

## RESTORE Council FPL 3 Proposal Document

### **General Information**

*Proposal Sponsor:*

Louisiana Coastal Protection and Restoration Authority

*Title:*

River Reintroduction into Maurepas Swamp

*Project Abstract:*

This proposal is to implement a river reintroduction project. The project goal is to convey Mississippi River water into the Maurepas Swamp to improve the structure, function, and resilience of the coastal forest habitat through reintroduction of fresh oxygenated water, nutrients, and sediment. Congress recently approved appropriations for the West Shore Lake Pontchartrain (WSLP) levee in the vicinity, which created an opportunity to save money by consolidating the final design and construction of these projects. The Maurepas project is anticipated to benefit ~45,000 acres of swamp habitat at a total cost of \$190 million, with \$130 million from Bucket 2. Louisiana is considering using ~\$60 million from Bucket 3 and/or other funds for the remaining cost, potentially used to meet wetland mitigation needs for the levee, providing additional cost savings to the state. The WSLP project and its mitigation are scheduled to be completed by 2024 resulting in the urgency to build both projects concurrently.

*FPL Category:*

Cat2: Implementation Only

*Activity Type:* Project

*Program:* N/A

*Co-sponsoring Agency(ies):* N/A

*Is this a construction project?:* Yes

*RESTORE Act Priority Criteria:*

(I) 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.

(II) 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.

(III) 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.

*Priority Criteria Justification:*

For priority criterion 1, it meets the scale (~45,000 acres of coastal swamp forest benefitted), duration (project life of 50 years provides long-term benefits to the project area), and sustainability (prolongs the existence of the swamp habitat by decades) factors.

For priority criterion 2, it provides landscape-scale benefits to the upper Pontchartrain Basin where freshwater input is most critical in the estuary. The Maurepas Swamp is the second largest

contiguous area of forested coastal wetland in Louisiana and one of the largest along the Gulf Coast.

For priority criterion 3, the project has been included in most coastwide and basin-level restoration plans for decades, including CWPPRA Conservation plan, Coast 2050, Louisiana's 2007, 2012, and 2017 Comprehensive Master Plan for a Sustainable Coast (CPRA 2017), and is listed as an example of the type of project, approach and technique in the 2019 RESTORE Comprehensive plan for the basin. By restoring, in part, the natural process that previously sustained this habitat, with the ability to adaptively manage the flows, this project increases the function, structure, and resiliency of the swamp forest under variable and uncertain conditions in the future.

*Project Duration (in years):* 8

## **Goals**

*Primary Comprehensive Plan Goal:*  
Restore and Conserve Habitat

*Primary Comprehensive Plan Objective:*  
Restore and Enhance Natural Processes and Shorelines

*Secondary Comprehensive Plan Objectives:*  
Restore , Enhance, and Protect Habitats  
Promote Community Resilience

*Secondary Comprehensive Plan Goals:* N/A

*PF Restoration Technique(s):*  
Restore hydrology and natural processes: Controlled river diversions

## **Location**

*Location:*  
Pontchartrain Basin, LA – Intake at River Mile 144.2 near Garyville, LA. Benefits ~45,000 acres in St. John the Baptist, St. James, & Ascension parishes, roughly between Lake Maurepas, Blind River, Reserve Relief Canal, and developed uplands along the Mississippi River plus some lake shoreline north of Blind River (Figures 1 and 2).

*HUC8 Watershed(s):*  
Lower Mississippi Region(Lower Mississippi-Lake Maurepas) - Lake Maurepas (Lake Maurepas)

*State(s):*  
Louisiana

*County/Parish(es):*  
LA - Ascension  
LA - St. James  
LA - St. John the Baptist

*Congressional District(s):*  
LA - 6  
LA - 2

## **Narratives**

### *Introduction and Overview:*

This proposal is for implementation of a river reintroduction project in the upper portion of the Pontchartrain Basin, Louisiana-Mississippi region. It will introduce Mississippi River water into the southern portion of the Maurepas Swamp via an intake and gated control structure at the river levee near Garyville, LA; a conveyance channel into the swamp with “guide levees” to ensure the water gets to the intended location and prevent flooding; and additional outfall management features designed to help distribute the flow throughout the project area. The goal of the project is to reduce or minimize future loss of coastal swamp forest habitat in the project area through the introduction of Mississippi River water. The project is needed to improve the health and essential functions of the swamp for long-term sustainability. The project area of influence is approximately 45,000 acres of baldcypress/water tupelo swamp, including closed canopy, transitional, and open canopy/marsh.

In FPL 1, the Council approved approximately \$14.2 million for planning, final engineering and design, and permitting for the project. The estimated cost of project construction is \$190 million, with \$130 million being requested from Bucket 2 of FPL 3.

Near-term Council action could advance the commitments in the 2016 Comprehensive Plan Update by facilitating this large-scale Gulf coast ecosystem restoration project, save money, and improve community resilience. Congress recently approved appropriations for the WSLP levee, which overlaps with a portion of the guide levees for the proposed project. The State and USACE would achieve substantial cost savings by consolidating the final E&D and construction of the overlapping portions of the two projects (Figure 2). In addition, the USACE is required to mitigate the wetland impacts of the levee. The swamp habitat mitigation can potentially be met with a portion of the environmental benefits of the Maurepas project. Louisiana is considering requesting ~ \$60 million from Bucket 3 and/or other source(s) to cover the portion of the Maurepas project that could be used to mitigate the levee impacts. If the USACE accepts this mitigation arrangement, Louisiana would be credited those funds towards its required share of the cost of the WSLP levee, thereby offsetting the proposed Bucket 3 investment. The timeline for implementing the Maurepas project will be heavily reliant upon and coordinated with that of WSLP.

This project is based on an extensive history of planning and science, federal and state support, and Congressional authorization. In 2001, the federal-state CWPPRA Task Force approved funds for the project to 30% design. In 2004, the USACE identified the project as a near-term priority in the LCA Ecosystem Restoration plan (USACE 2004), authorized by Congress in WRDA 2007. The State funded design to the 95% level, with NFWF GEBF funds used for additional planning tasks, including contracting a Technical Advisory Group (TAG) of forest wetland ecologists to develop performance measures and targets for ecosystem function, resilience, and sustainability (Krauss et al. 2017). The project was included in the 2007, 2012, and 2017 Louisiana Comprehensive Master Plan for a Sustainable Coast (CPRA 2017).

In 2012, the Gulf Coast Ecosystem Restoration Task Force (Task Force) Strategy called for expedited construction of authorized river reintroduction projects. The RESTORE Act directed the Council to include in its Comprehensive Plan, the strategy, projects, and programs recommended by the Task Force. By including this project in FPL3, the Council would be building upon this history, previous investments in project planning, and fulfilling the Task Force recommendation to expedite its construction. Implementing this project builds on the RESTORE investment from the 2015 Initial FPL to complete outstanding tasks required to make the project ready for construction. These tasks included creating a new hydrodynamic and water quality model, final design, landrights, continuation of engagement with the TAG, continuation of permitting and environmental compliance processes, and creating a Preliminary Operations, Maintenance, Monitoring, and

Adaptive Management (OMMAM) plan (Buras et al. 2018).

There are many ecological problems in this area, but probably the most significant is the current hydrologic regime, which is no longer conducive to sustain swamp forest habitat (Shaffer et al. 2009, 2016). Historically, the ~200,000 acre swamp received oxygenated water, sediment, and nutrient inputs from the Mississippi River during seasonal overbank flooding and via Bayou Manchac. That process was interrupted by the construction of local and eventually federal levees along the Mississippi River for flood control as well as the blockage of its connection with Bayou Manchac. This altered hydrologic regime has prevented natural connection of the swamp to the river's life-sustaining waters and resulted in oxygen-poor, stagnant water conditions that impair forest health and associated aquatic habitats.

The swamp's hydrology issues have been exacerbated by the construction of highways, pipelines, railroads, pull boat canals, the Amite River Diversion Canal, navigation canals, and oil and gas exploration canals, along with the spoil banks associated with canal excavation. The channelization of local streams and the construction of local flood mitigation features such as weirs, local levees, floodgates, and drainage ditches have also altered hydrology in the area. This altered hydrologic regime, especially the reduced freshwater inflow and outflow, has resulted in periodic intrusion of brackish water from Lake Pontchartrain into Lake Maurepas and the swamp (Shaffer et al. 2009, 2016). This intrusion was further increased by the construction of the Mississippi River Gulf Outlet (MRGO) that created a saltwater and storm surge conduit from the Gulf of Mexico south of New Orleans, through the lakes into the Maurepas Swamp. Since the 2009 closure of the MRGO, salinity reductions have been noted, but droughts, sea level rise, and storm surge still cause periodic high salinities, which can be fatal to baldcypress and water tupelo. Impounding features, coupled with low soil surface elevations, have exacerbated saltwater intrusion and caused mortality or degradation of trees in the project area (Shaffer et al. 2016). These hydrologic changes have led to the declining health of the Maurepas Swamp.

The isolation of the swamp from the Mississippi River has also resulted in the deprivation of nutrients and sediments which are important for forest health, structure, function, and resilience. Nutrients and sediments promote vertical accretion and help maintain soil surface elevation on pace with relative sea level rise. The healthier forests adjacent to streams transporting local upland runoff are receiving nutrients and sediment along with flowing water that helps sustain them (Shaffer et al. 2009, 2016), and demonstrate the need for periodic inundation of the whole system with river water as sheet flow. Net primary productivity, stem densities, and tree basal areas are very low and similar to other baldcypress swamps flooded by low nutrient, low dissolved oxygen, stagnant water (Shaffer et al. 2003, Hoepfner et al. 2008). Because neither baldcypress nor water tupelo seeds can germinate under flooded conditions, there has been limited recruitment of new trees to the swamp. Therefore, where mortality has created gaps in the canopy, the swamp has converted to marsh and open water.

Because the majority of the old growth swamp trees were clear-cut in the late 1800s and early 1900s, most of the current trees have spent their entire lives in these degraded conditions. The harvest of second-growth trees continued to utilize non-sustainable forestry practices (Chambers et al. 2005) until harvesting was limited by conservation acquisitions and the regulatory recognition that harvesting coastal wetland forests largely resulted in conversion to non-forested habitats. These factors, plus conversion of forests to other land uses, have contributed to an overall reduction in coastal forest area and reduced health, structural integrity, and resilience of what remains. The combination of these factors has resulted in significant swamp habitat loss, and the conversion of degraded swamp to freshwater marsh habitat and open water. Although restoration to a historic condition is not possible, the best available science suggests it is possible to rehabilitate and prolong

the existence of the existing forest through restoration of the processes that sustain it.

The objectives are to establish a hydrologic regime in the project area consistent with swamp forest sustainability that will introduce flowing oxygenated water; ameliorate salinity intrusion; facilitate nutrient uptake and retention; increase forest health and structural integrity; and increase rates of soil surface elevation gain to offset subsidence and future sea level rise. If these objectives are achieved, swamp habitat structure, function, and resilience will increase, and conversion to non-forested habitats will be reduced. According to the Wetland Value Assessment, the project will provide an estimated net 7667 Average Annual Habitat Units of swamp habitat improvement to 44,683 acres over the life of the project. (LaCour-Conant et al. 2019).

#### *Proposed Methods:*

The project consists of the following major components, designed to divert fresh water and associated fine sediments and nutrients from the Mississippi River into the Maurepas Swamp: 1) a gated river intake structure, 2) box culverts through the levee, 3) a sedimentation basin, 4) a conveyance channel and associated guide levees, and 5) outfall management features. The maximum design flow is 2,000 cfs, which can be achieved at least half the year with average river flow, with lower rates possible the rest of the year. This was informed by modeling conducted during planning and also based on the capacity of the existing Hope Canal channel under I-10. In 2007, during E&D of the project, URS (now AECOM) developed two numerical models used in the feasibility and preliminary design of the project. These numerical models included a 1D drainage model, EPA's Stormwater Management Model (SWMM), and a 2D hydrodynamic model – the Advanced Circulation (ADCIRC) Model. The SWMM was used to verify Hydrologic Engineering Center-River Analysis System (HEC-RAS) model results of conveyance channel parameters from the CWPPRA Phase 1 efforts. The ADCIRC model was used to study the behavior of 2000 cfs of fresh water within the Maurepas Swamp. Preliminary results of the ADCIRC model guided design of small water control features to improve freshwater retention and circulation. More recent Delft3D modeling (FTN 2019) supported previous results and shows the project can be operated to deliver sheet flow throughout the project area. Additional Delft model runs (FTN 2019) showed the potential for salinity reduction as well as the ability for nutrient uptake within the swamp without causing large nutrient increases in Blind River or Lake Maurepas.

The project will be located near Garyville, LA in St. John the Baptist Parish. The intake structure at River Mile 144.2 will be comprised of three 10-ft x 10-ft sluice gates connected to three 10-ft x 10-ft box culverts through the levee and underneath LA 44. The conveyance channel extends just under 5.5 miles from the river to a discharge point in the Maurepas Swamp approximately 1,000 ft north of I-10. The channel will have a typical bottom width of 40 ft and will be bounded on both sides by guide levees. The first 1.5 miles of the eastern guide levee would be constructed as part of the integration with the WSLP hurricane protection levee.

Major infrastructure crossings include LA 44, Canadian National and Kansas City Southern railroads, US 61, and I-10. Numerous outfall management features will be constructed to improve retention and circulation of river water within the Maurepas Swamp. The design includes lateral relief valves to be constructed off the water conveyance channel, south of I-10, each having pipes with knife gate valves to divert 125 cfs water to the west and east of the constructed channel into the swamp system. One-way check valves will be installed along the north side of I-10 on all culverts beneath I-10 from LA 641 to the Mississippi Bayou overpass. Weirs will be constructed in Bourgeois Canal and Bayou Secret at their intersections with Blind River. Cuts will be created in the abandoned railroad embankment north of I-10 and east of Blind River. Additional cuts may be added along the Reserve Relief Canal and elsewhere, pending final design and adaptive management of the project. Tree planting may be included where feasible to accelerate regeneration in areas most influenced by the

diversion.

*Environmental Benefits:*

Modeling (FTN 2019) shows the project can be operated to deliver sheet flow throughout the approximately 45,000-acre project area, providing freshening and nutrient uptake within the swamp without causing large nutrient increases in Blind River or Lake Maurepas. The TAG (Krauss et al. 2017) anticipated the project would help maintain favorable salinities in the swamp, promote soil surface elevation gains to offset relative sea-level rise, and promote near complete uptake of nitrate by the receiving wetlands. They further expect increased productivity reflected in stand density and overstory leaf area index in the swamp. A Wetland Value Assessment (WVA) (LaCour-Conant et al. 2019) using the Swamp Community Model quantified the estimated net project benefits as 7,667.5 Average Annual Habitat Units over 44,683 acres. Mitigation requirements for the 3002 acres of swamp habitat impacted by WSLP could potentially be satisfied with an estimated 1090 AAHUs from this project.

The communities surrounding the swamp include some of the fastest growing in the state, and currently have no major structural hurricane protection. Implementing this project would maintain an important floodwater storage area as well as improve its storm surge buffering capacity. Combined with the WSLP levee, it would provide substantially improved resilience for the communities and industrial infrastructure in the surrounding area. This project shares the first 1.5 miles of its eastern guide levee with the WSLP levee (Figure 2), which is anticipated to be constructed concurrently, and a healthy swamp forest will provide significant synergy with that levee protection. The restored area of the Maurepas Swamp would provide an additional layer of natural flood defense in front of the levee, a “multiple lines of defense” strategy, providing substantial, long-term improvements in community resilience. Concurrent construction of these two projects creates a unique opportunity to help facilitate two important coastal projects thereby providing for greater overall community resilience in the area.

*Metrics:*

Metric Title: HR009 : Restoring hydrology - Acres with restored hydrology

Target: 44,683 acres

Narrative: Long-term monitoring to quantify restoration success will be based on performance metrics and targets recommended by the TAG (Krauss et al. 2017) and described in the OMMAM Plan (Buras et al. 2018). For the grant period, preconstruction monitoring will establish baselines and post-construction monitoring will continue for 5 years under other funding sources. Taking advantage of the coastal Louisiana CRMS monitoring program, existing CRMS sites within and near the project area will be used and additional CRMS sites will be added in the project benefit area. The CRMS monitoring program will continue project-specific and regional monitoring beyond closeout of the award for the remainder of the 50-year project life. Some elements will be measured more often in the first few years of operation to inform adaptive management, and decrease frequency in later years. The project will be evaluated for the restored hydrology metric during the grant period by determining distribution of River water throughout the project area by monitoring water level, specific conductivity, salinity, and temperature; isotope analysis of water samples; synoptic surveys of water velocity, depth, DO, chl-a, turbidity, specific conductivity, pH, temperature, and suspended sediments. We will also measure other parameters to assess surface elevation change/accretion, vegetation and habitat, soil properties, nutrient uptake, and water quality.

*Risk and Uncertainties:*

Major risks consist of deviations to the schedule, cost, and long-term performance. The key risk is associated with the schedule; project timing is both critical and urgent.

Project schedule risks: Since this project may be considered partial mitigation for the WSLP project, it is essential that schedules and logistics are heavily coordinated and aligned to avoid a significant lost opportunity to build both projects in an integrated fashion that provides both ecosystem and risk reduction benefits. The project's complexity and numerous affected stakeholders have the potential to greatly impact the project schedule. Construction of the project features will affect ~30 different utilities, each requiring coordination and relocation dependent on each utility's relocation timeline. Timelines for the utilities must be coordinated since CPRA needs to capitalize on each utility's different "shut down days" for regular maintenance. Mississippi River conditions may pose a schedule risk. Louisiana has experienced unprecedented high river stages in recent years. If the river is high during construction, relocating the river levee may have implications for flood fight efforts and restrictions on activities within 1,500 feet of the levee could cause a delay.

If this project is considered mitigation for WSLP, regulatory review and permitting will be heavily coordinated with the USACE, who will work with CPRA to determine requirements that satisfy NEPA and additional laws and regulations, which could affect the project schedule.

Cost escalation risk: In the past, construction costs have increased due to increased fuel cost and cost of construction materials, particularly following major storms or hurricanes.

Project performance risks: If not adequately funded for operations and maintenance, the project will not perform as designed, since water flow through the project area is highly dependent on maintenance of the channel, culverts, bridges, and sedimentation basin. Depending on future water levels in the basin and river, full capacity operations may not be possible since the operation and performance rely on the head difference between the river and receiving basin.

Low Risk: Attaining voluntary landrights is not anticipated to be a significant risk. The portion of the project area near the Mississippi River is privately owned by Marathon Oil Corporation (formerly Pin Oak). CPRA has coordinated extensively with this group for 5 years regarding the location of the project and attaining the needed landrights should not be problematic. CPRA has coordinated with other private landowners in the area and no issues are anticipated. The majority of the project area is State-owned by LDWF as part of the Maurepas Swamp Wildlife Management Area. CPRA has been coordinating with LDWF about this project and it should not pose a significant project risk. Considerable coordination, however, will be required with LDWF to address any project-specific concerns they may have. This project has broad general support from local, state, and federal government, stakeholders, and the general public and has little to no documented opposition; therefore, this is considered a low risk. Also, CPRA believes the potential for unanticipated adverse environmental and/or socio-economic impacts is low.

Scientific uncertainties that may affect the project include future sea level rise rates (Pahl 2017), subsidence, weather events (such as droughts, rainfall, local riverine floods, and tropical events) (Frankson et al. 2019), variability in timing and volume of river flow (Tao et al. 2014, Mize et al. 2018, LaFontaine et al. 2019), interaction with new flood protection features such as WSLP, and other regional and local drainage, protection, and restoration projects. Since this is the first river reintroduction project targeting a coastal swamp in Louisiana, scientific uncertainties exist with respect to temporal and spatial attainment of various project benefits. The diversion will not affect the entire project area uniformly due to its large size, variable existing and future conditions (topography and location-specific levels of swamp degradation) and variable water influence (Krauss et al. 2017). This risk will be mitigated with adaptive management which includes monitoring and optimizing project operations and results during the project life. Future development in the watershed and the associated hydrologic changes that may occur are also uncertainties.

The primary measure that CPRA will utilize to mitigate risks is coordination that is both frequent and in advance of critical project milestones. This coordination will occur with USACE, utility companies, LDOTD, Pontchartrain Levee District, LDWF, St. John the Baptist Parish, and others as necessary. Other risks and uncertainties will be managed through targeted data collection, management, and analysis to inform adaptive management strategies and decisions.

*Monitoring and Adaptive Management:*

Ecological monitoring for up to 5 years pre-diversion operations will determine baseline conditions, continue during construction, and extend 50 years post-construction. Monitoring frequency will be greatest prior to and within the first few years of construction to inform operations and assess immediate project effects on the swamp and neighboring waterways. Monitoring for structural integrity and function will occur regularly during and after construction and includes visual inspections and hydrographic surveys.

Ecological monitoring is tailored to address whether the project's performance measures are being met (Krauss et al. 2017). Real-time monitoring of diversion discharge, water elevation, salinity and DO will allow for timely adjustments to diversion operations to maintain the project's hydrologic and salinity targets. Data from pre-existing hydrographic continuous recorders will supplement real-time stations, following CRMS protocols (Folse et al. 2018). Isotope analysis of water samples and synoptic surveys will provide additional insight into water distribution and flow. On-the-ground vegetation surveys will document tree growth and capture changes in recruitment, survivability, and canopy cover (Folse et al. 2018). Habitat analysis using CIR photography and satellite imagery will provide a broader-based evaluation of habitat change over years (Folse et al. 2018, Cowardin et al. 1979). Water quality analysis (nutrients, DO, chl a, TSS) will determine the efficiency of nutrient uptake in the swamp and inform operational adjustments to enhance nutrient retention. Sediment samples will be analyzed for nutrients, % organic matter, and bulk density. Surface elevation change and accretion will be assessed using rod surface elevation tables, feldspar marker accretion plots (Folse et al. 2018), and radioisotope dating of sediment cores.

The primary strategy for adaptive management is adjustments to operations of the diversion structure and outfall management features. Changes in timing, duration, and frequency must be flexible to meet the receiving basin's needs, including encouraging periods of low water to promote seedling establishment. Other adaptive management strategies could include additional spoil bank gapping, water control structures, check valves, lateral relief valves, or cuts in railroad embankments to assist with achieving the desired hydrology. Location-targeted plantings of baldcypress and water tupelo will also be considered.

*Data Management:*

Data collected in association with this project will be managed in accordance with established CRMS, SWAMP, and survey standards data management protocols, where applicable, and made publicly available. CPRA's data management system is called the Coastal Information Management System (CIMS; <https://cims.coastal.la.gov/>) and is our overall enterprise data repository that combines a network of webpages hosted by CPRA. It includes a spatial (GIS) database and relational tabular database in one public-facing, GIS-integrated system capable of robust visualizations and data delivery. It also has a library for sharing documents pertinent to CPRA's mission. CIMS facilitates CPRA, its partners, and the general public's access to CPRA's suite of protection and restoration projects as well as CRMS and SWAMP stations, Coastal Master Plan activities, geophysical data, and coastal community resiliency information. CIMS is the official repository for environmental, modeling, and monitoring data for restoration and protection projects undertaken by the State of Louisiana.



### *Collaboration:*

Through the collaborative process utilized for developing project ideas for FPL 3, a potential partnership between CPRA and the USACE was identified for the project. Congress recently approved appropriations for the WSLP levee project in the same vicinity as the Maurepas project (WSLP overlaps with Maurepas' guide levees), which creates an unprecedented opportunity for the partners to build a truly integrated wetland restoration and risk reduction project. This collaborative opportunity also allows the RESTORE Council the ability to facilitate the project, save money, and improve community resilience. Partnering with the USACE would reduce the Bucket 2 funds needed by consolidating the final design/integrated construction of the overlapping portions of the 2 projects while facilitating WSLP. The WSLP project and its mitigation are scheduled to be completed by 2024 resulting in the urgency to build both projects concurrently.

### *Public Engagement, Outreach, and Education:*

CPRA's Coastal Master Plan (CPRA 2017) guides all of our efforts, including the Maurepas Project. CPRA established a strategic outreach and engagement framework for the Coastal Master Plan that helped/helps guide communications and interactions with diverse audiences and stakeholders. These audiences/ stakeholders include key citizen groups and organizations, non-governmental organizations, local and State officials, business groups and the general public. Regularly scheduled opportunities for public input include: CPRA Board Monthly Public Meetings, National Environmental Policy Act / Permitting Project-Specific Opportunities, and Community Meetings. Specifically for the Maurepas Project, various informational meetings have been held about the project since it began under the CWPPRA Program in 2001. In April 2002, a Notice of Intent was published in the Federal Register to prepare an EIS. NEPA Scoping letters were mailed to 869 local organizations (tribal, etc.), the public, public interest groups, elected officials, and other agencies inviting them to participate in public scoping meetings. The purpose of those meetings was to provide information on the project and for the attendees to provide issues that they wanted to see addressed in the EIS. Various other project update meetings have been held between 2002 and now. The most recent public, informational meeting was co-hosted by CPRA and the Louisiana Wildlife Federation on the evening of March 26, 2018 in Reserve, LA. The intention of this meeting was to inform the attendees about the project, its current status and next steps, and provide a forum for questions. CPRA will continue to perform public education, outreach, and education on this project throughout the construction and post-construction processes. CPRA believes a successful restoration project is built on local knowledge, input from a diverse range of coastal stakeholders, and extensive dialogue with the public. We continue to reach out to the public in new ways to better share information on this and other restoration projects. CPRA is committed to engaging stakeholders and citizens in the effort to ensure their voices are heard and their input is incorporated.

### *Leveraging:*

Funds: \$10,717,183.00

Type: Building on Others

Status: Received

Source: CWPPRA, LCA, State-only

Source Type: Other

Description: The Maurepas project has leveraged other funding sources, including CWPPRA, LCA, State-only. The project was included on CWPPRA PPL 11 and planning efforts were performed. In 2001, CWPPRA Task Force approved funding to complete 30% design. Additional project investigations were performed for the Louisiana Coastal Area (LCA) Program and, in 2004, the USACE identified the project as a near-term priority in the LCA plan (USACE 2004). CPRA funded design to the 95% level.

**Funds:** \$153,422.00

**Type:** Building on Others

**Status:** Received

**Source:** NFWF-GEBF

**Source Type:** Other

**Description:** NFWF GEBF funds were used for other planning tasks, including contracting the TAG to develop performance measures and targets (Krauss et al. 2017).

**Funds:** \$14,190,000.00

**Type:** Building on Others

**Status:** Received

**Source:** RESTORE Bucket 2

**Source Type:** Other Federal

**Description:** Funds were provided under the RESTORE Council 2015 Initial FPL to complete planning tasks required to bring the project to a “construction ready” status. These tasks included creating a new hydrodynamic and water quality model (FTN 2019), final design, landrights, continuation of engagement with the TAG, continuation of permitting and environmental compliance processes, and creating a Preliminary Operations, Maintenance, Monitoring, and Adaptive Management (OMMAM) plan (Buras et al. 2018).

**Funds:** \$88,526,550.00

**Type:** Adjoining

**Status:** Proposed

**Source:** TBD

**Source Type:** Other

**Description:** Although the exact funding source for the project’s monitoring, adaptive management, and data management has not been finalized, other funding sources besides RESTORE are anticipated to be utilized for these tasks. These tasks are critically important to determine ecological success of the project and determine if any adaptive management actions (operational or otherwise) are needed. The current estimated cost for these 3 activities throughout the 50-year project life is \$88,526,550.

**Funds:** \$346,029,172.00

**Type:** Adjoining

**Status:** Proposed

**Source:** TBD

**Source Type:** Other

**Description:** An operations and maintenance plan for the 50-year project life has been drafted. Physical operations of the diversion and associated structures will be managed by CPRA and performed by CPRA or its designee(s). Maintenance activities of all project features will be divided among the various responsible parties. For example, railroad crossing maintenance, although funded through the project, would likely be performed by the actual railroad company while guide levee maintenance would likely be delegated to the local levee district. The 50-year O&M budget, including inflation, is \$346,029,172.

**Funds:** \$60,000,000.00

**Type:** Co-funding

**Status:** Proposed

**Source:** RESTORE Bucket 3 and/or other sources

**Source Type:** Other

**Description:** The planned project footprint of the WSLP project overlaps with the Maurepas project’s guide levees. Because these projects are adjoining/in the same vicinity, there is the

potential for leveraging with the USACE, as described throughout this proposal. Under this coordinated scenario, the USACE would provide CPRA a cost share for the WSLP mitigation, approximately \$60M would be requested from Bucket 3 and/or other source(s).. The WSLP project and its mitigation are scheduled to be completed by 2024.

#### *Environmental Compliance:*

The Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) Task Force approved the River Reintroduction into Maurepas Swamp Project for planning studies and design in 2001, with Environmental Protection Agency (EPA) as the federal sponsor and the State of Louisiana as the local sponsor. Engineering and design were initiated in 2002 and EPA initiated National Environmental Policy Act (NEPA) compliance with the publication of a Notice of Intent to prepare an Environmental Impact Statement (EIS) in the Federal Register. Public scoping meetings were held. EPA undertook informal consultation with the U.S. Fish and Wildlife Service (USFWS) for West Indian manatee, Gulf sturgeon, and pallid sturgeon. EPA completed consultations with SHPO and THPOs under Section 106 of the National Historic Preservation Act in 2008; SHPO concurred the project would not affect significant archaeological sites or standing structures.

In 2013, CPRA submitted a Joint Permit Application (CUP# 20130675) to construct the Project. The CWPPRA Task Force de-authorized this Project in January 2014 due to its construction costs. Prior to de-authorization, EPA completed a Draft Environmental Information Document (EID) (EPA 2011) that screened engineering alternatives and documented existing conditions in the Mississippi River, Maurepas Swamp, and the Pontchartrain Basin.

Currently, CPRA is updating EPA's EID to evaluate recent design changes and update environmental conditions in the Maurepas Swamp and Pontchartrain Basin. CPRA's EID would incorporate past consultations performed by EPA, including but not limited to: Endangered Species Act- Section 7 – Informal Consultation; Migratory Bird Treaty Act Consultation; Bald and Golden Eagle Protection Act – Consultation and Planning; and NHPA Section 106 – Consultation and Planning ACHP, SHPO(s), and/or THPO(s). The EID would also include information from updated modeling and design reports. See Design Proposal submitted to RESTORE for more information.

CPRA has the opportunity to streamline this Project's Environmental Compliance by partnering with USACE to use the Maurepas Project as wetland mitigation for the swamp impacts of the federal WSLP Project, as the Maurepas Project was identified as a mitigation alternative in the WSLP EIS. With this opportunity, Environmental Compliance for the Maurepas Project would likely be documented in a supplemental Environmental Assessment (EA) to the WSLP EIS.

#### **Budget**

##### *Project Budget Narrative:*

A total of \$130,000,000 is being requested from FPL 3a to fund construction of the River Reintroduction into Maurepas Swamp Project. The amount requested is not inclusive of the total construction estimate of \$190,000,000. The remainder of construction funds will likely be requested from the Spill Impact Component and/or other source(s) to take advantage of leveraging opportunities described above involving the combined construction of the West Shore Lake Pontchartrain Hurricane and Storm Damage Reduction Project and River Reintroduction into Maurepas Swamp project as it relates to the shared components of both projects. The funds being requested are solely intended to be used for project construction implementation. Project Management funds other than those described below, as well as funds to be used for any leveraging and cost sharing, are not part of this request..

Planning funds are not being requested as part of this request. An estimated 81% of this request is

for project construction implementation. An estimated 0.4% is being requested for project management activities such as construction oversight, budget and schedule management, and grant management and reporting. An estimated 0.5% is being requested for reporting on monitoring and adaptive management activities to ensure progress is made toward the acres with restored hydrology metric. An estimated 0.1% is being requested for data management activities. The construction Contingency is currently estimated at 10% and Escalation is estimated at 8% and both are included in the total construction estimate.

*Total FPL 3 Project/Program Budget Request: \$130,000,000.00*

*Estimated Percent Monitoring and Adaptive Management: 0.5 %*

*Estimated Percent Planning: 0 %*

*Estimated Percent Implementation: 81 %*

*Estimated Percent Project Management: 0.4 %*

*Estimated Percent Data Management: 0.1 %*

*Estimated Percent Contingency: 18 %*

*Is the Project Scalable?:*

No

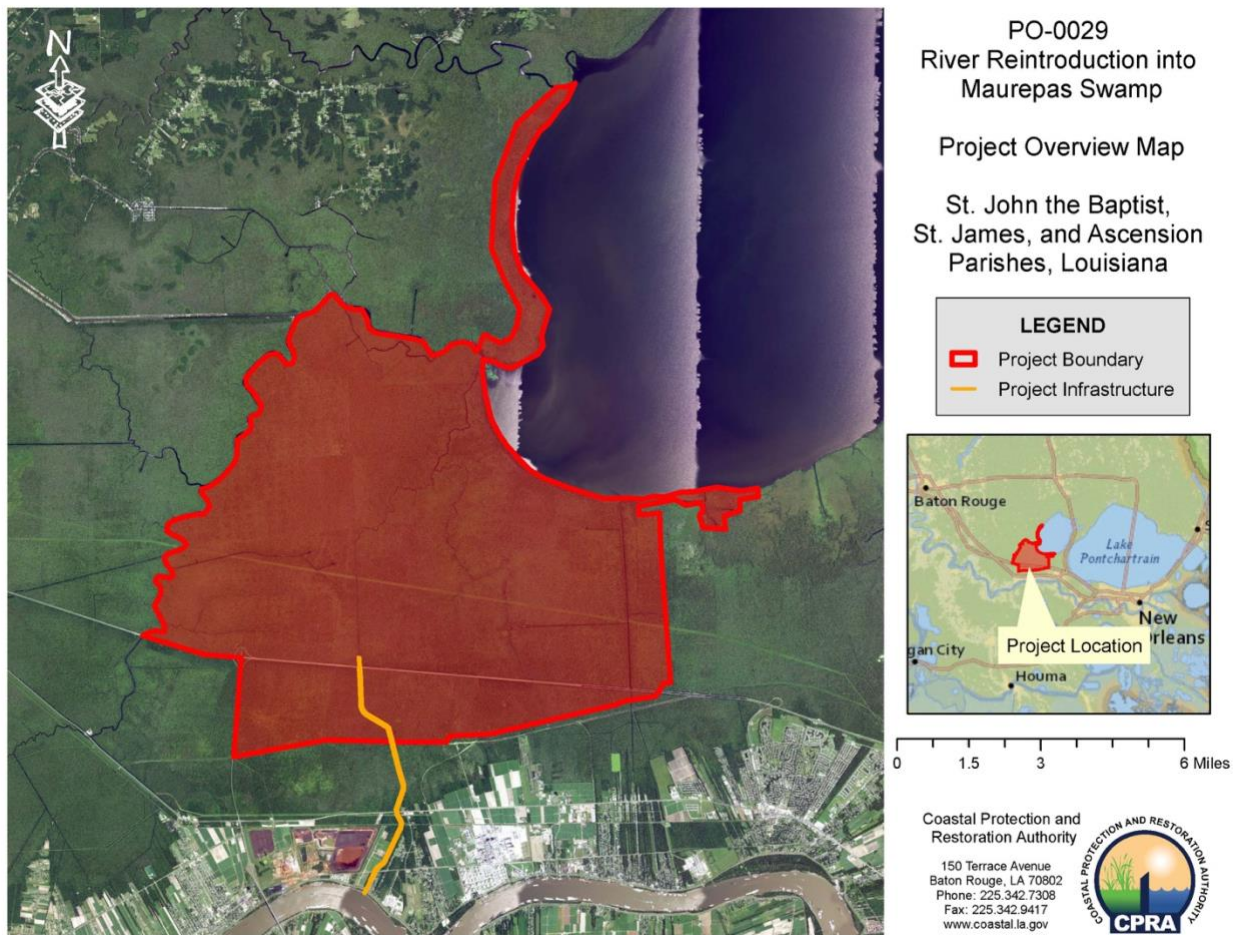
*If yes, provide a short description regarding scalability:*

N/A

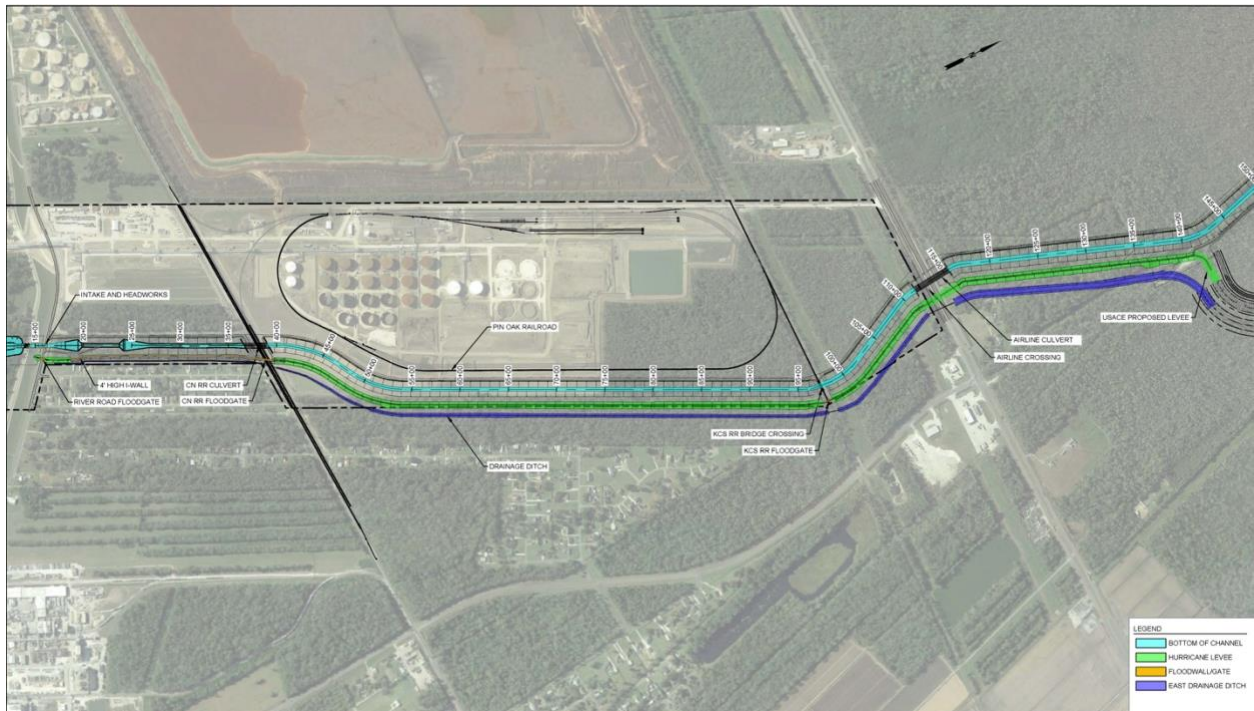
## Environmental

Environmental Requirement	Has the Requirement Been Addressed?	Compliance Notes (e.g., title and date of document, permit number, weblink etc.)
National Environmental Policy Act	___ Yes ___ No <u>X</u> N/A	
Endangered Species Act	___ Yes ___ No <u>X</u> N/A	
National Historic Preservation Act	___ Yes ___ No <u>X</u> N/A	
Magnuson-Stevens Act	___ Yes ___ No <u>X</u> N/A	
Fish and Wildlife Coordination Act	___ Yes ___ No <u>X</u> N/A	
Coastal Zone Management Act	___ Yes ___ No <u>X</u> N/A	
Coastal Barrier Resources Act	___ Yes ___ No <u>X</u> N/A	
Farmland Protection Policy Act	___ Yes ___ No <u>X</u> N/A	
Clean Water Act Section 404	___ Yes ___ No <u>X</u> N/A	
River and Harbors Act Section 10	___ Yes ___ No <u>X</u> N/A	
Clean Water Act Section 401	___ Yes ___ No <u>X</u> N/A	
Marine Protection, Research and Sanctuaries Act	___ Yes ___ No <u>X</u> N/A	
Marine Mammal Protection Act	___ Yes ___ No <u>X</u> N/A	
National Marine Sanctuaries Act	___ Yes ___ No <u>X</u> N/A	
Migratory Bird Treaty Act	___ Yes ___ No <u>X</u> N/A	
Bald and Golden Eagle Protection Act	___ Yes ___ No <u>X</u> N/A	
Clean Air Act	___ Yes ___ No <u>X</u> N/A	

## Maps, Charts, Figures



Caption : Figure 1: River Reintroduction into Maurepas Swamp Project Overview- This project is located in the Pontchartrain Basin with the intake at River Mile 144.2 near Garyville, Louisiana with conveyance channel alignment (shown in orange). Project benefit area (shown in red) is approximately 45,000 acres roughly between Lake Maurepas, Blind River, Reserve Relief Canal, and developed uplands along the Mississippi River. The benefit area also includes some lake shoreline north of Blind River and east of Reserve Relief Canal.



Caption : Figure 2: Integrated reach of WSLP and River Reintroduction into Maurepas Swamp Project - The first 1.5 miles of conveyance channel, guide levees, crossings, and drainage features of Maurepas Swamp project are integrated along shared alignment with the West Shore Lake Pontchartrain hurricane risk reduction project with the diversion channel being on the west (flood side) and the WSLP levee to the east. The diversion intake structure, headworks, and conveyance channel are shown in blue; flood wall/flood gate are shown in orange; drainage features are shown in purple; and the shared levee alignment is shown in green.

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