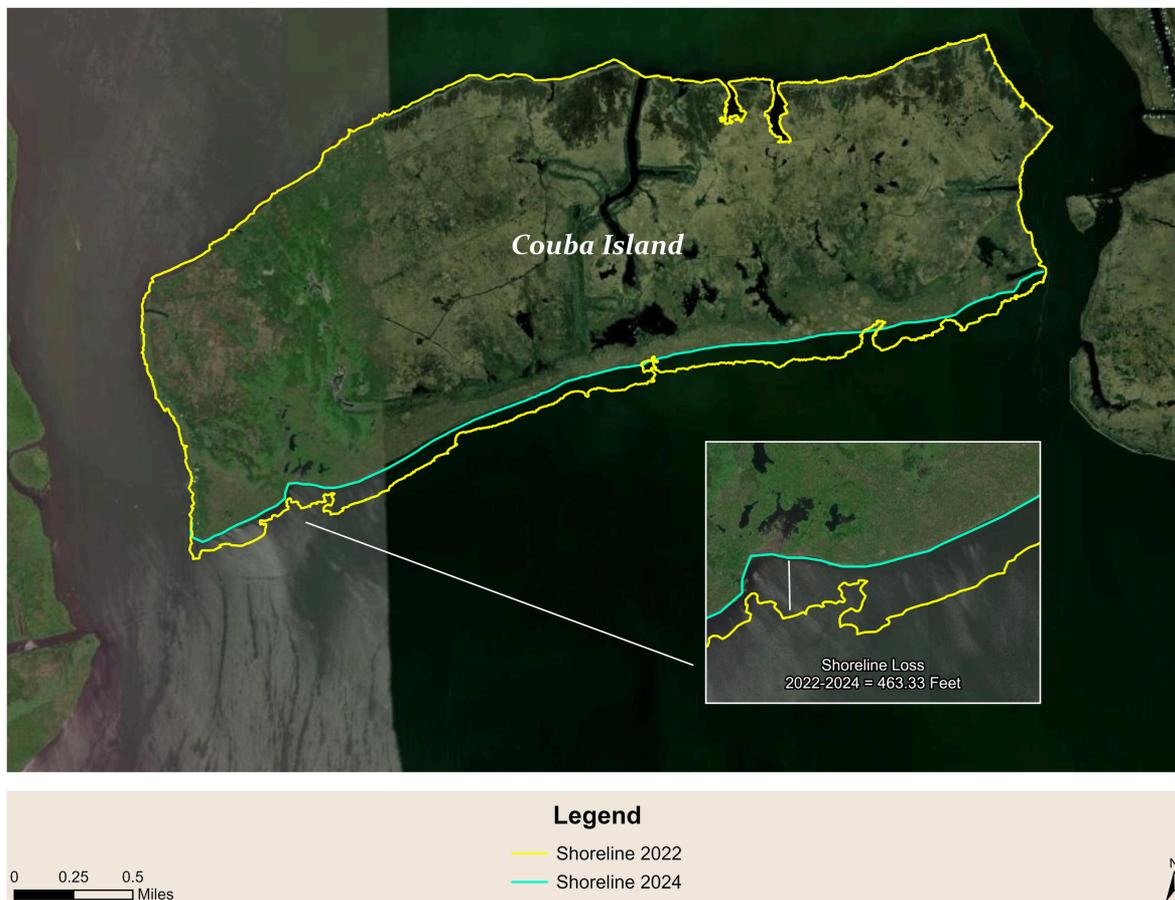


Figure 8. Erosion of the southern shoreline of Couba Island from 2022 to 2024.

The Labranche wetlands on the East Bank experience high rates of land loss, driven by the area’s history of human alterations (e.g., interstate and railroad construction and associated canals for equipment access), which have facilitated saltwater intrusion and impaired hydrology, leading to fragmented marsh and large areas of open water (CWPPRA, n.d.-c). The area is also susceptible to shoreline erosion and wind-driven wave action from Lake Pontchartrain, which exacerbates the loss of interior marshes that are critical for protecting East Bank communities. It’s estimated that approximately 9.5 feet of shoreline are lost per year due to erosion in this area of the parish (CPRA, 2025).

Given that much of the parish’s wetlands around Lake Salvador and Lake Cataouatche have been cut off from historically important freshwater and sediment sources by flood protection systems, these habitats are also increasingly vulnerable to saltwater intrusion-related risks. Rising sea levels, periods of drought, and prevailing southern winds all contribute to prolonged spikes in salinity, which over time can cause vegetative stress and shifts in plant and aquatic species assemblages (Day et al., 2021). Although the Davis Pond Diversion is helping to mitigate these risks and preserve the existing freshwater marsh ecosystem, additional freshwater reintroduction projects would increase the area of benefit and address these issues at a larger scale.

The frequency and intensity of tropical storms and hurricanes are another challenge faced by coastal communities in Louisiana. Since 2000, St. Charles Parish has had 34 federally declared disasters related to tropical storms, hurricanes, and flooding (FEMA, 2024). Hurricane Katrina caused widespread flooding and storm surge, which contributed to significant wetland erosion and saltwater intrusion, permanently altering the landscape. Hurricanes Gustav and Isaac followed with heavy rainfall and prolonged storm surges that further degraded marshlands and stressed local flood protection infrastructure. Hurricane Ida in 2021 was particularly catastrophic for St. Charles Parish, with sustained winds exceeding 150 miles per hour. The storm caused massive tree loss, widespread power outages, and severe structural damage to homes and businesses. Ecologically, Ida further eroded parish shorelines and caused siltation of interior wetland channels, disrupting natural hydrological processes and wetland functions. Without additional restoration or protection actions, hurricane-related risks to local communities are likely to worsen. CPRA projections indicate that the parish faces increased future storm surge-based flood risk in areas currently outside the hurricane protection system, particularly along Highway 90, where 100-year flood depths could increase to over 16 feet (Figure 9) (CPRA, 2023c).

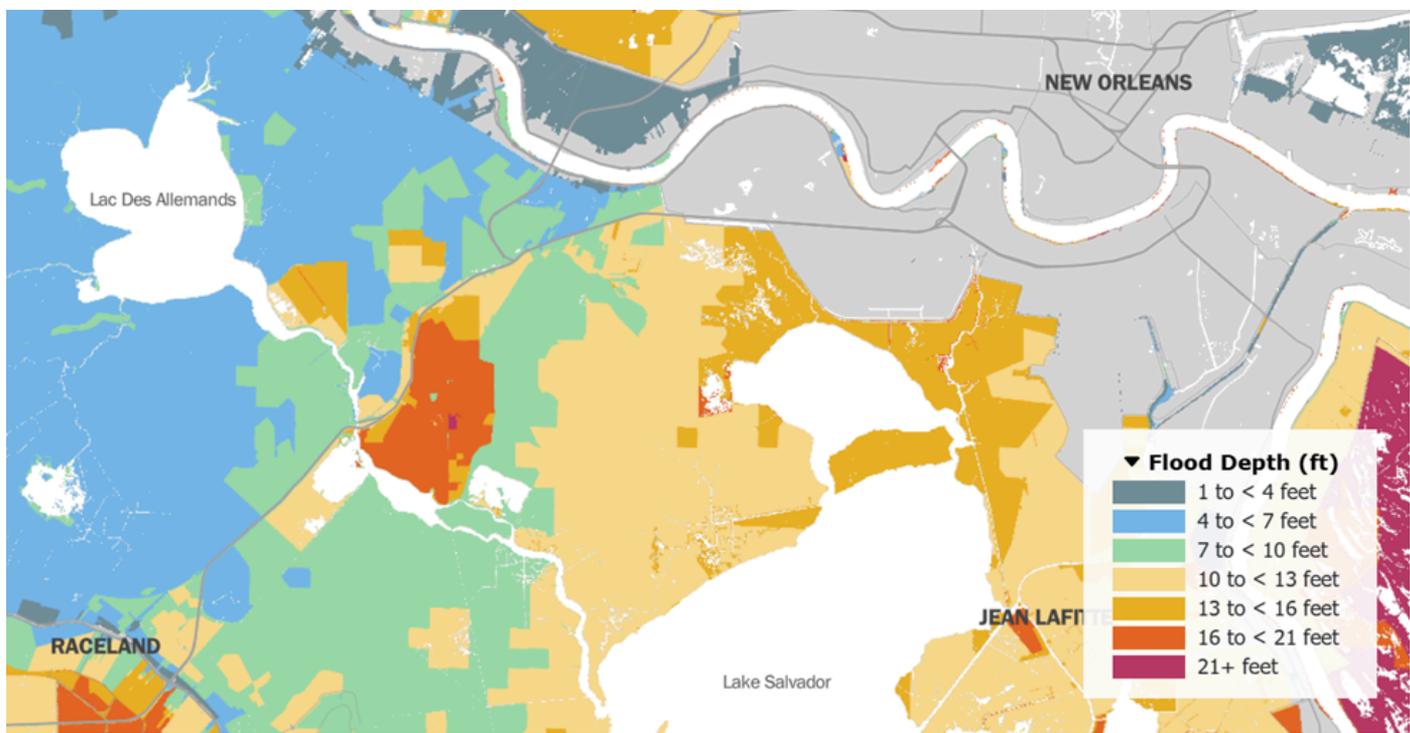


Figure 9. Projected future without action at year 50 (CPRA 2023c).





# Chapter 2

# **VISION**

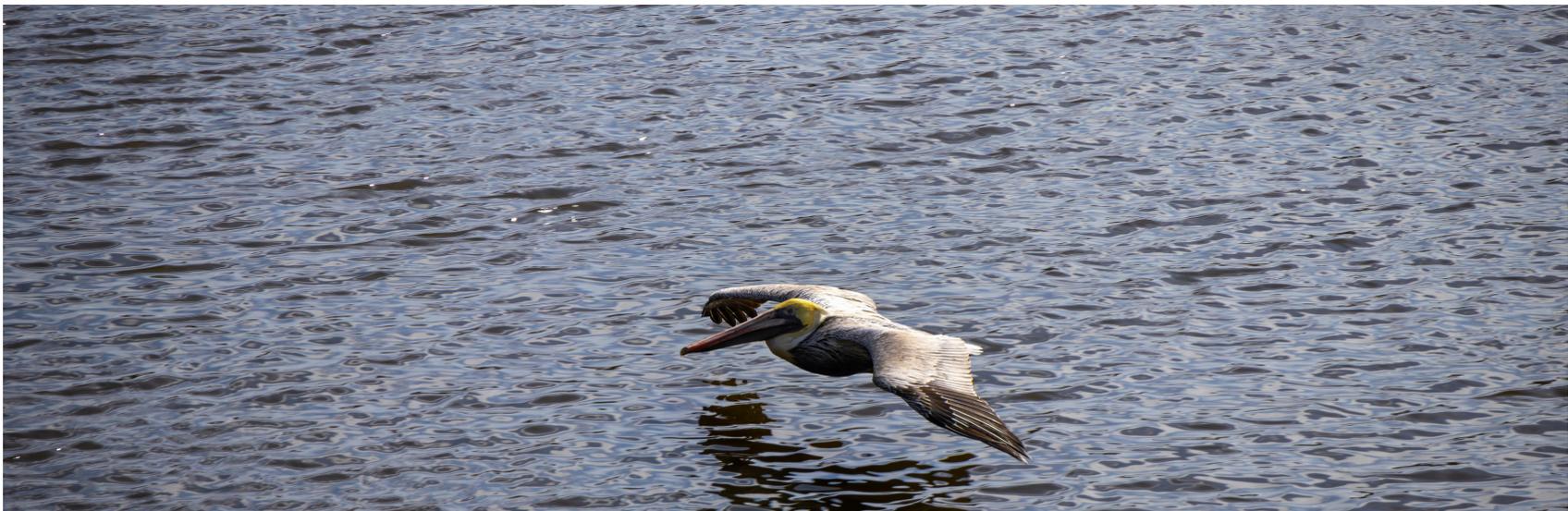
# STRATEGIC VISION

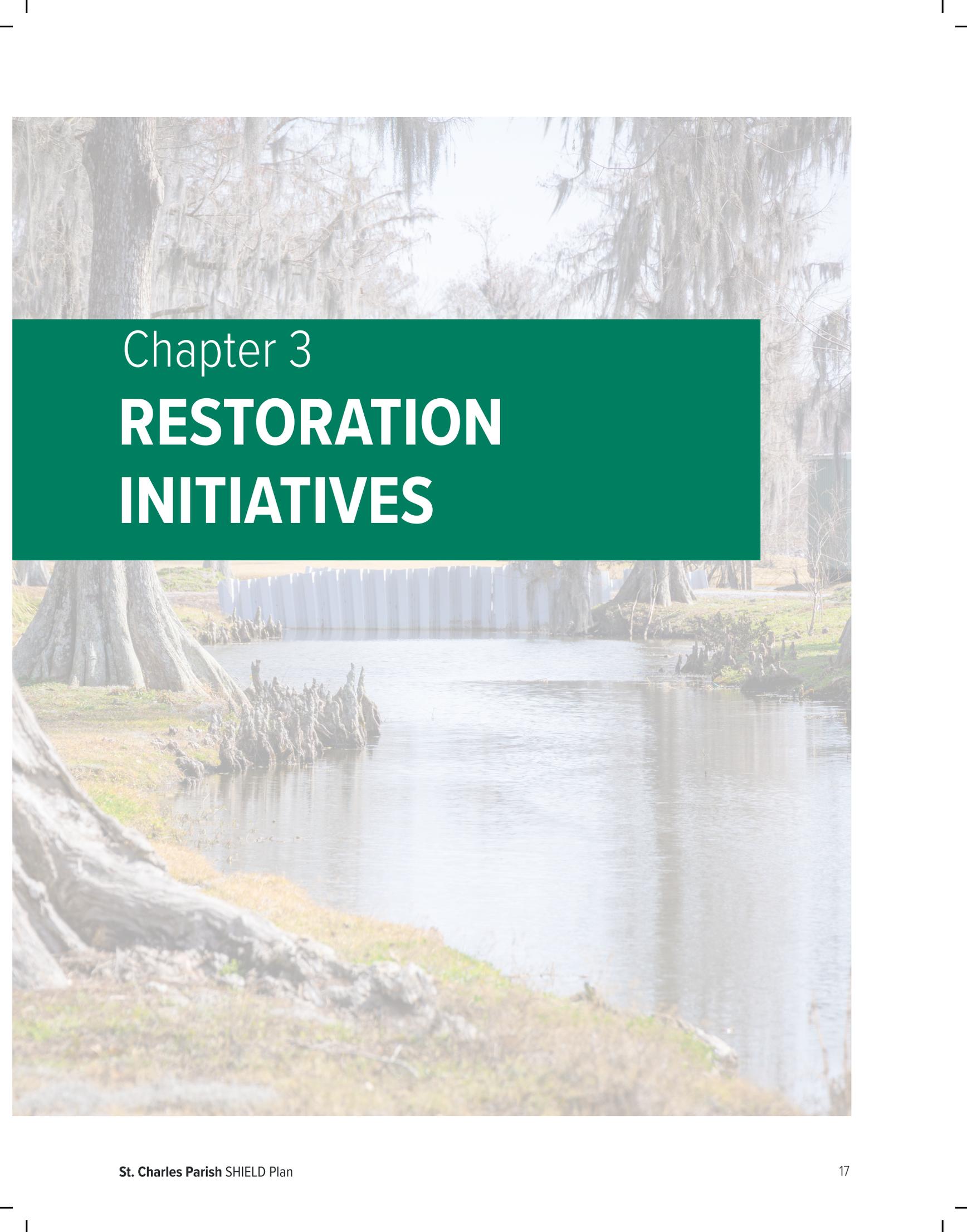
The SHIELD plan is intended to serve as a guide for the future of coastal restoration in St. Charles Parish. To translate the SHIELD projects from ideas to reality, strategic actions must be taken to keep St. Charles Parish at the forefront of restoration funding and partnership opportunities as they emerge.

Avenues for achieving this vision are outlined below:

- Circulate the SHIELD plan to funding sources and restoration advocates to demonstrate SCPG has a plan, has invested in that plan, and is being a good steward of its coastal resources.
- Continue parish engagement with CPRA via active participation in monthly board meetings (although President Jewell serves on the CPRA board currently, the parish must remain vigilant in its engagement with CPRA for the long term, regardless of board member composition).
- Monitor funding stream opportunities for project nomination periods and build collaborative relationships with program members and committees to advocate for the SHIELD projects.
- Track and apply for new disaster-related funding opportunities that may arise.
- Pursue partnerships with NGO's, non-profits, and private corporations to advance the SHIELD projects and ideas.
- Continue and expand parish coastal restoration community engagement efforts to garner public support for the SHIELD projects.

The SHIELD plan provides a comprehensive framework to protect, restore, and enhance the parish's valuable coastal ecosystems. By prioritizing projects and concepts such as shoreline protection, hydrologic restoration, marsh creation, and freshwater reintroduction projects, this plan ensures that the parish can adapt to changing environmental conditions while restoring and preserving its critical natural areas. The successful implementation of this plan will rely on continued collaboration among local, state, and federal partners, robust public engagement, and a commitment to adaptive management as projects are implemented. With proactive planning, St. Charles Parish can safeguard its coastlines, support resilient communities, and maintain the ecological functions that are vital to its economy and way of life.



A scenic view of a bayou with large cypress trees and a blue corrugated metal barrier in the background. The water is calm, reflecting the sky and the surrounding greenery. The trees have thick, gnarled trunks and some have Spanish moss hanging from their branches. The barrier is made of vertical slats and runs across the middle ground.

# Chapter 3 **RESTORATION INITIATIVES**

# EXISTING AND ONGOING PROJECTS

In recent decades, St. Charles Parish, in coordination with state and federal partners, has implemented a suite of restoration projects to mitigate and combat the effects of storms, land loss, and sea level rise on its residents and coastal habitats. These efforts encompass a range of restoration strategies, including freshwater diversions, shoreline protection, and marsh creation (Figures 10 and 11).

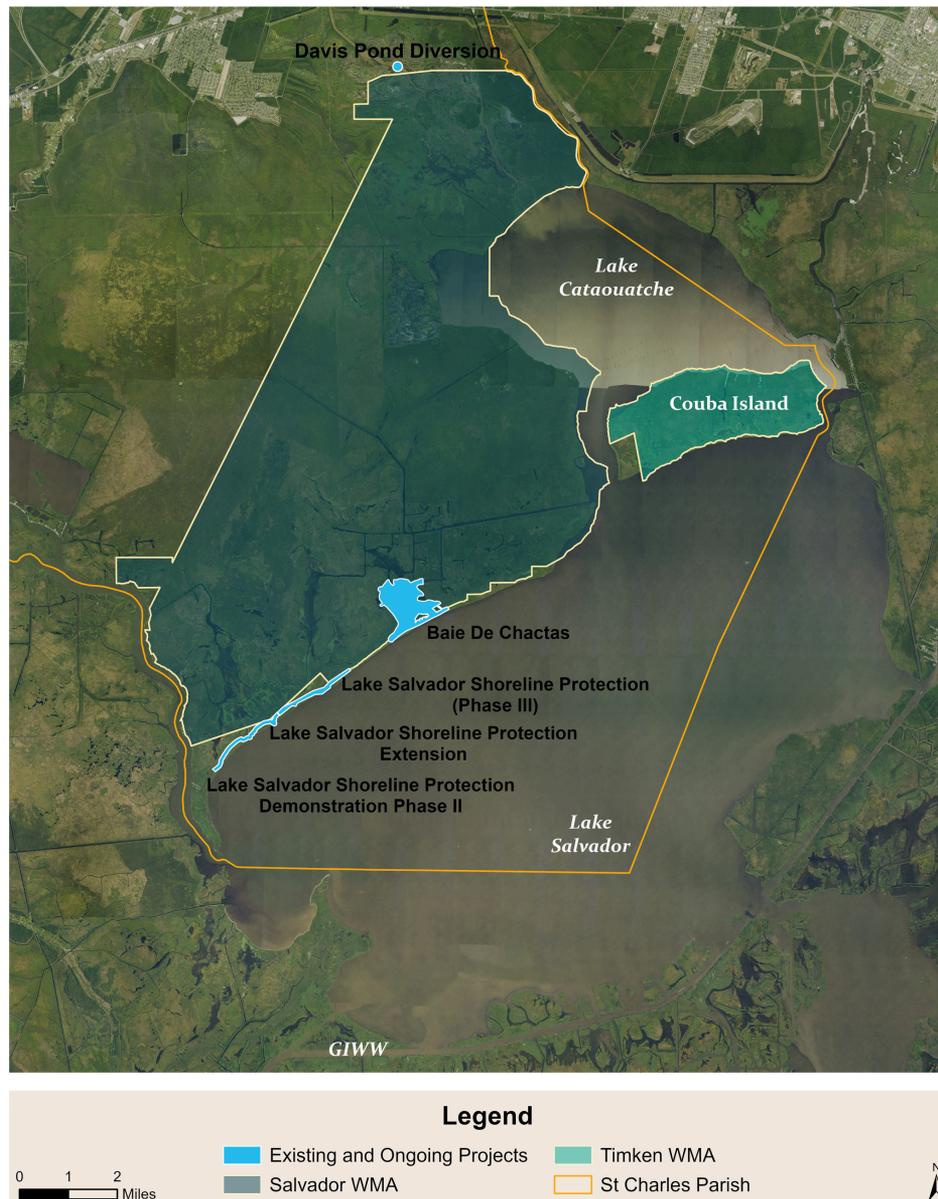


Figure 10. Existing and ongoing projects on the parish's West Bank.

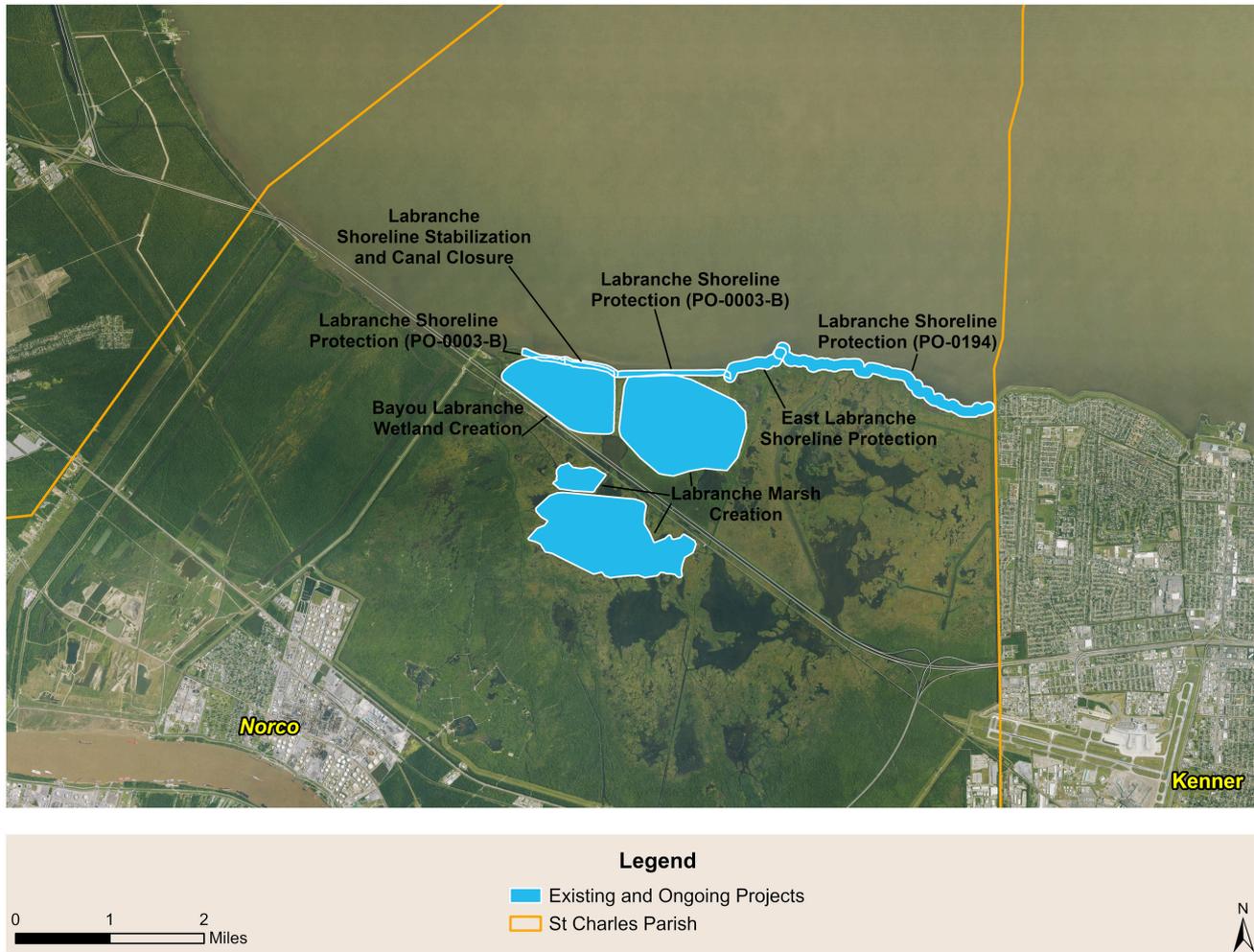


Figure 11. Existing and ongoing projects on parish's East Bank.

## SHORELINE PROTECTION

Shoreline protection is the most prevalent restoration type in the parish, with a total of seven projects completed to date and one currently under construction (Table 1). These shoreline protection projects are distributed along the parish’s Lake Pontchartrain shoreline and the western shoreline of Lake Salvador, protecting approximately 57,500 linear feet of shoreline in total.

Table 1. Existing and ongoing shoreline protection projects in St. Charles Parish.

PROJECT NAME AND NUMBER	YEAR COMPLETE	APPROXIMATE PROTECTED LENGTH	TYPE	STATUS
<b>West Bank</b>				
Baie de Chactas (BA-0005-C)	1990	7,400 linear feet	Crushed Oyster Shell	Constructed
Lake Salvador Shoreline Protection Demonstration Phase II (BA-0015) *	1998	8,000 linear feet	Rock	Constructed
Lake Salvador Shoreline Protection Extension (BA-0015-X1)	2005	9,000 linear feet	Rock	Constructed
Lake Salvador Shoreline Protection Phase III (BA-0015-X2)	2009	7,000 linear feet	Rock	Constructed
<b>East Bank</b>				
LaBranche Shoreline Stabilization and Canal Closure (PO-0003)	1987	3,000 linear feet	Rock	Constructed
Labranche Shoreline Protection (PO-0003-B)	1996	8,700 linear feet	Rock	Constructed
East Labranche Shoreline Protection (PO-0043)	2013	1,400 linear feet	Rock	Constructed
Labranche Shoreline Protection (PO-0194)	2025**	13,000 linear feet	Rock	Under Construction

\* Phase I of this project is not included in the table or total shoreline protection project count because it was removed following the 5-year monitoring period.

\*\* This project is under construction and is anticipated to be complete in 2025.

The established shoreline protection projects have reduced erosional shoreline retreat and, in many cases, contributed to land building processes behind the shoreline structures, as evidenced in the series of shoreline protection projects along Lake Salvador (Figure 11 and Figure 12). The Lake Salvador Shoreline Protection Demonstration project was a 5-year demonstration of a two-phase project. Phase I of the project tested four types (Grated Apex, Geotextile Tube, Angled Timber Fence, and Vinyl Sheet Pile) of shoreline protection structures along a section of the northern lakeshore to determine their effectiveness in reducing shoreline erosion. To the south, Phase II constructed an 8,000-foot rock shoreline stabilization structure along a section of the western lakeshore to protect the shoreline and adjacent marsh from wave-induced erosion. Monitoring of the project phases found that none of the four Phase I tested structure types reduced shoreline erosion rates, whereas the Phase II rock structure not only prevented further shoreline erosion but also built land at a rate of 1.8 feet per year behind the rock structures (Curole et al., 2002). Phase I of the project was removed following the completion of the 5-year monitoring period, while Phase II was left in place and continues to provide protection to the Salvador shoreline. The success of Phase II led to the eventual implementation of two additional riprap projects along the Salvador shoreline, both of which have been effective at reducing shoreline erosion, building land, and protecting the fragile interior marsh surrounding Lake Salvador.



*Figure 12. Aerial view of a successful shoreline protection project on the western shoreline of Lake Salvador.*

In the Labranche wetland area, several shoreline protection projects have been implemented to address breaching of Lake Pontchartrain into the adjacent wetlands. These projects work in conjunction with marsh creation projects, such as the recently completed Labranche Marsh Creation Project (PO-0075), to restore and protect wetlands and mitigate flood risk for the neighboring communities. Similarly, the Labranche Shoreline Protection (PO-0094) project currently under construction will act synergistically with the other existing Labranche shoreline protection projects to provide protection for the entire shoreline from Bayou Labranche to the west to the St. Charles-Jefferson parish line to the east. The demonstrated success of this project type in the parish emphasizes the importance of shoreline protection as an effective protection and restoration strategy.

## FRESHWATER DIVERSION

Currently, there is only one freshwater diversion project in the parish. The Davis Pond Freshwater Diversion, located on the west bank of the Mississippi River at mile 118, began construction by the United States Army Corps of Engineers (USACE) in 1997 and was operational in 2002. The goal of the project was to reduce the effects of saltwater intrusion into the Barataria Basin by re-establishing hydrologic connectivity from the Mississippi River to the surrounding floodplain. Adjustments to the project operations in 2009 were intended to provide more favorable, consistent conditions in the basin, such as improved vegetative growth and increased commercial and recreational fish and wildlife productivity. The freshwater, nutrients, and sediment from this project help to preserve approximately 33,000 acres of marsh and provide benefits to approximately 777,000 acres (CPRA, 2017a, USACE, n.d.-a).

## MARSH CREATION

There are two completed marsh creation projects in the parish, both in the Labranche wetland area south of Lake Pontchartrain (Table 2). The Bayou Labranche Marsh Creation (PO-0017) project created approximately 486 acres of marsh and was the first marsh creation project in the parish and the first restoration project constructed through the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) program. The project was intended to address shoreline breaching from Lake Pontchartrain and subsequent exposure of the interior wetlands to wave energy and higher saline waters. Monitoring reports from 2012 found that the project objectives, creating 305 acres of shallow water habitat and a minimum of 70% emergent marsh at year 5 post-construction, were successfully attained and were maintained throughout the CWPPRA 20-year project life (Richardi, 2014).

Table 2. Existing marsh creation projects in St. Charles Parish.

PROJECT NAME AND NUMBER	YEAR COMPLETE	APPROXIMATE ACRES CREATED
Labranche Marsh Creation (PO-0017)	1994	487
Labranche Marsh Creation (PO-0075)	2024	1,470

More recently, in November of 2024, the Labranche Marsh Creation project (PO-0075) completed construction. Located just east of the older Bayou Labranche Marsh Creation project, this effort utilized dredged material from Lake Pontchartrain to create and restore approximately 1,470 acres of emergent wetland habitat. In addition to its ecological benefits, the project also serves as a critical protective buffer for infrastructure, such as I-10, which is a primary hurricane evacuation route (CPRA, 2025).

## OTHER

Other existing and ongoing projects include new phases of the Upper Barataria Risk Reduction project, the Des Allemands Boat Launch project, and swamp reforestation efforts led by the Restore the Earth Foundation.

# RELEVANT PLANS

Planning is the foundation of the coastal restoration process in Louisiana. It is frequently the first step in documenting restoration needs, goals, and objectives and provides a framework for proactively identifying and prioritizing projects from which available funding streams can be applied for engineering and design and construction implementation. Current local and state plans and processes relevant to St. Charles Parish and the SHIELD include CPRA's Coastal Master Plan and Annual Plan, as well as local planning documents such as the St. Charles Parish Local Coastal Program document and the St. Charles Parish 2030 Comprehensive Plan.

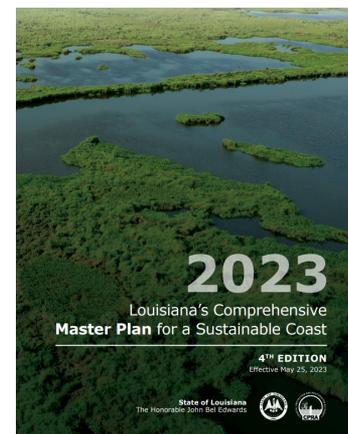
## CPRA'S COASTAL MASTER PLAN AND ANNUAL PLAN

The Coastal Master Plan is a long-term, comprehensive plan for Louisiana's coastal protection and restoration, setting the overall vision and direction for these efforts. The aftermath of Hurricanes Katrina and Rita in 2005 demonstrated the need for creating a coordinated and comprehensive approach to coastal restoration and protection in the state.

In response, the Louisiana Legislature created the Coastal Restoration and Protection Authority and tasked it with developing a plan to guide restoration and protection activities. The first Coastal Master Plan was released in 2007; however, the first science-based resource-limited Master Plan that identified specific projects was approved in 2012. It was updated in 2017 and 2023, which is the most recent version. Development of the 2029 Coastal Master Plan is currently underway. In order for a project to receive any type of state/CPRA funding, it must be consistent with the Coastal Master Plan.

The Annual Plan is the implementation companion document of the Coastal Master Plan. It provides project descriptions, implementation schedules, and funding sources, helping to ensure that the state's coastal restoration and protection efforts remain on track. It provides this information for a 3-year outlook. The Annual Plan also provides updates on ongoing projects and reports on the state's progress in achieving its coastal restoration and protection goals.

Projects for the Coastal Master Plan are selected through a multi-step process that prioritizes projects with the greatest impact on restoring and protecting coastal areas, while also considering funding, resource constraints, and environmental factors. This process involves analyzing project proposals, evaluating their potential benefits, and ultimately selecting a suite of projects that collectively address coastal issues and achieve the state's goals. Inclusion of a project in the Coastal Master Plan or Annual Plan is pivotal to securing funding, ensuring the project aligns with the state's overall goals for coastal protection and restoration, and maximizing the project's impact by integrating it with a broader, comprehensive strategy.



## ST. CHARLES PARISH IN THE 2023 COASTAL MASTER PLAN

The 2023 Coastal Master Plan included two projects within St. Charles Parish: The Upper Barataria Risk Reduction project and the Upper Basin Diversion Program - Barataria project (Figure 13).

The Upper Barataria Risk Reduction project is a multi-phase, long-term effort aimed at constructing and improving levees, floodgates, and other infrastructure to reduce storm-surge and flood risk along Highway 90 between the West Bank and Larose (CPRA, 2023c). Modeling from the 2023 Coastal Master Plan estimates that the fully completed project would significantly reduce flooding in Paradis, Luling, and Boutte (CPRA 2023a).

There have been several diversion projects (e.g., Ama and Edgard) proposed in and around St. Charles Parish since the 2017 Coastal Master Plan to address issues of wetland loss, water quality, and saltwater intrusion and alleviate Mississippi River flood pressure. However, none have moved forward to design or implementation. The Upper Basin Diversion Program-Barataria 2023 Coastal Master Plan project models these and other potential freshwater and sediment diversion projects to evaluate the cumulative effects of additional diversions in the upper basin, with currently or soon-to-be-operational diversions. The outcome of this project will inform potential locations and operations for additional diversions in the upper basin, while accounting for the system-wide effects of multiple diversion operations (CPRA, 2023a; CPRA, 2023c).

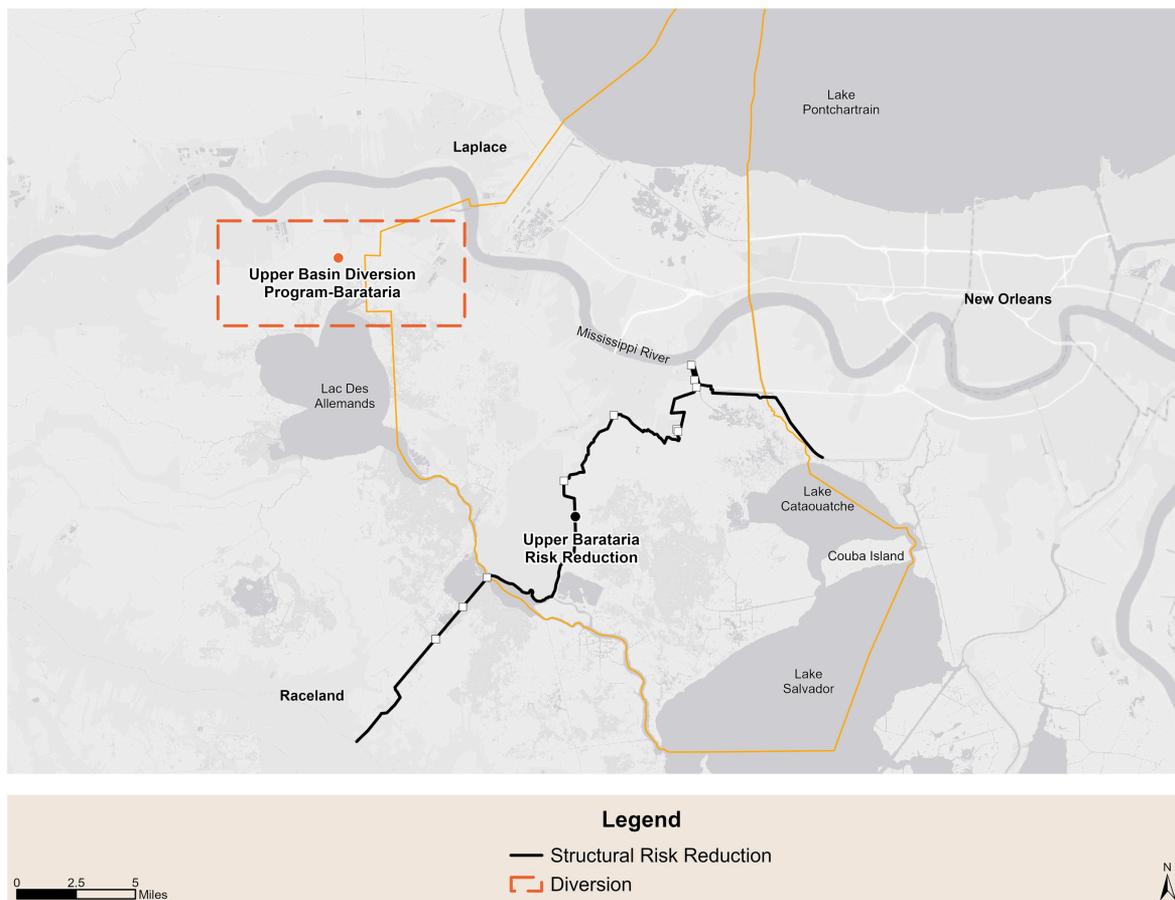


Figure 13. Location of the two St. Charles Parish 2023 Coastal Master Plan projects.

## ST. CHARLES PARISH IN THE FISCAL YEAR 2026 ANNUAL PLAN

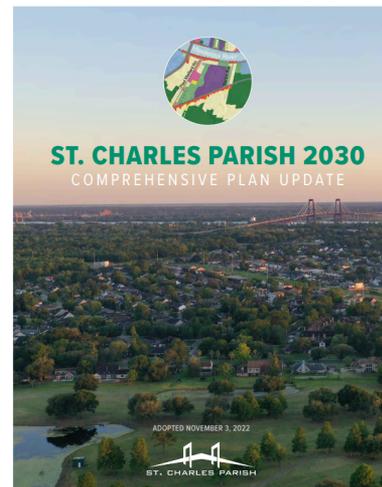
CPRA’s Annual Plan for Fiscal Year 2026 includes updates on the implementation of the Upper Barataria Risk Reduction project and the Labranche Shoreline Protection Project (PO-0194). The plan also includes funding for two of the SHIELD projects, the Lake Salvador Shoreline Protection Priority Project and the Modification of Davis Pond Feasibility Study Diversion Program Project. Other St. Charles Parish projects with activity updates in the Annual Plan include the Bayou Des Allemands Floodgate Complex, the Des Allemands Boat Launch project, and several risk reduction projects (CPRA, 2025).

## LOCAL PLANS

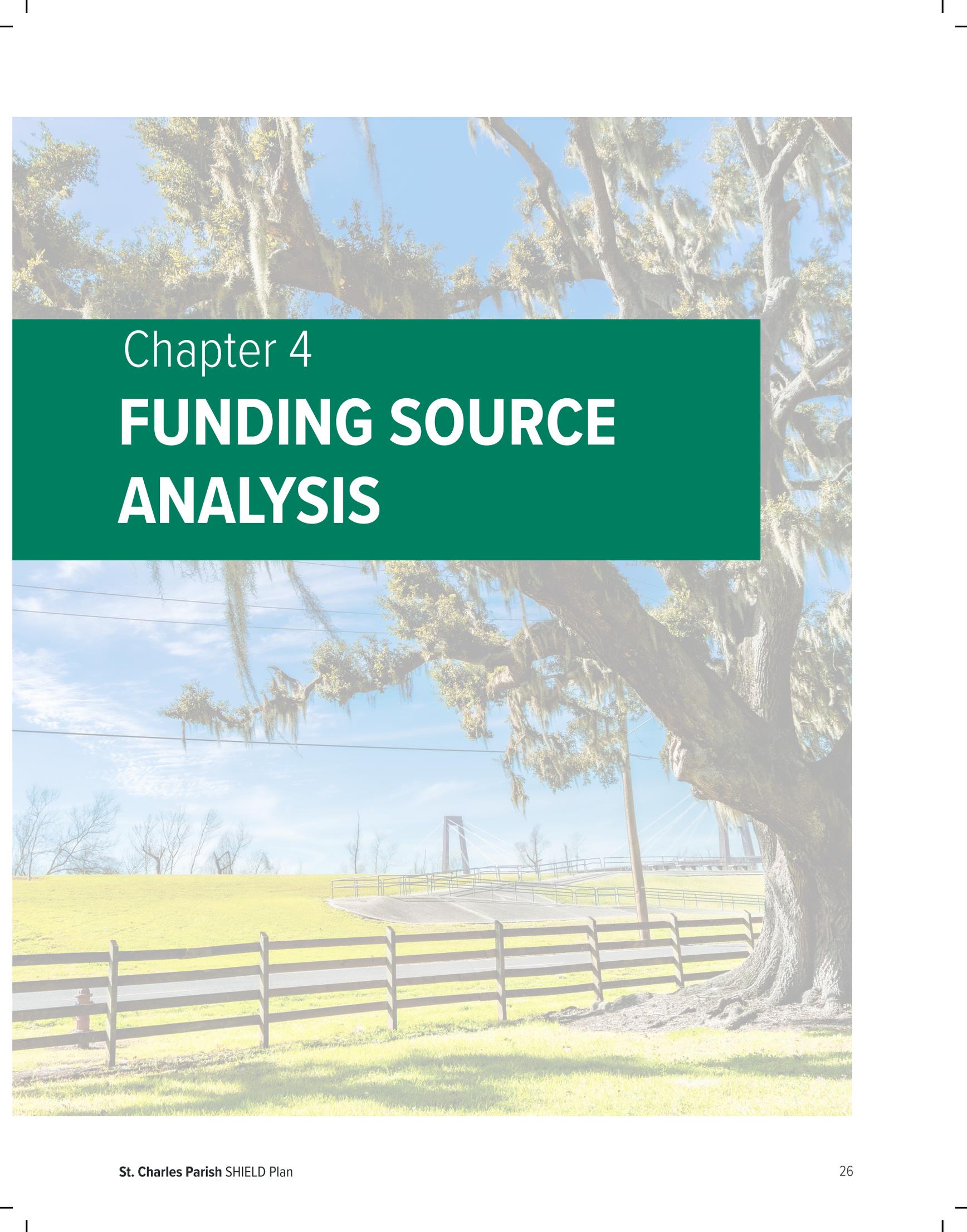
St. Charles Parish has developed several local documents that are relevant to coastal restoration and planning. The parish’s Local Coastal Zone Management (CZM) program released the St. Charles Parish Local Coastal Program document in 2015 with the intention of gaining federal and state approval for the program. The Local CZM program is responsible for coordinating the development and restoration of St. Charles Parish’s wetlands primarily through review, issuance, and monitoring of permits for local uses and activities. The document identifies and describes key landscape features, natural resources, and existing land uses for both the entire parish and individual Environmental Management Units (EMUs), existing resource users and conflicts among them, and the policies, goals, and objectives of the program. Additionally, the SHIELD plan defines specific management and restoration objectives for each unique EMU in Chapter 6.

The St. Charles Parish 2030 Comprehensive Plan, adopted in 2011 and updated in 2022, takes a holistic view of the parish, outlining its vision for future development, growth, and priority actions across all sectors, including natural and cultural resources, as well as resilience. The plan provides a snapshot of current trends and future projections and serves as a guiding framework for effective and coordinated decision-making.

RESTORE Act Multiyear Implementation Plans are developed by applicants for Direct Component restoration funds. The plans provide details on project purpose, need, objectives, funding, and projected schedule. The parish’s latest Multiyear Implementation Plan was for the Des Allemands Boat Launch project and was adopted in November 2024.







# Chapter 4 **FUNDING SOURCE ANALYSIS**

# MAIN FUNDING SOURCES

Louisiana’s coastal restoration efforts are driven by a multitude of funding streams. This section summarizes key funding mechanisms, selection processes, and associated guidelines for using these funds. Projects identified in the SHIELD plan should be regularly evaluated for funding via these programs and sources to maximize opportunities for implementing engineering, design, and construction project phases.



## COASTAL WETLANDS PLANNING, PROTECTION AND RESTORATION ACT (CWPPRA)

CWPPRA, also known as the Breaux Act, was enacted in 1990 to fund coastal restoration projects in Louisiana aimed at combating wetland loss. Funding for the CWPPRA program is provided via the Sport Fish Restoration and Boating Safety Trust Fund and requires a 15% state cost share. The program is managed by a Task Force of five federal agencies (Environmental Protection Agency, U.S. Fish and Wildlife Service, Natural Resources Conservation Service, National Marine Fisheries Service, USACE) and the state of Louisiana and has an average annual budget of \$50-75 million (CWPPRA, n.d.-a.).

New projects are nominated for funding annually by the CWPPRA Task Force agencies and coastal parishes at Regional Planning Team meetings. Received projects are then ultimately narrowed down through a series of voting and committee sessions to a group of projects which compete for Phase 1 (e.g., engineering and design) approval and funding in the final Priority Project List. Once projects have completed Phase 1, Phase 2 (e.g., construction) funding can be requested from the CWPPRA Technical Committee. Projects selected for CWPPRA must be consistent with the current Coastal Master Plan and align with a program-supported restoration strategy. These include freshwater and sediment diversions, marsh creation, ridge restoration, shoreline protection, terracing, hydrologic restoration, barrier island restoration, and vegetative plantings (CWPPRA, 2023). The criteria for project selection are reviewed annually, but typically the following factors are utilized to score and select projects (CWPPRA, 2023):

- Coastal Master Plan Consistency
- Cost Effectiveness
- Synergy of Project Benefits
- Critical Area of Need Benefitted
- Restore or Maintain Critical Landscape Features
- Critical Infrastructure Protection

CWPPRA has completed projects in St. Charles Parish, particularly in the LaBranche and Lake Salvador areas. Given this foundation, companion projects such as those listed among the SHIELD’s Priority Projects should be actively pursued.



## **GULF OF MEXICO ENERGY SECURITY ACT (GOMESA)**

The Gulf of Mexico Energy Security Act (GOMESA), passed in 2006, requires a 37.5% revenue share from offshore oil and gas leases in the Gulf of Mexico with the four oil and gas producing states (Alabama, Louisiana, Mississippi, and Texas), their Coastal Political Subdivisions (CPSs), and the Land and Water Conservation Fund. The funds are intended to mitigate the infrastructure and natural resource impacts these states experience from hosting oil and gas production activities (USDOJ, 2025). Specifically, the funding is allocated to projects that address coastal conservation, restoration, and hurricane protection, as well as coastal infrastructure directly impacted by wetland loss. In Louisiana, GOMESA funds are primarily used for hurricane risk reduction projects, but they are also regularly applied to other restoration strategies, including shoreline protection, marsh creation, and hydrologic restoration (CPRA, 2023a; CPRA, 2025).

Projects are prioritized and selected for GOMESA funding through CPRA's Annual Plan process, provided they are consistent with the state's Coastal Master Plan, located within the Coastal Zone, and demonstrate benefits to coastal restoration or hurricane protection. These funds are distributed annually to CPRA and to parishes within the Louisiana Coastal Zone. For Fiscal Year 2025, Louisiana received a total of \$156,312,662, of which St. Charles Parish received \$1,099,024 (USDOJ, 2025).

GOMESA funds can be used for planning and engineering and design (E&D), and then leveraged by parishes to secure state funding for construction, as the state encourages parishes to contribute funding towards projects that align with the Coastal Master Plan. A recent measure included in federal legislation, the "One Big Beautiful Bill Act," increases GOMESA revenue by 30%, or about \$50 million a year, for Louisiana and the CPSs.



## **NATURAL RESOURCE DAMAGE ASSESSMENT ACT (NRDA)**

The Natural Resource Damage Assessment Act (NRDA) is a legal process under the Oil Pollution Act of 1990, where federal, state, and tribal trustees assess environmental damages from oil spills and seek compensation from responsible parties to restore injured natural resources. Due to the 2010 Deepwater Horizon (DWH) oil spill, NRDA was enacted, and a total of \$5 billion was allocated to the state of Louisiana for restitution of damages. This funding stream is overseen by the Louisiana Trustee Implementation Group (LA TIG), composed of state and federal agencies, which approves restoration and implementation plans that utilize these funds. These funds are received annually, but the overall amount available is declining as the funding stream is set to end on April 4, 2031, in accordance with the settlement (CPRA, 2025).

Broadly, to be eligible for DWH NRDA funds for planning, engineering and design, construction, or monitoring and adaptive management, projects must address injuries resulting from the spill and meet one of the goals outlined in the Final Programmatic Damage Assessment and Restoration Plan and Programmatic Environmental Impact Statement (PDARP/PEIS). More specific eligibility and screening criteria are defined by the LA TIG for each restoration plan tiered from the PDARP/PEIS. Funds are not released for projects until the restoration plan proposing the project has been made available for public comment and approved by the LA TIG (CPRA, 2017b).



## **RESOURCES AND ECOSYSTEMS SUSTAINABILITY, TOURIST OPPORTUNITIES, AND REVIVED ECONOMIES OF THE GULF COAST STATES ACT (RESTORE)**

In 2012, the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act (RESTORE) was passed to direct portions of DWH civil penalty monies to ecosystem restoration and economic recovery along the Gulf coast. The Act established the Gulf Coast Ecosystem Restoration Council (RESTORE Council) consisting of the governors (or designated alternates) of the States of Alabama, Florida, Louisiana, Mississippi and Texas and the Secretaries of the U.S. Departments of Agriculture, the Army, Commerce, Homeland Security, the Interior and the Administrator of the U.S. Environmental Protection Agency. The RESTORE Council manages and oversees the Gulf Coast Restoration Trust Fund (RESTORE Trust Fund) to carry out restoration. The RESTORE Trust Fund receives 80% of the Deepwater Horizon Oil Spill Clean Water Act civil penalties for the purpose of restoring the long-term health of the natural ecosystems and economy of the Gulf Coast region. Similar to other DWH-related funding sources, these funds are distributed over 15 years and are declining as they approach their end on April 4, 2031 (CPRA, 2023a).

RESTORE funds are allocated to several components or “buckets” (Figure 14) (CPRA, n.d.-c):

- Direct Component or “Bucket 1”: 35% equally divided among the five affected States for ecological restoration, economic development, and tourism promotion;
- Council-Selected Restoration Component or “Bucket 2”: 30% plus interest managed by the Council for ecosystem restoration under the Comprehensive Plan (“Council-Selected Restoration Component”);
- Spill Impact Component or “Bucket 3”: 30% divided among the States according to a formula to implement State expenditure plans, which require approval of the Council (“Spill Impact Component”);
- 2.5% plus interest for the Gulf Coast Ecosystem Restoration Science, Observation, Monitoring and Technology Program within the Department of Commerce’s National Oceanic and Atmospheric Administration (NOAA); and
- 2.5% plus interest allocated to the States for Centers of Excellence Research grants, which will each focus on science, technology, and monitoring related to Gulf restoration.

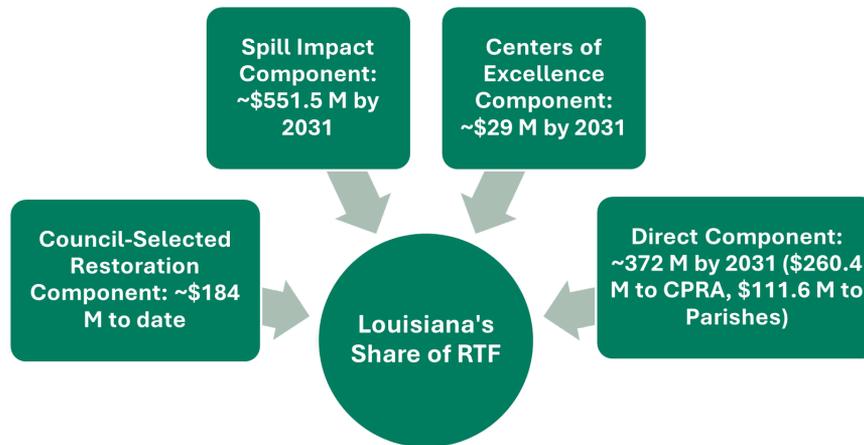


Figure 14. Breakdown of Louisiana's share of the RESTORE Trust Fund.

CPRA and Coastal Zone parishes apply for Direct Component grant funding by submitting Multi-Year Implementation Plans to the U.S. Department of the Treasury (USDT, 2025). These plans must describe the proposed project, undergo a 45-day public review and comment period, and demonstrate the use of the best available science, as per the application procedures outlined in 31 C.F.R. § 34.303(b). Direct Component funds can be used for a variety of activities, including planning, restoration, and protection of natural resources, economic development, and tourism opportunities (31 CFR § 34.201).

Council-Selected Restoration Component projects are nominated for funding by RESTORE Council members. The RESTORE Council considers all project proposals and votes on which projects to move forward for funding. The initial list of projects is published in a draft Funded Priorities List (FPL), which outlines the projects and programs intended for funding. The public then has an opportunity to review and comment on the draft FPL. Following consideration of any public comments received and any subsequent changes to the list, the final FPL is published. The Council will give highest priority to projects meeting one or more of the criteria defined in 33 U.S.C. 1321(t) (2)(D)(iii) and reproduced below:

1. Projects that are projected to make the greatest contribution to restoring and protecting the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region, without regard to geographic location within the Gulf Coast region.
2. Large-scale projects and programs that are projected to substantially contribute to restoring and protecting the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast ecosystem.
3. Projects contained in existing Gulf Coast state comprehensive plans for the restoration and protection of natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.
4. Projects that restore long-term resiliency of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands most impacted by the Deepwater Horizon oil spill.

Spill-Impact Component projects are selected by CPRA and presented to the RESTORE Council for approval via State Expenditure Plans. These projects must be consistent with the Coastal Master Plan and based on the best available science. No more than 25% of funds from this component can be spent on infrastructure projects. Current projects and programs being funded through this component are The Houma Navigation Canal (HNC) Lock Complex (\$366 million), Adaptive Management Program (\$60.9 million), CPRA-Parish Matching Opportunities Program (up to \$100 million), and Contingency funds (approximately \$24.6 million) (CPRA, n.d.-d).



## NATIONAL FISH AND WILDLIFE FOUNDATION (NFWF) GULF ENVIRONMENTAL BENEFIT FUND

As a result of the Deepwater Horizon (DWH) criminal plea agreements, \$1.27 billion was directed to the National Fish and Wildlife Foundation (NFWF) for natural resource restoration in Louisiana. These funds may only be used to support barrier island restoration or sediment diversions from the Mississippi and Atchafalaya Rivers. Priority projects for this funding stream are identified in the Coastal Master Plan and the Louisiana Coastal Area Mississippi River Hydrodynamic and Delta Management Study (CPRA, n.d.-b). NFWF funds could be applied to the Freshwater Reintroduction Program Projects in the SHIELD plan.



## STATE SOURCES

**State Surplus Funds** may be allocated to coastal protection and restoration efforts in years when the state collects more revenue than originally budgeted (CPRA, 2025).

**Capital Outlay Funds** can be used to acquire lands, buildings, equipment, or other permanent properties, or for their preservation or development or permanent improvement (R.S., §39:2). Coastal restoration projects that preserve land, buildings, or properties are therefore eligible to receive funds.

**State Mineral Revenues** are generated from royalties and leases related to mineral production on state-owned lands and water bottoms. These funds are distributed from the state's General Fund to agencies such as CPRA, which typically uses them to meet Louisiana's cost-share obligations for CWPPRA projects and to support its programs and operations (CPRA, 2025).

# ADDITIONAL FUNDING SOURCES

The following funding sources offer additional opportunities for leveraging funds for restoration in St. Charles Parish:

**Water Resources Development Act (WRDA):** This act authorizes the USACE to conduct studies and projects related to water resources infrastructure. It's a bipartisan, biennial bill passed regularly since 2014. WRDA authorizes projects for flood control, navigation, and ecosystem restoration, and it also includes provisions for water infrastructure policy and financing (CPRA n.d.-a).

**Louisiana Coastal Area (LCA) program:** This program is authorized under WRDA and is implemented in partnership between the USACE and CPRA. The program emphasizes slowing coastal land loss and associated resource decline via ecosystem restoration projects and programs such as beneficial use of dredge material, freshwater diversions, marsh creation, and barrier island restoration (USACE, n.d.-b).

**Disaster Relief Funding:** Federal disaster relief funding opportunities, such as the U.S. Department of Housing and Urban Development's Disaster Recovery Community Development Block Grants, can be used for flood protection projects such as levee construction or improvements, floodgate installation, critical infrastructure, and shoreline protection (CPRA n.d.-a).

**Non-Governmental Organizations (NGOs), Non-Profits, and Private Companies:** Partnerships with NGOs and non-profits can provide opportunities to leverage available funding and the extensive education and outreach networks these organizations typically have in place. Innovative partnerships with private companies can also be utilized to achieve mutually beneficial outcomes for the environment and the company's public relations and marketing.

**Government Grant Programs:** Several federal agencies offer grant programs that benefit coastal areas. These programs include the National Oceanic and Atmospheric Administration Coastal and Marine Habitat Restoration Grants, National Fish and Wildlife Foundation Grant Programs, and U.S. Fish and Wildlife's North American Wetlands Conservation Act Grants.



## Chapter 5

# PRIORITY PROJECT DEVELOPMENT



# METHODOLOGY

The SHIELD Priority Project development process (Figure 15) began with the identification and compilation of a preliminary suite of project ideas. These project concepts were primarily sourced from meetings with various stakeholders and a review of previous planning efforts. The process of further developing and refining the project list included: (1) reviewing existing data and documentation; (2) screening projects for consistency with relevant plans; (3) developing conceptual design and project details; (4) considering public input; and (5) identifying appropriate funding strategies.

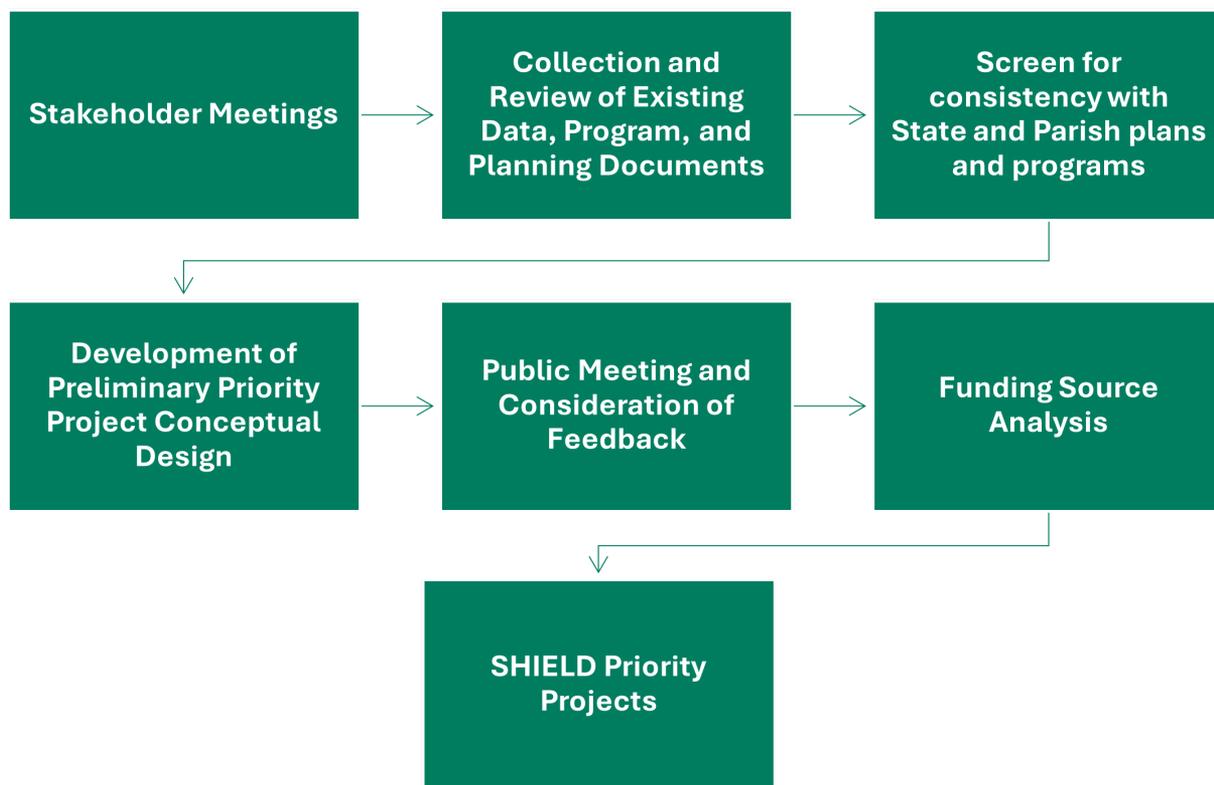


Figure 15. SHIELD Priority Project development process.

Although the focus of the SHIELD plan is identification and conceptual design of parish Priority Projects, the SHIELD plan development process resulted in the identification of other potential ideas, concepts, and programs not captured by the Priority Projects list. These project and concept ideas are further described in Chapter 6.

# STAKEHOLDER ENGAGEMENT

Coastal stakeholders in St. Charles Parish comprise a wide range of interests including recreational and commercial hunting and fishing activities, community resilience, conservation, and energy production/support. The values and priorities among these user groups are complex and sometimes conflicting. Therefore, involving stakeholders throughout coastal planning and restoration processes is critical to understand the issues on the ground, tap into local knowledge, and ultimately improve project concepts and outcomes.

Throughout the development of the SHIELD plan, stakeholders were consulted for assistance with generating project concepts and for feedback on preliminary Priority Project ideas. Beginning early in the planning process, various stakeholder groups, including the St. Charles Parish Council, Ducks Unlimited, LDWF, BTNEP, and CPRA, were consulted for discussion on current coastal issues in the parish and priorities for restoration. Following these meetings, the initial suite of Priority Project ideas was developed and presented to the public for feedback. The public meeting, held on February 4, 2025, involved a presentation of the overall SHIELD plan effort and the preliminary Priority Projects under consideration (Figure 16). After the presentation, an open house period was held to facilitate direct public interaction and discussion with parish officials and planning team members.

Ranking of the proposed projects by priority and general feedback on ideas were solicited via comment cards at the meeting and through an online format, which remained open for one week following the meeting. Analysis of comment card responses and general feedback from open house discussions indicated that there was broad based support for a consistent suit of projects and programs. Specifically, the projects with the highest public priority were the shoreline protection projects along Lake Salvador and Couba Island. The Priority Projects are discussed in further detail in the following chapter.

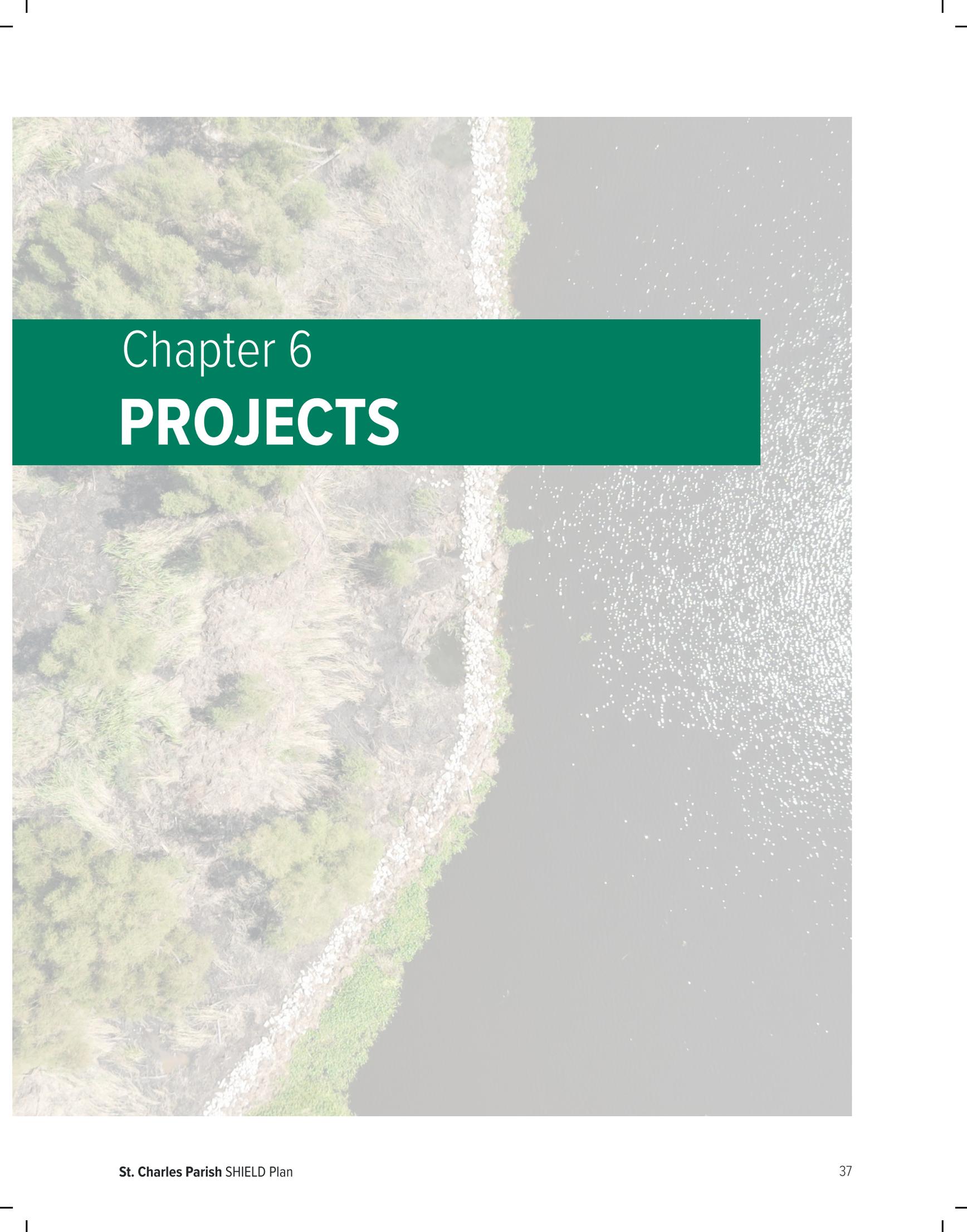


*Figure 16. Members of the public participated in discussions and reviewed plan materials at a public meeting February 4<sup>th</sup>, 2025, at the Edward A. Dufresne Community Center in Luling, LA.*

Following the completion of the Draft SHIELD Plan, St. Charles Parish invited input from a broad range of stakeholders through an official public comment period held from July 11 to July 25, 2025. In addition, an overview of the Draft SHIELD Plan was presented to the public at the St. Charles Parish Planning Commission meeting on July 10, 2025.

During the comment period, St. Charles Parish received multiple responses from stakeholders. Each submission was carefully reviewed by the Parish team and considered in the development of the Final SHIELD Plan. Public input was integral to refining the plan's strategies and actions, and it will continue to serve as a critical factor in shaping future projects and pursuits as St. Charles Parish priorities are updated. The comments and dialogue generated through this process underscore the importance of stakeholder engagement and will inform subsequent updates to the SHIELD Plan, ensuring that future iterations remain responsive to community needs and evolving conditions.





# Chapter 6 **PROJECTS**

# PROJECTS AND PROGRAMS OVERVIEW

The SHIELD projects and programs presented in this chapter and in Appendix A are summarized in the table below (Table 3). The full universe of projects generated as a result of the SHIELD plan process has been organized into three categories as follows:

1. Priority Projects
2. Freshwater Reintroduction Program Projects
3. Programmatic Concepts

These categories represent projects and programs of different scale, complexity, and specificity of projects.

*Table 3. Overview of Projects and Programs in the SHIELD plan.*

PROJECT NAME	PROJECT CATEGORY
Lake Salvador Shoreline Protection	Priority Projects
Couba Island Shoreline Protection	Priority Projects
Bayou Couba Shoreline Protection	Priority Projects
Tank Pond Shoreline Protection	Priority Projects
Rock Jetty Extension at Bayou Des Allemands	Priority Projects
Lake Salvador Interior Marsh Hydrologic Restoration	Priority Projects
Labranche Area Marsh Creation	Priority Projects
Modification of Davis Pond Diversion Feasibility Study	Freshwater Reintroduction Program Projects
Lac Des Allemands Freshwater Reintroduction	Freshwater Reintroduction Program Projects
Abandoned Vessel Removal Program	Programmatic Concepts
Invasive Species Management	Programmatic Concepts
Education, Access, and Recreational Use	Programmatic Concepts
Native Vegetation Planting Program	Programmatic Concepts
Sole Source Mitigation	Programmatic Concepts
Land Conservation Program	Programmatic Concepts

# PRIORITY PROJECTS

The Priority Projects category contains projects that meet the following criteria:

- Small to medium scale
- Targeted to specific sites
- Low to moderate complexity

Restoration strategies considered for Priority Project development were informed by the coastal issues facing the parish and the objectives of the SHIELD plan effort. These strategies were constrained to those that addressed concerns such as land loss, shoreline erosion, water quality, saltwater intrusion, and habitat quality, while also contributing to improved community resilience. Ultimately, three restoration strategies were selected: marsh creation, shoreline protection, and hydrologic restoration. A total of seven Priority Projects were developed to a conceptual planning level (Appendix A, Figure 17 and Figure 18). The identified priority projects are currently in the planning phase. Progressing to engineering and design and ultimately construction will require detailed modeling, permitting, land rights, and other necessary steps to fully implement each project.

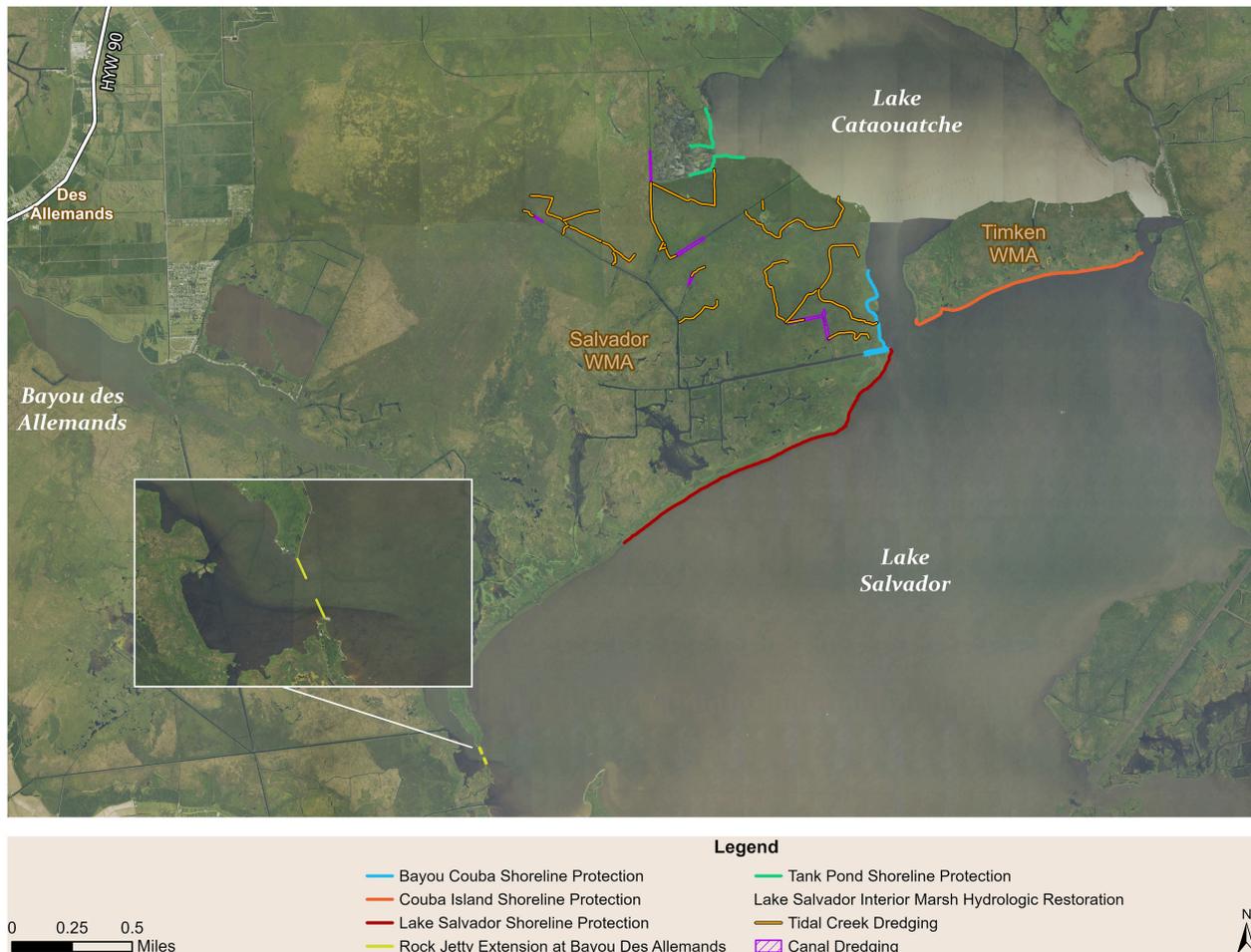


Figure 17. Locations of the West Bank Priority Projects.



*Figure 18. Location of the East Bank Priority Project.*

Each Priority Project was screened for consistency with the Coastal Master Plan as well as the parish’s Local Coastal Program document, specifically the objectives for the EMUs that each project falls within. The EMUs and associated objectives relevant to the SHIELD Priority Projects are outlined in the following sections.

## WEST BANK PROJECTS

The wetlands in and around Lake Salvador and Lake Cataouatche are the largest natural, undeveloped areas in the parish and provide critical protection against Gulf tropical storms and hurricanes. Given the importance of the area for storm protection and ecological and biological health, six of the seven priority restoration projects are located in this region (Table 4).

Table 4. West Bank Priority Project names, strategies, descriptions, and likely funding streams.

PROJECT NAME	RESTORATION STRATEGY	DESCRIPTION	POTENTIAL FUNDING SOURCE
Lake Salvador Shoreline Protection	Shoreline Protection	The project would place approximately 7 miles of rock along the northwestern shoreline of Lake Salvador to address wind and storm-driven wave erosion and associated interior marsh degradation and loss.	GOMESA*, State Surplus, CWPPRA
Couba Island Shoreline Protection	Shoreline Protection	The project would place approximately 4 miles of rock along the southern shoreline of Couba Island to address wind-and storm-driven wave erosion, marsh loss, and reinforce the Island's natural storm barrier defenses.	GOMESA, State Surplus, CWPPRA
Bayou Couba Shoreline Protection	Shoreline Protection	The project would place approximately 2.6 miles of rock along the west side of Bayou Couba to prevent further erosion and widening of the bayou.	GOMESA, State Surplus, CWPPRA
Tank Pond Shoreline Protection	Shoreline Protection	The project would place approximately 2 miles of rock along the entrance to the Tank Ponds to prevent further widening of the entrance and subsequent erosion and marsh loss within the Tank Pond.	GOMESA, State Surplus, CWPPRA
Rock Jetty Extension at Bayou Des Allemands	Shoreline Protection	The project proposes to extend or realign the rock jetty at the mouth of Bayou des Allemands to address widening of the bayou and adjacent hot spots of shoreline erosion as well as associated increases in tidal flooding and salinity spikes upstream.	GOMESA, State Surplus, Capital Outlay
Lake Salvador Interior Marsh Hydrologic Restoration	Hydrologic Restoration	The project proposes dredging of approximately 16 miles of waterways, canals, and crevasses within the Salvador WMA to restore hydrologic function to the area, maintain healthy marsh, and improve access.	GOMESA, State Surplus

\*This project has been allocated \$4 million for E&D from GOMESA from CPRA in the Fiscal Year 2026 Annual Plan.

The Lake Salvador region of St. Charles Parish urgently requires targeted shoreline protection measures to combat erosional land loss and to safeguard remaining fragile wetlands. The demonstrated success of previous shoreline protection projects on the Salvador shoreline supports the use of this restoration technique to effectively stabilize vulnerable banks, reduce wave energy, and promote sediment accumulation behind the structures. Strategic implementation of such projects not only helps slow wetland degradation but also supports community resilience by reducing flood risk and preserving critical ecosystem services. Given the cumulative effects of erosion, subsidence, and storm surge exposure, implementing shoreline protection projects in the Lake Salvador area is a vitally important component of the parish’s overall coastal restoration and storm protection strategy. In addition to shoreline protection, hydrologic restoration of the Salvador WMA to address hurricane-induced siltation of waterways will allow for a return to natural water flow patterns and hydroperiods necessary for maintaining healthy marsh while also improving access to the marsh interior for relevant stakeholders.

## EAST BANK PROJECTS

Extensive restoration work has been undertaken in the Labranche area, resulting in much of the western half of these wetlands being protected or restored via marsh creation and shoreline protection. However, large areas of open water and degraded, fragmented marsh are evident to the east of these existing projects. These degraded marshes are located south of the stretch of shoreline that will be protected by the ongoing Labranche Shoreline Protection (PO-0194) project. The SHIELD plan’s Labranche Area Marsh Creation Priority Project proposed in this area would complement the Labranche Shoreline Protection (PO-0194) project and offer synergistic resiliency benefits to the adjacent communities that rely on these wetlands for flood protection (Table 5).

Table 5. East Bank Priority Project name, strategy, description, and likely funding stream.

PROJECT NAME	RESTORATION STRATEGY	DESCRIPTION	POTENTIAL FUNDING SOURCE
Labranche Area Marsh Creation	Marsh Creation	The project would create approximately 660 acres of marsh to restore areas that have been damaged and fragmented due to subsidence, sea-level rise, and a lack of new sediment inputs. Fill would likely be sourced from Lake Pontchartrain.	CWPPRA, NRDA, RESTORE

## PRIORITY PROJECT CONSISTENCY

The Priority Projects presented here were screened for consistency with CPRA’s Coastal Master Plan. Shoreline protection and small-scale hydrologic restoration projects are considered programmatically consistent with the Coastal Master Plan due to their generally smaller scale of impact. Programmatic consideration in the 2023 Coastal Master Plan means that these project types are not individually evaluated or selected through the Coastal Master Plan process, but instead are considered broadly so that they can be evaluated on a case-by-case basis through other initiatives or programs and subsequently be included in CPRA Annual Plans (CPRA, 2023b). CPRA has constructed several marsh creation projects in the Labranche area and marsh creation represents \$16M of the \$25M identified in the Coastal Master Plan for restoration.

Priority Projects were also evaluated for consistency with the parish’s Local Coastal Program document and EMU objectives. Projects were evaluated against the specific stated objectives for their respective EMU (Figure 19 and Table 6).



Figure 19. Environmental Management Unit boundaries from the St. Charles Parish Local Coastal Program document.

Table 6. Priority Project consistency with their respective EMU objectives, as defined in the 2015 St. Charles Local Coastal Program document.

ENVIRONMENTAL MANAGEMENT UNIT (EMU)	PRIORITY PROJECT(S)	EMU OBJECTIVE(S) CONSISTENT WITH PRIORITY PROJECT(S)
Salvador EMU-12	Lake Salvador Shoreline Protection  Lake Salvador Interior Marsh Hydrologic Restoration  Rock Jetty Extension at Bayou Des Allemands  Bayou Couba Shoreline Protection	Objective 1: Implement both structural and non-structural solutions to control saltwater intrusion, wave wash, and subsidence.  Objective 3: Funding for the study, planning, and implementation of shoreline stabilization for the Lake Salvador shoreline should be actively sought. Both structural and non-structural methods should be employed.  Objective 9: Coordination with the Louisiana Department of Wildlife and Fisheries to ensure consistency with the goals and objectives of the Salvador Wildlife Management Area.
Couba Island Wetland EMU-13	Couba Island Shoreline Protection	Objective 2: Implement structural and non-structural solutions to control saltwater intrusion, wave wash, and subsidence.  Objective 9: Coordination with the Louisiana Department of Wildlife and Fisheries to ensure consistency with the goals and objectives of the Salvador Wildlife Management Area.
Davis Management EMU-14	Tank Pond Shoreline Protection	Objective 4: Implement structural and non-structural solutions to control saltwater intrusion, wave wash, and subsidence.  Objective 9: Coordination with the Louisiana Department of Wildlife and Fisheries to ensure consistency with the goals and objectives of the Salvador Wildlife Management Area.
Labranche Wetlands EMU-7	Labranche Area Marsh Creation Project	Objective 5: The creation of new marsh should be encouraged in the subsided areas.

Lastly, Priority Projects were evaluated for consistency and eligibility for the funding sources described in Chapter 3. While the most likely funding sources for each project are provided in Tables 3 and 4, it should be understood that frequently, a combination of funding sources is utilized to move a project from conceptual design to final design, and construction. Proactive engagement with, and monitoring of potential funding sources is essential to maximize opportunities for the SHIELD projects.

## REGULATORY CONSIDERATIONS

Priority Projects were evaluated for likely regulatory requirements and potential obstacles that could arise as projects move into engineering and design and construction phases. Given that St. Charles Parish is entirely within the state's Coastal Zone and that these projects are within USACE jurisdictional wetlands, all seven Priority Projects will require a Coastal Use Permit (CUP) from the Louisiana Department of Energy and Natural Resources (LDENR)\* and both Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act (Section 404/10) permits from the USACE. Some projects will be proximal to Hurricane & Storm Damage Risk Reduction System (HSDRRS) protection levee on the east and west banks will also require Section 408 permits from the USACE. These permits are typically applied for via the Joint Permit Application (JPA) process and involve coordination and consultation with state and federal agencies to meet various compliance requirements. Although the permitting process can be lengthy, the clear ecological benefits of the proposed Priority Projects should help expedite the process and nullify the need for mitigation. Preliminary review of the project locations against available regulatory screening databases did not reveal any major likely obstacles to project implementation. Several known archaeological sites were identified in the Lake Salvador area, though none directly overlapped proposed project footprints. Avoidance of these sites during engineering and design and construction activities would likely be required, should access or activities extend too close to site boundaries.

*\*LDNER will be renamed Louisiana Department of Conservation and Energy (DCE) effective October 2025.*

# FRESHWATER REINTRODUCTION PROGRAM PROJECTS

The projects identified for the Freshwater Reintroduction Program category were sourced from discussions with parish and CPRA leadership as well as previous Coastal Master Plan project ideas. While the parish supports these projects, they were not included as parish Priority Projects due to scale and resource limitations. The Freshwater Reintroduction Program Projects category contains projects that meet the following criteria:

- Large-Scale
- Targeted to specific sites
- High Complexity

## MODIFICATION OF DAVIS POND DIVERSION FEASIBILITY STUDY

This project proposes resuming the partially completed Louisiana Coastal Area program's Modification of Davis Pond Feasibility Study, which was suspended in 2013. The goal of the study is to identify changes in the operation of the existing diversion structure to maximize its potential restoration benefits. Current operations of the Davis Pond Diversion have been criticized as not being aggressive enough to maximize the projects restoration benefits. This feasibility study that scientifically evaluates and analyzes potential modifications to the diversion's operational regime is a critical first step toward responsibly addressing those concerns.

This project was included in CPRA's Fiscal Year 2026 Annual Plan, with \$3 million allocated for resumption of this study via a 50:50 cost-share between the state and the USACE (CPRA, 2025). St. Charles Parish fully endorses this effort and the opportunity it will provide to optimize the parish's coastal environments for stakeholder and ecological benefit.

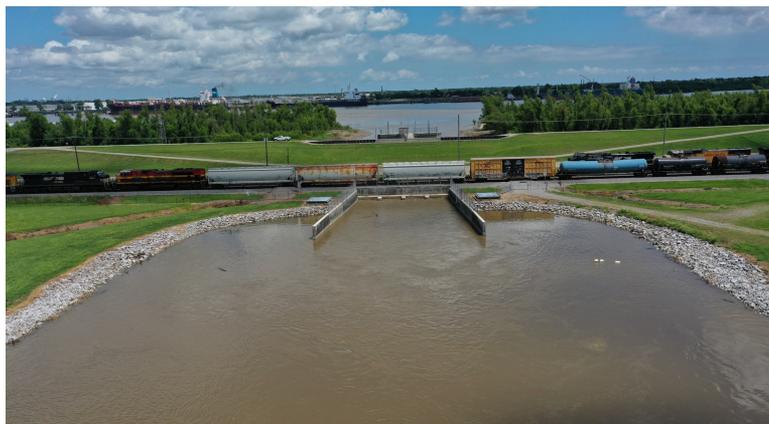


Figure 20. Davis Pond Diversion. Photo Courtesy of CPRA.

## LAC DES ALLEMANDS FRESHWATER RIVER REINTRODUCTION

Several other diversion projects have been proposed in and around St. Charles Parish, though none have progressed to design or implementation. The Upper Basin Diversion Program-Barataria 2023 Coastal Master Plan project is modeling these previously proposed diversion projects and assessing potential locations and operational regimes. One of the diversion projects to be modeled is the Edgard Diversion, which proposes diverting water into swamps near Edgard to provide freshwater and sediment for emergent marsh creation and nourishment, and to act as a relief valve for the Mississippi River to provide flood control in high river conditions. The SHIELD plan's Lac Des Allemands Freshwater Reintroduction project proposed here recommends a diversion project in a similar location to the Edgard Diversion that would ideally achieve similar goals. The parish is supportive of a freshwater reintroduction project being implemented in the region, as informed by the Upper Barataria Diversion Program Coastal Master Plan project.

# PROGRAMMATIC CONCEPTS

The final category of the SHIELD projects is for Programmatic Concepts. This category was defined based on the following criteria:

- Non-location specific or parish-wide
- Low complexity

Throughout discussions with stakeholder groups and the public, various concepts and ideas continually arose as concerns that merited inclusion in the SHIELD plan but did not fit the criteria for Priority Projects. These concerns ranged from increased education, access, and recreational use opportunities to the removal of abandoned vessels in the parish's waterways. These programmatic initiatives complement standard restoration strategies and provide a holistic approach to coastal restoration. Support for such programs should be sought through innovative partnerships with non-governmental organizations and private companies, as well as through established funding streams, such as RESTORE, which has supported many recreational use and access projects throughout coastal Louisiana. Other funding sources, such as State Surplus and Parish-Matching, can be utilized to fund these concepts.

## EDUCATION, ACCESS, AND RECREATIONAL USE

St. Charles Parish is dominated by open water and expansive coastal habitats. However, access to and recreational use of these resources have historically been limited to those with access to watercraft. Coastal education and awareness opportunities in the parish are also limited both by access and available facilities. Implementing education, access, and recreational projects programmatically as they arise will allow the parish to systematically improve the ability of residents to take advantage of their natural surroundings and become active participants in conservation efforts. Educational initiatives could include programs that are delivered through school curricula, community workshops, signage in natural areas, and online resources. Access to and recreational use of natural areas could be improved through boardwalks, fishing piers, kayak trails, and observation platforms, ensuring that the public can directly experience and appreciate the beauty and value of coastal habitats, regardless of watercraft availability. Completion of the Des Allemands Boat Launch, scheduled for the end of 2026, will be a major step forward in addressing many of these concerns.

## INVASIVE SPECIES MANAGEMENT

Invasive species significantly threaten the region's fragile ecosystems through the displacement of native vegetation, the degradation of wildlife habitats, and the acceleration of land loss. LDWF has indicated that feral hog and nutria, in particular, are a significant issue in the Salvador WMA. Addressing invasive species at a parish-wide scale would require a coordinated effort between parish and state agencies to identify, monitor, and control these species through established techniques such as mechanical removal, chemical treatment, and biological control. The benefits of an effective, coordinated invasive species management program include the restoration of native plant communities, which are essential for maintaining the structural integrity of wetlands and providing critical habitat for fish and wildlife. Additionally, reducing the presence of invasive species improves water quality by preventing dense, non-native vegetation from impeding water flow and increasing sedimentation.

## NATIVE VEGETATION PLANTING PROGRAM

Re-establishing native vegetation throughout the parish via planting efforts can be an effective way to restore habitat, improve water quality, sequester carbon, mitigate storm surge and flooding, and stabilize fragile wetland soils. The Restore the Earth Foundation, in collaboration with St. Charles Parish and Chevron, has successfully planted more than 18,000 acres of bald cypress and tupelo trees across the parish and has successfully gained water quality credits from the Louisiana Department of Environmental Quality's (LDEQ) Water Quality Trading (WQT) Program for their planting efforts on the Salvador WMA. This marks the first instance of LDEQ granting water quality credits in the state (Restore the Earth Foundation, 2025). The WQT program allows entities with high costs of reducing pollution to purchase equal or greater pollution reduction credits from sources with lower costs (LDEQ, n.d.). Large-scale planting efforts with potential for additional WQT credit generation could continue to be implemented throughout the parish via similar partnerships.

## MARSH FIRES

Improperly conducted burns in marshland threaten wetland ecosystems and negatively affect restoration efforts. Burns that do not follow Recommended Forestry Best Management Practices (Louisiana Department of Agriculture and Forestry, 2021) can destroy native vegetation, increase erosion, displace or kill wildlife, and degrade air and water quality. Unauthorized fires can also create public safety hazards and may violate local, state, and federal laws.



To address unauthorized burning at the parish level, St. Charles Parish should promote the Louisiana Certified Prescribed Burner Program, develop an education program for landowners, monitor high-risk areas, and enforce compliance with approved burn protocols. Such a program would involve collaboration between parish, state, and federal agencies to provide guidance on Best Managements Practices for prescribed burning, ensure proper permitting, and respond swiftly to unpermitted burns. By preventing harmful burning practices, St. Charles Parish can safeguard the integrity of sensitive habitats, maintain ecosystem functions, and protect the health and safety of surrounding communities.

## ABANDONED VESSEL REMOVAL PROGRAM

Tropical events and major hurricanes are relatively frequent in coastal Louisiana. One of the impacts of storms on coastal communities is the destruction of large numbers of commercial and recreational vessels situated in navigable waterways throughout the state. Parish governments have recently begun to focus on programmatic removal of abandoned and storm-damaged vessels to eliminate navigational hazards, prevent environmental contamination, and directly improve water quality and habitat conditions. Developing an abandoned vessel removal program in St. Charles Parish would provide an established framework for removal on a case-by-case basis as these vessels are identified. The process for removal is relatively straightforward, requiring: (1) identification of the vessel(s) for removal; (2) receipt of all required permits, which would typically be obtained through the Joint Permit Application process; and (3) removal and proper disposal of the subject vessels.

## SOLE SOURCE MITIGATION

Sole source mitigation is a mitigation bank that is established to provide compensatory mitigation credits for permits sought by a single entity (e.g., St. Charles Parish), rather than being open to the general public for purchase. This mitigation approach is generally utilized for entities that anticipate needing to continually permit projects that will collectively require significant amounts of mitigation, such as local governments with large amounts of planned projects occurring in wetland areas. This method can also be a significant cost savings for the implementer as they do not have to buy credits from third parties on the open market. This idea has been successfully implemented in Louisiana, with St. Tammany Parish establishing the Cane Bayou sole source mitigation bank to meet their permitting needs. St. Charles Parish should explore the possibility of sole source mitigation as a way to streamline meeting regulatory requirements for parish projects while also ensuring that impacts to local wetlands are mitigated within the parish.

## LAND CONSERVATION PROGRAM

The Parish should explore and research opportunities to acquire conservation areas and implement land banking strategies in the Lake Pontchartrain area. This could involve targeting properties that were sold for development but are no longer viable, such as “paper subdivisions” in the LaBranche wetlands. Similar programs in other states involve state-led land acquisition, often through voluntary donation, for long-term conservation.





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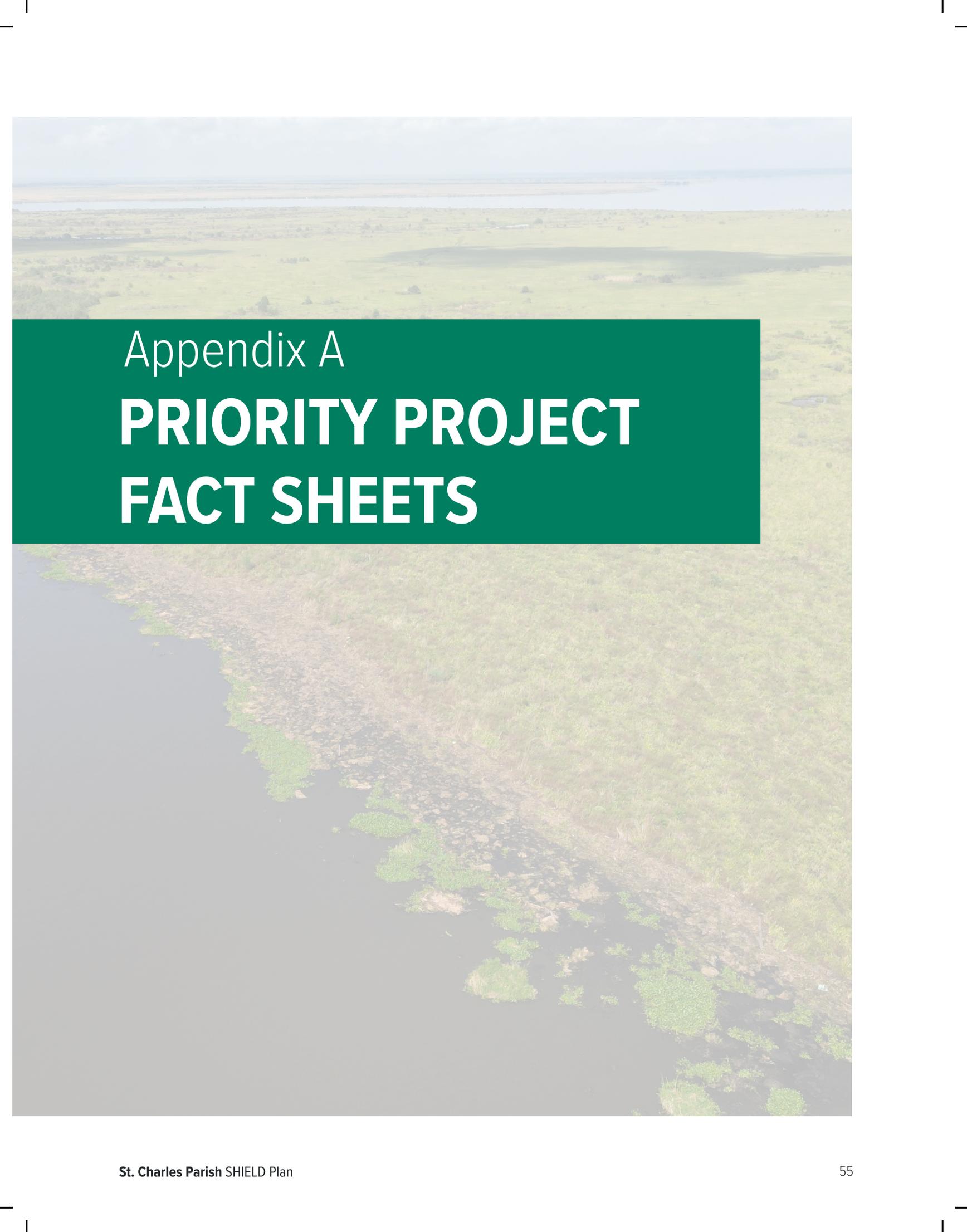
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Appendix A  
**PRIORITY PROJECT  
FACT SHEETS**

# LAKE SALVADOR SHORELINE PROTECTION

## PROJECT LOCATION

Southeastern border of Salvador Wildlife Management Area (WMA) along Lake Salvador

## PROJECT NEED

The southeastern shoreline of the Salvador WMA along Lake Salvador is eroding through wind-driven waves as well as boat wakes. The shoreline provides natural protection for the Salvador WMA; however, since 2022, portions of this shoreline have receded over 400 feet. As the shoreline retreats, the fragile interior wetlands are at risk of being exposed directly to the wave energy of the lakes. Without shoreline protection measures, the interior marshes will be lost, especially during highly erosional events such as tropical storms and hurricanes. Prior shoreline protection projects along the same shoreline to the south have proven to be extremely effective in halting erosion, protecting adjacent marsh, and in some areas building marsh.

## ENVIRONMENTAL MANAGEMENT UNIT

Salvador Management Unit EMU-12

## SOLUTION AND OBJECTIVES

### Proposed Solution:

- Shoreline Protection

### Project Objectives:

- Protect ~5.5 miles of shoreline along Lake Salvador via placement of rock riprap
- Benefit up to 400 acres of critical wetland habitat



# LAKE SALVADOR SHORELINE PROTECTION

## CONCEPTUAL DESIGN

This shoreline protection feature will be constructed out of riprap placed along 5.5 miles of Salvador WMA shoreline. The structure will be constructed along a pre-determined contour with a crown width minimum of 4-feet, constructed to an elevation of +3.5 feet. It is anticipated that the Lake Salvador side of the structure will have a gentle 3H:1V embankment side slope, which will provide a broader surface to reduce wave impact erosion on the embankment. The shoreside slope of the shoreline embankment will be 1.5H:1V to reduce the quantity of material required while providing adequate slope stability. A flotation channel will be constructed where needed in shallower waters so that barge-mounted equipment can access the project location. A portion of the spoil dredged to create the flotation channel will be placed on the shoreside of the structure to supplement the land building process; the rest will be temporarily placed on the lakeside of the flotation channel and will be placed back into the flotation channel at the end of construction.

## ESTIMATED BUDGET

Planning-level construction costing was performed using cost estimating tools that combine equipment and personnel rates with construction activity production rates to produce a unit cost per bid item. The engineering and design (E&D) phase include geotechnical survey and data collection, permitting, and modeling. The construction phase includes mobilization, demobilization, construction management (CM), and operations and maintenance (O&M). E&D, CM, and O&M costs were derived based on estimated construction costs and were prepared using methodologies outlined in the 2023 CPRA MP. Contingencies used in this report are consistent with CPRA published guidelines (CPRA, 2017a).

PHASE	ESTIMATED COST
E&D	\$5,961,000
Construction	\$60,707,400
<b>Total (total cost rounded)</b>	<b>\$66,670,000</b>

## POTENTIAL FUNDING SOURCES

This project has been allocated \$4 million in GOMESA funding from CPRA for engineering and design. Additional potential funding sources are State Surplus and CWPPRA.

# COUBA ISLAND SHORELINE PROTECTION

## PROJECT LOCATION

Southern border of Timken Wildlife Management Area (WMA) located on Couba Island between Lake Cataouatche and Lake Salvador

## PROJECT NEED

The southern shoreline of the Timken Wildlife Management Area along Lake Salvador is eroding due to naturally and boat induced waves. This shoreline has also been adversely impacted by storm events. Historically, the shoreline has provided natural protection for the Timken WMA; however, over time the shoreline has eroded and without restoration measures, it is likely the shoreline will continue to recede, exposing the inland areas to greater erosion associated with storm events.

## ENVIRONMENTAL MANAGEMENT UNIT

Couba Island Wetland EMU-13

## SOLUTION AND OBJECTIVES

### Proposed Solution:

- Shoreline Protection

### Project Objectives:

- Protect ~4 miles of the Couba Island southern shoreline via placement of rock riprap
- Benefit up to 120 acres of critical wetland habitat



# COUBA ISLAND SHORELINE PROTECTION

## CONCEPTUAL DESIGN

To reduce ongoing shoreline loss along Couba Island's southern edge, a riprap shoreline protection feature will be constructed over a 4-mile stretch adjacent to Lake Salvador within the Timken WMA. The nature of the site and shallow nearshore waters will require the use of barge-mounted equipment and the excavation of flotation channels to facilitate access. Riprap will be placed along a pre-determined elevation contour that ensures constructability and effective shoreline stabilization. The structure will feature a 4-foot-wide crown and will be built to an elevation of +3.5 feet. Side slopes will be 3H:1V on the lakeside to dissipate wave energy and 1.5H:1V on the Couba Island side to optimize material efficiency. Dredged material from flotation channel excavation will be partially deposited landward of the structure to assist with marsh platform development, while temporary spoil stockpiles placed lakeside will be returned to the channel post-construction.

## ESTIMATED BUDGET

Planning-level construction costing was performed using cost estimating tools that combine equipment and personnel rates with construction activity production rates to produce a unit cost per bid item. The engineering and design (E&D) phase include geotechnical survey and data collection, permitting, and modeling. The construction phase includes mobilization, demobilization, construction management (CM), and operations and maintenance (O&M). E&D, CM, and O&M costs were derived based on estimated construction costs and were prepared using methodologies outlined in the 2023 CPRA MP. Contingencies used in this report are consistent with CPRA published guidelines (CPRA, 2017a).

PHASE	ESTIMATED COST
E&D	\$4,257,000
Construction	\$43,341,600
<b>Total (total cost rounded)</b>	<b>\$47,600,000</b>

## POTENTIAL FUNDING SOURCES

Potential funding sources for this project are likely to include GOMESA, State Surplus, and CWPPRA.

# BAYOU COUBA SHORELINE PROTECTION

## PROJECT LOCATION

Eastern shoreline of Salvador Wildlife Management Area (WMA) along the western shoreline of Bayou Couba that connects Lake Salvador and Lake Cataouatche

## PROJECT NEED

The eastern shoreline of the Salvador Wildlife Management Area along Bayou Couba that connects Lake Salvador and Lake Cataouatche is eroding due to wind-driven waves as well as boat wakes. As the shoreline retreats, the fragile interior wetlands are at risk of being exposed directly to the wave energy of the lakes. Without shoreline protection measures, the interior marshes will be lost, especially during highly erosional events such as tropical storms and hurricanes. Without restoration measures, Bayou Couba is expected to expand, exposing the inland areas to greater risks associated with highly erosive storm events.

## ENVIRONMENTAL MANAGEMENT UNIT

Salvador Management Unit EMU-12

## SOLUTION AND OBJECTIVES

### Proposed Solution:

- Shoreline Protection

### Project Objectives:

- Protect ~2.6 miles western shoreline along Bayou Couba via placement of rock riprap
- Benefit up to 180 acres of critical wetland habitat



# BAYOU COUBA SHORELINE PROTECTION

## CONCEPTUAL DESIGN

Shoreline retreat has been observed along the western shoreline of Bayou Couba as the area has been subject to erosional forces due to natural and anthropogenic causes. To protect approximately 2.6 miles of the western shoreline of Bayou Couba from continued erosion, a shoreline protection structure constructed of riprap is proposed within the Salvador WMA. This structure will be installed using barge-mounted equipment due to limited land access and shallow nearshore depths. The structure will have a 4-foot minimum crown width and built to an elevation of +3.5 feet. The Bayou Couba-facing slope will be installed at 3H:1V to reduce erosive wave energy, while the inland slope will be steeper at 1.5H:1V to conserve material while maintaining structural performance. A flotation channel may be required in the shallow areas along the shoreline in order for the barge mounted equipment to access the project area. A portion of the spoil dredged to create the flotation channel will be placed on the shoreside of the structure at a target elevation that promotes healthy vegetation growth in order to supplement the land building process. The rest of the spoil material will be temporarily placed on the Bayou Couba side of the flotation channel which will later be used to fill the channel after all other necessary construction has been completed.

## ESTIMATED BUDGET

Planning-level construction costing was performed using cost estimating tools that combine equipment and personnel rates with construction activity production rates to produce a unit cost per bid item. The engineering and design (E&D) phase includes geotechnical survey and data collection, permitting, and modeling. The construction phase includes mobilization, demobilization, construction management (CM), and operations and maintenance (O&M). E&D, CM, and O&M costs were derived based on estimated construction costs and were prepared using methodologies outlined in the 2023 CPRA MP. Contingencies used in this report are consistent with CPRA published guidelines (CPRA, 2017a).

PHASE	ESTIMATED COST
E&D	\$2,470,000
Construction	\$25,157,400
<b>Total (total cost rounded)</b>	<b>\$27,630,000</b>

## POTENTIAL FUNDING SOURCES

Potential funding sources for this project are likely to include GOMESA, State Surplus, and CWPPRA.

# TANK POND SHORELINE PROTECTION

## PROJECT LOCATION

Marshlands west of Lake Cataouatche and north of the Salvador Wildlife Management Area

## PROJECT NEED

The Tank Pond area has been damaged by erosional forces and continues to deteriorate and recede due to factors such as subsidence, wind-wave erosion, sea-level rise, major storm events, and a lack of new sediment inputs. Following storm events, wind-induced waves within Lake Cataouatche have caused the entrance to the Tank Pond to widen, inducing shoreline retreat along the pond's banks. Without restoration in this area, these marshes may not be able to fully recover. These marshes provide the first line of defense from hurricanes and storm events to St. Charles Parish and the surrounding communities. It is critical that the marshes of St. Charles Parish stay intact to protect these communities.

## ENVIRONMENTAL MANAGEMENT UNIT

Davis Management Unit EMU-14

## SOLUTION AND OBJECTIVES

### Proposed Solution:

- Shoreline Protection

### Project Objectives:

- Protect ~2 miles of Tank Pond shoreline via placement of rock riprap
- Benefit up to 140 acres of critical wetland habitat



# TANK POND SHORELINE PROTECTION

## CONCEPTUAL DESIGN

The proposed project will consist of armoring approximately 2 miles of the Tank Pond’s southeastern entrance at Lake Cataouatche. A rock shoreline protection structure will be constructed here by barge-mounted equipment. The barge-mounted equipment will rely on an excavated floatation channel where necessary to provide adequate water depths to perform the work. The structure will be built placing riprap along the Tank Pond entrance shoreline at a predetermined contour. Dimensions of the proposed structure will consist of a 4-foot minimum crown width, a constructed elevation of +3.5 feet, a 3H:1V side slope on the lake side, and a 1.5H:1V side slope on the shoreline side of the structure. The 3H:1V side slope on the shoreside of the structure will provide a broader surface aimed at reducing wave impacts to the adjacent shoreline. The shoreside slope of the structure will be a steeper 1.5H:1V to reduce the quantity of material required while providing adequate slope stability.

## ESTIMATED BUDGET

Planning-level construction costing was performed using cost estimating tools that combine equipment and personnel rates with construction activity production rates to produce a unit cost per bid item. The engineering and design (E&D) phase includes geotechnical survey and data collection, permitting, and modeling. The construction phase includes mobilization, demobilization, construction management (CM), and operations and maintenance (O&M). E&D, CM, and O&M costs were derived based on estimated construction costs and were prepared using methodologies outlined in the 2023 CPRA MP. Contingencies used in this report are consistent with CPRA published guidelines (CPRA, 2017a).

PHASE	ESTIMATED COST
E&D	\$2,200,000
Construction	\$22,419,600
<b>Total (total cost rounded)</b>	<b>\$24,620,000</b>

## POTENTIAL FUNDING SOURCES

Potential funding sources for this project are likely to include GOMESA, State Surplus, and CWPPRA.

# ROCK JETTY EXTENSION AT BAYOU DES ALLEMANDS

## PROJECT LOCATION

Convergence of Bayou des Allemands with Babs Bay and Lake Salvador

## PROJECT NEED

The area inside the mouth of Bayou des Allemands at its confluence with Lake Salvador contains hot spots of shoreline retreat /canal widening. These hot spots are likely caused by wind-driven waves entering Bayou des Allemands via Lake Salvador. The canal widening encourages stronger flows during storm events, thus causing further shoreline erosion in the area. Increased flows during storm events also encourages salinity spikes and tidal flooding of upstream communities and developments. Without restoration measures and extension of the jetty, these open water areas will continue to expand as the lake and bayou continue to widen, exposing the inland areas to greater risks associated with highly erosional storm events, and continued rising flood levels.

## ENVIRONMENTAL MANAGEMENT UNIT

Salvador Management Unit EMU-12

## SOLUTION AND OBJECTIVES

### Proposed Solution:

- Shoreline Protection

### Project Objectives:

- Reconfigure or extend existing rock jetty protection feature
- Benefit up to 1,900 acres of critical wetland and aquatic habitat



# ROCK JETTY EXTENSION AT BAYOU DES ALLEMANDS

## CONCEPTUAL DESIGN

To reduce erosion at the mouth of Bayou des Allemands and mitigate storm surge impacts to upstream communities, a jetty extension is proposed as the recommended structural solution. While detailed modeling will be completed during early engineering and design to evaluate alternative configurations, including shoreline armoring or partial jetty improvements, for planning purposes, it is assumed the project will extend the existing riprap jetty on both sides of the Bayou. This extension will reduce the width of the Bayou’s mouth to approximately 1/3 of its current opening, balancing coastal protection with the need to maintain navigability for small vessels. The structure will be constructed with a 6-foot-wide crown and a crest elevation of +3.5 feet. This jetty structure will use a composite design featuring a lightweight aggregate core and a 3-foot-thick riprap exterior to reduce settlement risks while maintaining durability against wave action. Navigation through the remaining channel opening will be maintained, and vessel access will be further evaluated during design. Site-specific surveys, including bathymetry and geotechnical investigations, will be required to confirm constructability and final dimensions.

## ESTIMATED BUDGET

Planning-level construction costing was performed using cost estimating tools that combine equipment and personnel rates with construction activity production rates to produce a unit cost per bid item. The engineering and design (E&D) phase includes geotechnical survey and data collection, permitting, and modeling. The construction phase includes mobilization, demobilization, construction management (CM), and operations and maintenance (O&M). E&D, CM, and O&M costs were derived based on estimated construction costs and were prepared using methodologies outlined in the 2023 CPRA MP. Contingencies used in this report are consistent with CPRA published guidelines (CPRA, 2017a).

PHASE	ESTIMATED COST
E&D	\$430,000
Construction	\$4,363,000
<b>Total (total cost rounded)</b>	<b>\$4,790,000</b>

## POTENTIAL FUNDING SOURCES

Potential funding sources for this project are likely to include GOMESA, State Surplus, and Capital Outlay.

# LAKE SALVADOR INTERIOR MARSH HYDROLOGIC RESTORATION

## PROJECT LOCATION

Salvador WMA interior waterways and canals

## ENVIRONMENTAL MANAGEMENT UNIT

Salvador Management Unit EMU-12

## PROJECT NEED

Hurricanes and associated flooding have resulted in increasing siltation and sedimentation of Salvador WMA interior crevasses, canals, waterways, and marsh. This sedimentation has effectively blocked access, impeded drainage, and disrupted the natural hydrology of the WMA. LDWF has identified approximately 16 miles of waterways within the WMA that need dredging to restore hydrologic function to the area, maintain healthy marsh, and improve access.

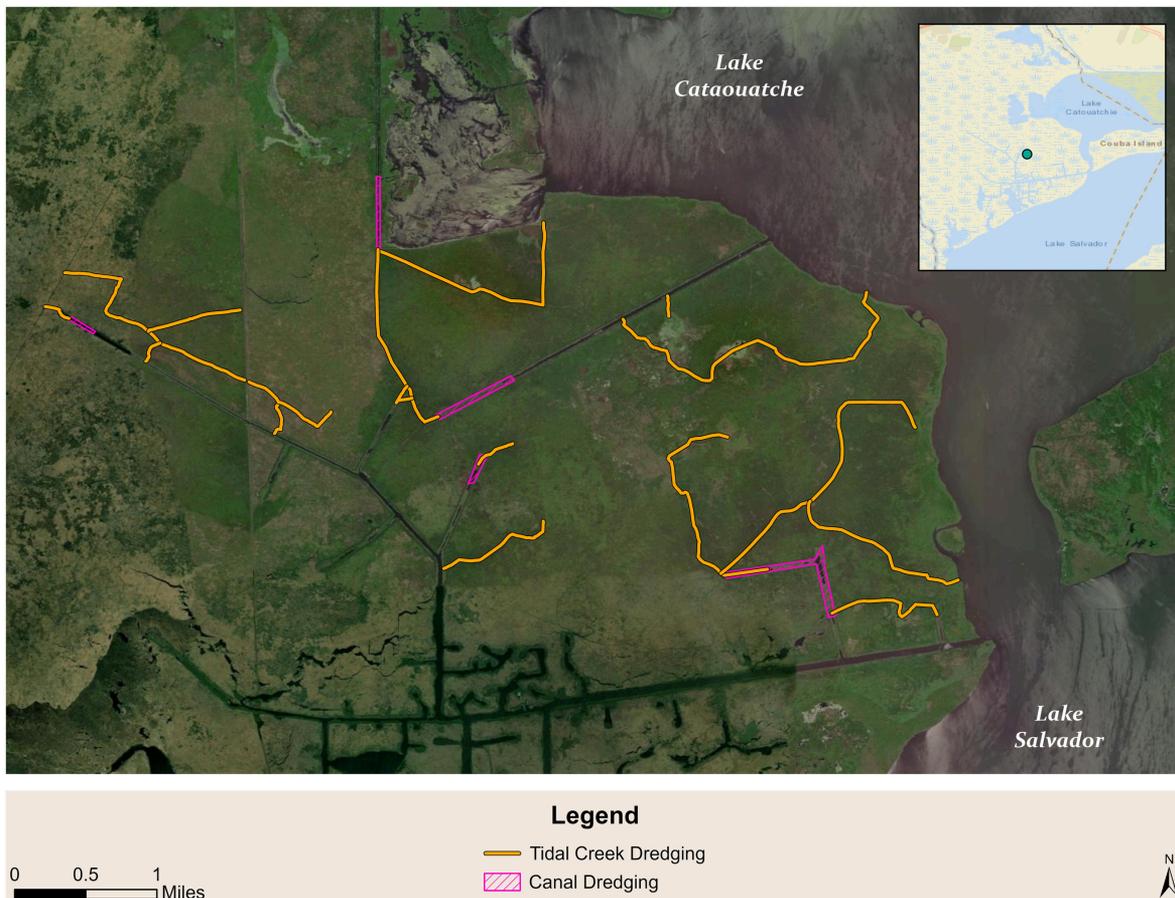
## SOLUTION AND OBJECTIVES

### Proposed Solution:

- Hydrologic Restoration

### Project Objectives:

- Dredge ~16 miles of waterways within the Salvador WMA
- Benefit up to 3,370 acres of critical wetland habitat



# LAKE SALVADOR INTERIOR MARSH HYDROLOGIC RESTORATION

## CONCEPTUAL DESIGN

The restoration plan will consist of dredging waterways and tidal creeks within the WMA to improve hydrologic patterns, access, wetland function, and aquatic habitats. The dredging of these waterways will be accomplished with small scale hydraulic dredge equipment and will require a designated disposal site to place the dredged material, preferably beneficially used for marsh creation. Further analysis will need to be performed to designate such a location for maximum ecosystem benefit.

## ESTIMATED BUDGET

Planning level construction costing was performed using cost estimating tools that combine equipment and personnel rates with construction activity production rates to produce a unit cost per bid item. The engineering and design (E&D) phase includes geotechnical survey and data collection, permitting, and modeling. The construction phase includes mobilization, demobilization, construction management (CM), and operations and maintenance (O&M). E&D, CM, and O&M costs were derived based on estimated construction costs and were prepared using methodologies outlined in the 2023 CPRA MP. Contingencies used in this report are consistent with CPRA published guidelines (CPRA, 2017a).

PHASE	ESTIMATED COST
E&D	\$6,926,000
Construction	\$69,602,000
<b>Total (total cost rounded)</b>	<b>\$76,530,000</b>

## POTENTIAL FUNDING SOURCES

Potential funding sources for this project are likely to include GOMESA and State Surplus.

# LABRANCHE AREA MARSH CREATION

## PROJECT LOCATION

Marshlands north of the I-10 and I-310 interchange, south of Lake Pontchartrain, and northwest of Kenner, LA

## PROJECT NEED

Wetlands in the proposed project area have been damaged via erosional forces from major storm events and continue to fragment, deteriorate, and recede due to factors such as subsidence, sea-level rise, and the lack of new sediment inputs. Without some type of restoration in this area, these marshes may not be able to fully recover. These marshes provide the first line of defense from hurricanes and storm events to St. Charles Parish and the surrounding communities. It is critical that the marshes of St. Charles Parish stay intact to protect these communities.

## ENVIRONMENTAL MANAGEMENT UNIT

Labranche Wetland EMU-7

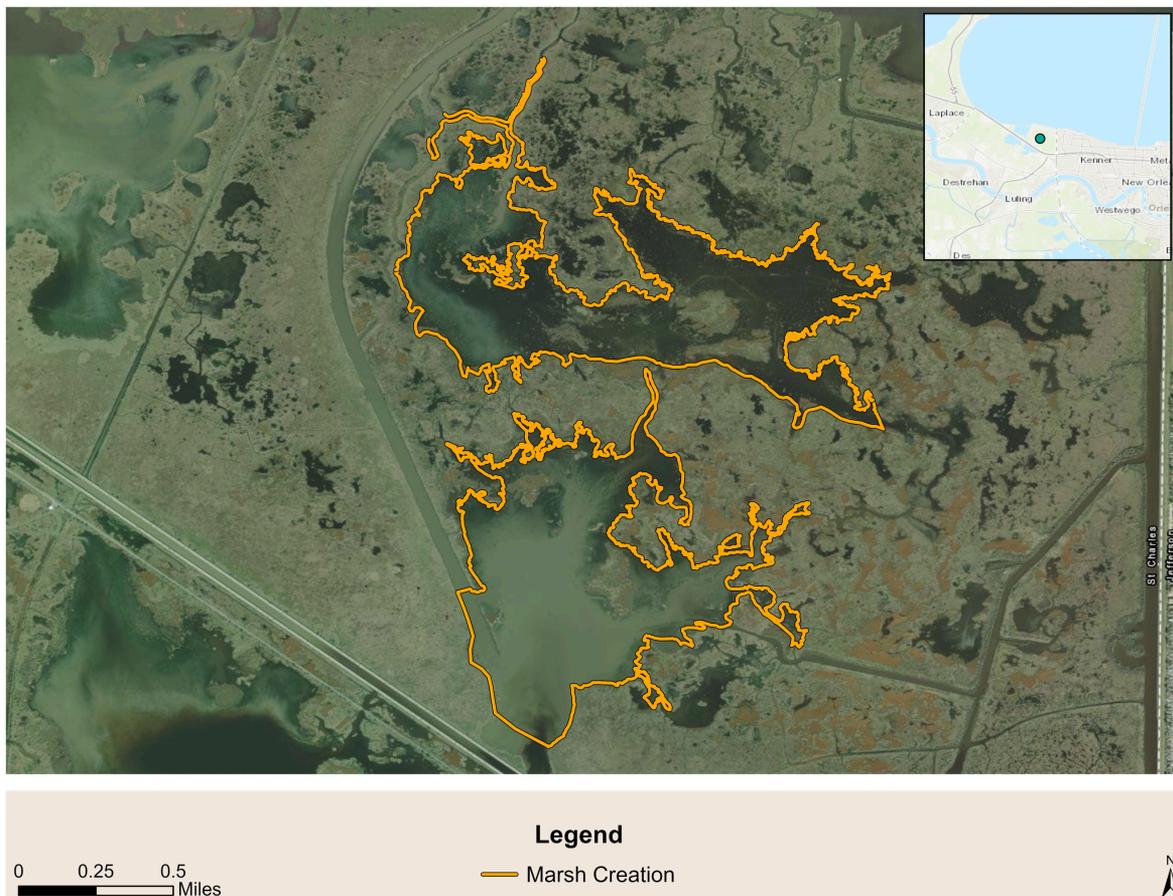
## SOLUTION AND OBJECTIVES

### Proposed Solution:

- Marsh Creation

### Project Objectives:

- Create 660 acres of marsh via placement of dredged material from Lake Pontchartrain
- Benefit up to 660 acres of critical wetland habitat



# LABRANCHE AREA MARSH CREATION

## CONCEPTUAL DESIGN

The proposed project will create, nourish, and restore approximately 660 acres of marsh by dredging sediment from designated borrow sources in Lake Pontchartrain. The open water areas will be converted to healthy marsh by utilizing a hydraulic dredge to pump in approximately 4 million cubic yards of material contained by earthen containment dikes outlined by the orange polygons in the above figure. The identification of the borrow source will be performed in the engineering and design portion of this project and will include surveying and geotechnical analyses.

## ESTIMATED BUDGET

Planning-level construction costing was performed using cost estimating tools that combine equipment and personnel rates with construction activity production rates to produce a unit cost per bid item. The engineering and design (E&D) phase includes geotechnical survey and data collection, permitting, and modeling. The construction phase includes mobilization, demobilization, construction management (CM), and operations and maintenance (O&M). E&D, CM, and O&M costs were derived based on estimated construction costs and were prepared using methodologies outlined in the 2023 CPRA MP. Contingencies used in this report are consistent with CPRA published guidelines (CPRA, 2017a).

PHASE	ESTIMATED COST
E&D	\$8,029,000
Construction	\$81,299,900
<b>Total (total cost rounded)</b>	<b>\$89,330,000</b>

## POTENTIAL FUNDING SOURCES

Potential funding sources for this project are likely to include CWPPRA, NRDA, and RESTORE.





# St. Charles Parish SHIELD Plan

Stabilizing Habitats through  
Infrastructure, Ecology, and  
Land Defense

