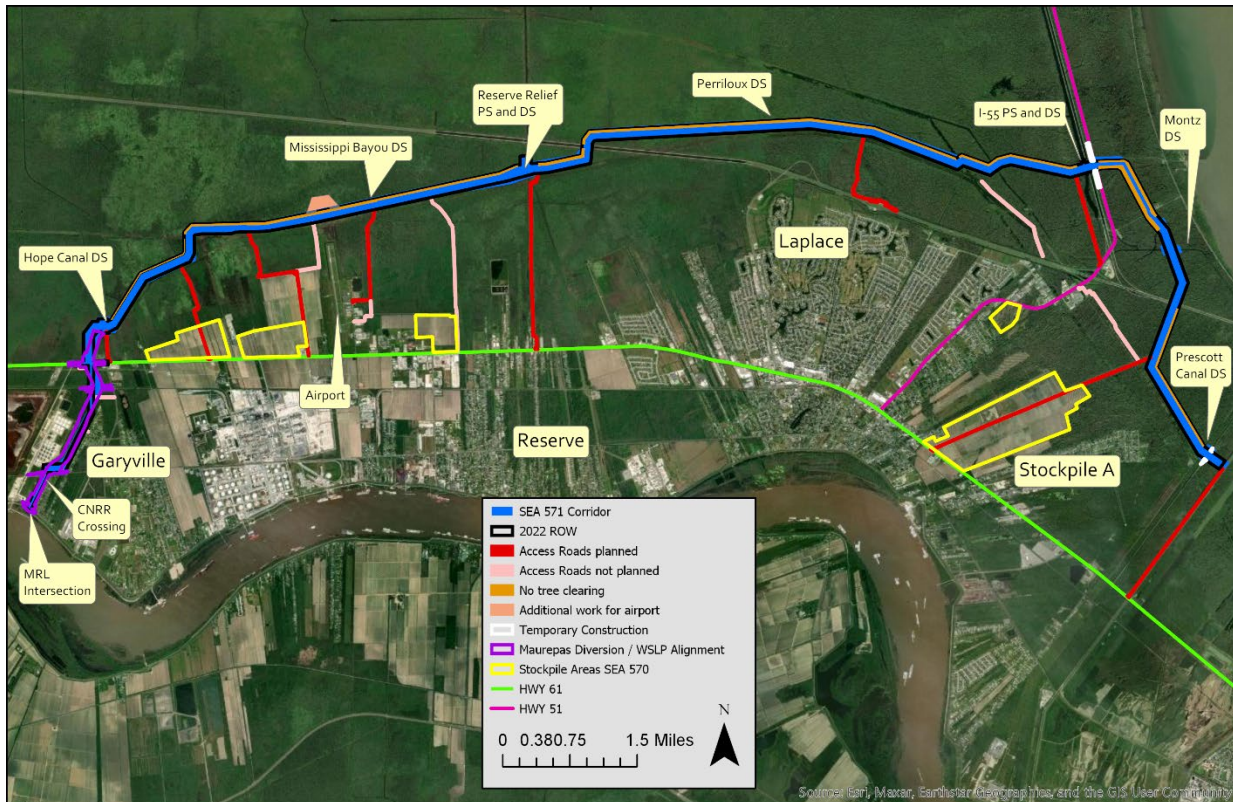




Supplemental Environmental Assessment
West Shore Lake Pontchartrain Hurricane and Storm Damage Risk Reduction Levee System
St. Charles and St. John the Baptist Parishes, Louisiana
SEA #571A



U.S. Army Corps of Engineers
Mississippi Valley Division
Regional Planning and Environment Division South
New Orleans District
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1 Introduction

The U.S. Army Corps of Engineers (USACE), Mississippi River Valley Division (MVD), Regional Planning and Environment Division South (RPEDS), has prepared this Supplemental Environmental Assessment (SEA 571A) for the New Orleans District (CEMVN) to evaluate potential impacts of adjustments to the levee system in St. John the Baptist and St. Charles Parishes, Louisiana, as described in the Supplemental Environmental Assessment #571, West Shore Lake Pontchartrain Hurricane and Storm Damage Risk Reduction Levee System St. Charles and St. John the Baptist Parishes, Louisiana (SEA 571), which evaluated additional changes to the WSLP levee alignment Right-of-Way (ROW) (SEA 571). The Finding of No Significant Impacts (FONSI) associated with SEA 571 was signed by the CEMVN District Commander on June 29, 2020. SEA 571 supplemented the West Shore Lake Pontchartrain Environmental Impact Statement (originally published in November 2014, herein referred to as 2016 WSLP EIS; <http://www.mvn.usace.army.mil/About/Projects/West-Shore-Lake-Pontchartrain/>). The Record of Decision (ROD) for the 2016 WSLP Environmental Impact Statement (EIS) was signed by the Assistant Secretary of the Army on September 14, 2016. Supplemental Environmental Assessment #570, West Shore Lake Pontchartrain Hurricane and Storm Damage Risk Reduction Structural Alignment Surveys and Borings Investigations St. Charles and St. John the Baptist Parishes, Louisiana (SEA 570) also investigated some levee alignment shifts as well as the addition of five stockpile/staging areas for construction related activities and the addition of a mitigation bank credit purchase option into the mitigation plan approved in the 2016 WSLP EIS for compensating bottomland hardwoods (BLH) impacts. The Finding of No Significant Impacts (FONSI) associated with SEA 570 was signed by the CEMVN District Commander on May 13, 2019. The 2016 WSLP EIS and ROD, SEA 570 and FONSI, and SEA 571 and FONSI are hereby incorporated by reference.

This SEA #571A has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) and the Council on Environmental Quality's Regulations (40 CFR 1500-1508), as reflected in USACE Engineering Regulation ER 200-2-2. This SEA provides sufficient information on the potential adverse and beneficial environmental effects to allow the District Commander, U.S. Army Corps of Engineers, and CEMVN District, to make an informed decision on the appropriateness of an EIS or a FONSI.

This SEA #571A is evaluating modifications to the WSLP levee system in St. John the Baptist and St. Charles Parishes, Louisiana described in the 2016 WSLP EIS and SEA 571, and modifications to features described in SEA 570 and SEA 571. The majority of changes would be within the SEA 571 construction ROW corridor, except for 4 locations:

1. Temporary bypass roads near the I-55 pump station and drainage structures
2. Temporary construction activities near the Prescott Canal Drainage structure
3. Power transmission corridor for the Reserve Relief Pump Station
4. Levee system re-alignment to accommodate a proposed runway extension for the Port of South Louisiana's Executive Regional Airport in Reserve, Louisiana

Design changes within the SEA 571 construction ROW include:

1. Levee system design, drainage canal designs and locations
2. Drainage structure design, size and locations
3. Pumpstation design, number and locations
4. Additional structures.

1.1 Proposed Action

The proposed action consists of modifications to the WSLP levee system in St. John the Baptist and St. Charles Parishes, Louisiana described in the 2016 WSLP EIS SEA 570, and SEA 571. The majority of features would be within the SEA 571 construction ROW corridor, except for 4 locations:

1. Temporary bypass roads near the I-55 pump station and drainage structures
2. Temporary construction activities near the Prescott Canal Drainage structure.
3. Power transmission corridor for the Reserve Relief Pump Station
4. Levee system re-alignment to accommodate a proposed runway extension for the Port of South Louisiana's Executive Regional Airport in Reserve, Louisiana.

Other features being supplemented include modifications to levee design, pumping stations, drainage structures, and drainage canals. The Project Area of the proposed action is shown in Figure 1.

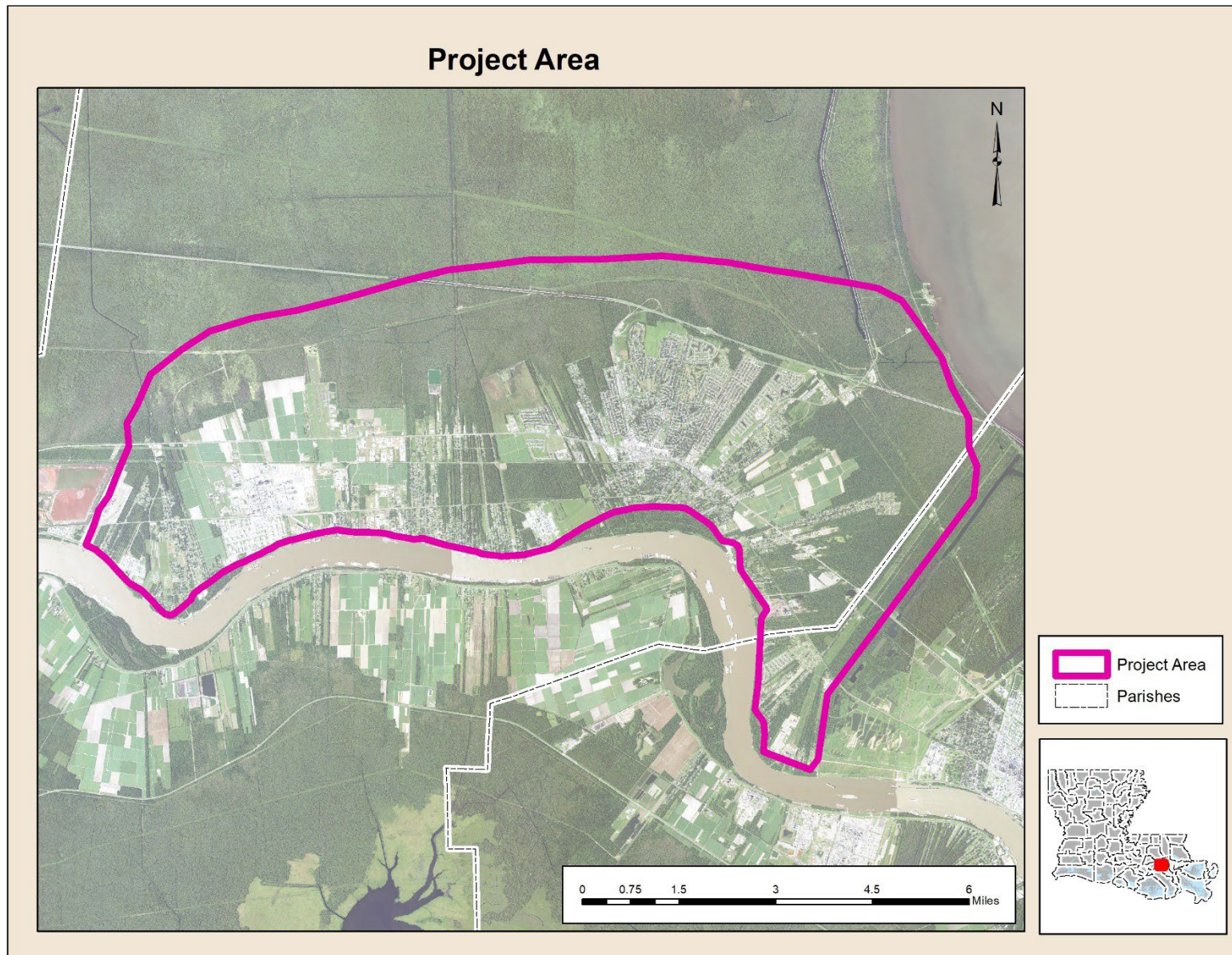


Figure 1: Project Area

1.2 Authority

Construction of the WSLP Hurricane and Storm Damage Risk Reduction Project (WSLP Project) was authorized as part of the Water Infrastructure Improvement for the Nation Act (WIIN Act, Public Law 114-322) in 2016. Construction of the WSLP Project was funded by the Bipartisan Budget Act of 2018 (BBA 2018, Public Law 115-123).

1.3 Purpose and Need for the Proposed Action

The purpose of the proposed action is to construct a Hurricane Storm Damage Risk Reduction System (HSDRRS) for parts of St. John the Baptist and St. Charles Parishes, Louisiana on the eastern bank of the Mississippi River. Adjustments considered herein were based on results of a design summit that was held in 2021 to examine all aspects of the project to reduce the cost while still providing the authorized 1-percent exceedance risk reduction. New field data were incorporated into updated, more precise Hydraulic and Hydrologic models and results of hydraulic re-designs lowered the required system heights and reduced the required pumping capacities. Additionally, levee re-designs included use of wick drains and staged construction to reduce levee embankment. Other features and plan changes are described in Section 2.2. The location of the proposed action is in St. John the Baptist and St. Charles Parishes, near the communities of Montz in St. Charles Parish, and Laplace, Reserve, and Grayville in St. John the Baptist Parish, Louisiana.

1.4 Prior Studies

A number of studies, reports, and environmental documents on water resources development in the project area have been prepared by USACE, other Federal, state, and local agencies, research institutes, and individuals. The most relevant prior studies, reports, and projects are described in Table 1.

Table 1: Relevant Prior Reports and Studies					
Previous West Shore Lake Pontchartrain Reports		Relevance to Proposed Action			
		Data Source	Consistency	Structural Measures	FWOP* Conditions
1985	West Shore Lake Pontchartrain Initial Evaluation Report	X	X	X	X
1987	Lake Pontchartrain West Shore, LA Hurricane Protection Reconnaissance	X	X	X	X
1997	West Shore Lake Pontchartrain, LA Hurricane Protection Project, Reconnaissance	X	X	X	X
2003	St. John the Baptist Parish, LA East Bank Urban Flood Control Reconnaissance Report	X	X	X	X
2016	Environmental Impact Statement West Shore Lake Pontchartrain Hurricane and Storm Damage Risk Reduction Study	X	X	X	X
2019	Supplemental Environmental Assessment #570 West Shore Lake Pontchartrain Hurricane and Storm Damage Risk Reduction Structural Alignment Surveys and Borings Investigations St. Charles and St. John the Baptist Parishes, Louisiana	X	X	X	X
2020	Supplemental Environmental Assessment #571 West Shore Lake Pontchartrain Hurricane and Storm Damage Risk Reduction Levee System St. Charles and St. John the Baptist Parishes, Louisiana	X	X	X	X
2020	Environmental Assessment #576 Bipartisan Budget Act (BBA) Construction Projects; West Shore Lake Pontchartrain (WSLP), Comite River Diversion, and East Baton Rouge (EBR) Flood Risk Management, BBA Construction Mitigation	X	X		X
2023	Supplemental Environmental Impact Statement to West Shore Lake Pontchartrain Hurricane and Storm Damage Risk Reduction Study	X	X	X	X
Other Studies and Reports					
1985	Supplemental Information Report (SIR) to the Supplemental Environmental Impact Statement on the Lake Pontchartrain, Louisiana, and Vicinity Hurricane Protection Project	X	X		
2004	LA Coastal Area (LCA), LA Ecosystem Restoration Study	X	X	X	X
2023	Draft LA's Comprehensive Master Plan for a Sustainable Coast	X	X	X	X

*Future without project (FWOP)

1.5 **Public Concerns**

Many public concerns were raised during the scoping and public review process of the 2016 WSLP EIS. Those public comments and USACE responses can be found in Appendix A, Annex P of the 2016 WSLP EIS. Those comments covered a broad range of topics including concerns about project design, impacts to property and infrastructure, potential induced flooding impacts, and adverse environmental impacts. Public comments associated with SEA 570 concerned wetland impacts. Public comments associated with SEA 571 concerned impacts to sediment diversion projects, mitigation concerns, and adverse wetland impacts and can be found in Appendix IX of SEA 571.

2 Alternatives Including the Proposed Action

Because the Proposed Action consists of modifications to the structural alignment of the levee system and associated features as described in the 2016 WSLP EIS, SEA 570, and SEA 571 only the No- Action Alternative (Future without Project Action) and the proposed action were considered.

2.1 No-Action Alternative (Future without Project (FWOP))

NEPA requires that in analyzing alternatives to a proposed action, a Federal agency consider an alternative of “No-Action”. The No-Action alternative evaluates the impacts associated with not implementing the proposed action and represents the Future without Project (FWOP) condition against which alternatives considered in detail are compared. The FWOP provides a baseline essential for impact assessment and alternative analysis.

Under the FWOP condition (No-Action), the Proposed Action would not occur. The activities described in the 2016 WSLP EIS, SEA 570, and SEA 571 would occur in the vicinity of the proposed action. A levee approximately 18.27 miles in length would be constructed as part of the WSLP Project in St. John the Baptist and St. Charles Parishes, Louisiana. See the 2016 WSLP EIS for more information on construction of the structural alignment.

Approximately 1,138 acres (-595 AAHUs) of direct negative impacts and 9,754 acres (352 AAHUs) of indirect negative impacts for a total of 10,892 acres (-947 AAHUs) of direct impacts to coastal swamp wetlands would occur.

Approximately 242 acres (-169 AAHUs) of direct negative impacts and 4,635 acres of indirect negative impacts (-124 AAHUs) for a total of 4,434 acres (-293 AAHUs) of direct impacts to coastal bottomland hardwoods (BLH) wetlands would occur.

2.2 Proposed Action

The Proposed Action would include modifications to the WSLP levee system in St. John the Baptist and St. Charles Parishes, Louisiana described in the 2016 WSLP EIS, SEA 570, and SEA 571. The majority of changes would be within the SEA 571 construction ROW corridor, except for 4 locations:

1. Temporary bypass roads near the I-55 pump station and drainage structures
2. Temporary construction activities near the Prescott Canal Drainage structure.
3. Power transmission corridor for the Reserve Relief Pump Station
4. Levee system re-alignment to accommodate a proposed runway extension for the Port of South Louisiana’s Executive Regional Airport in Reserve, Louisiana.

All other design changes being considered would occur within the SEA 571 construction ROW corridor:

1. Levee system design
2. Drainage canal designs and locations
3. Drainage structure design, size, and location
4. Pump station design, number, and locations
5. Additional structures

Overall, there would be a decrease in overall acreage of construction area due to levee system design changes. These changes allow for large areas within the 2022 ROW where there would not be any construction activities unless necessary for levee system improvements due to RSLR. The levee system will be constructed to heights for 1 percent annual chance of exceedance storm surge in year 2027.

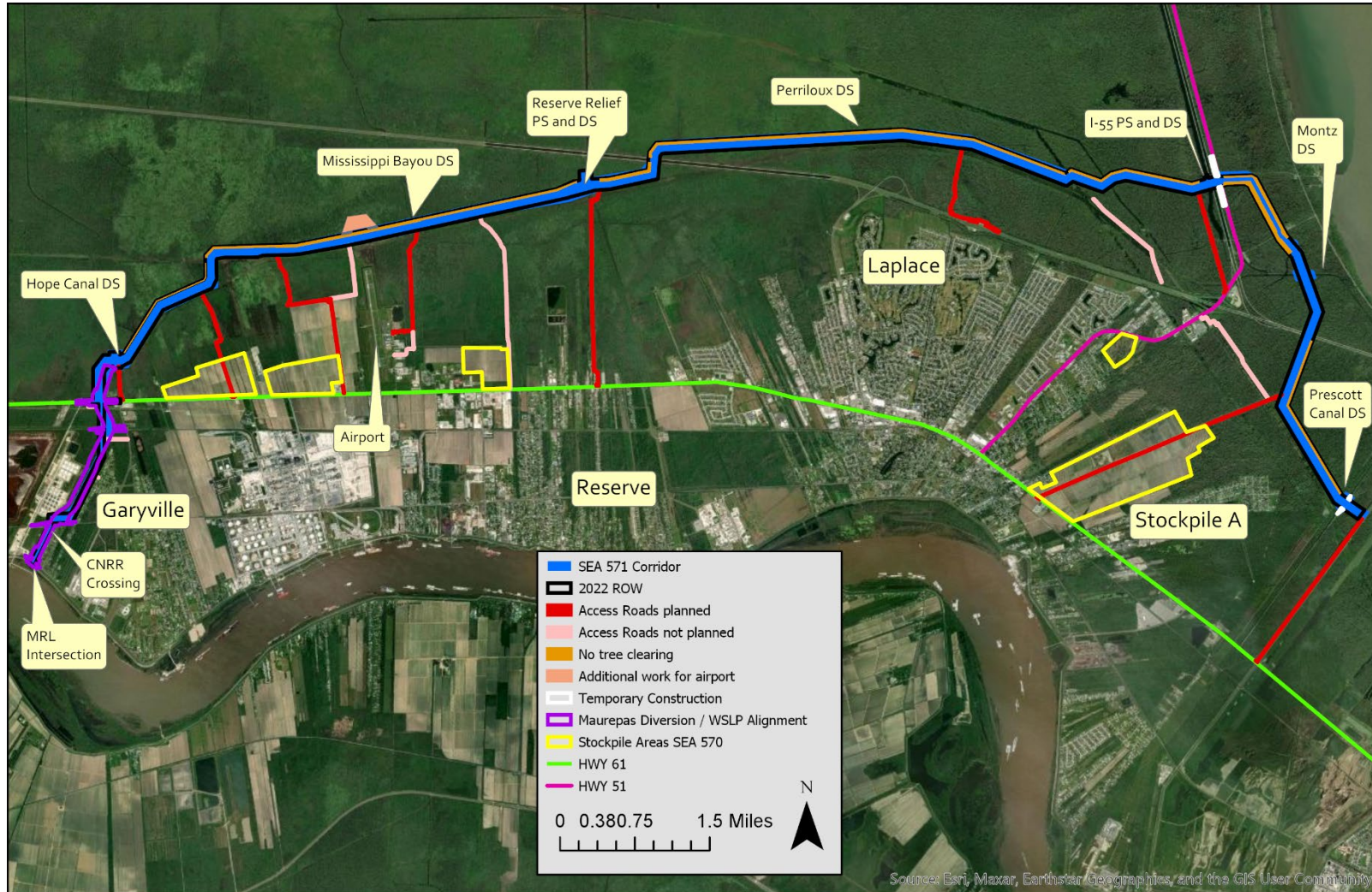


Figure 2. Map showing the Proposed Action.

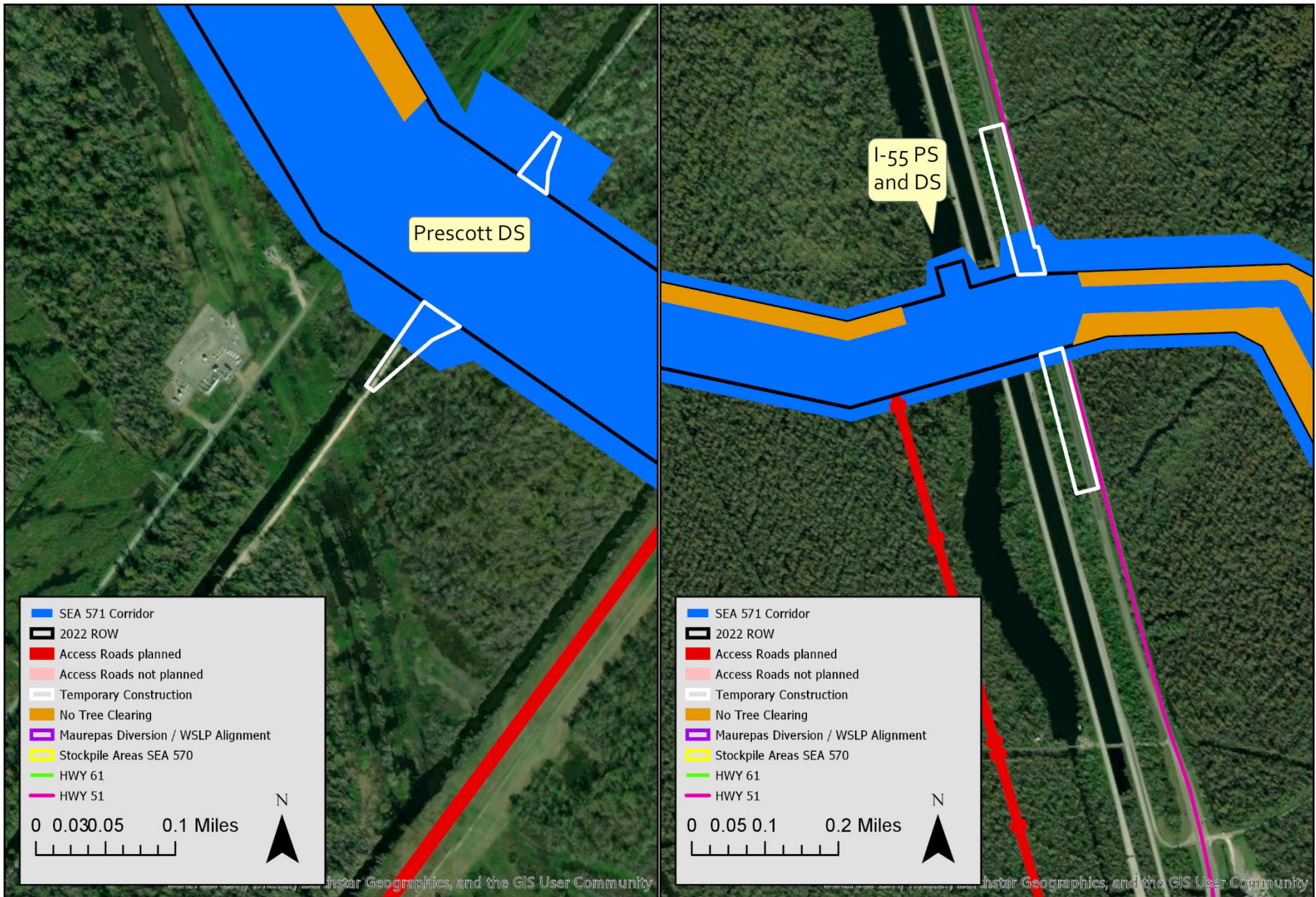


Figure 3. Areas with potential temporary staging and access roads outside of the SEA 571 ROW

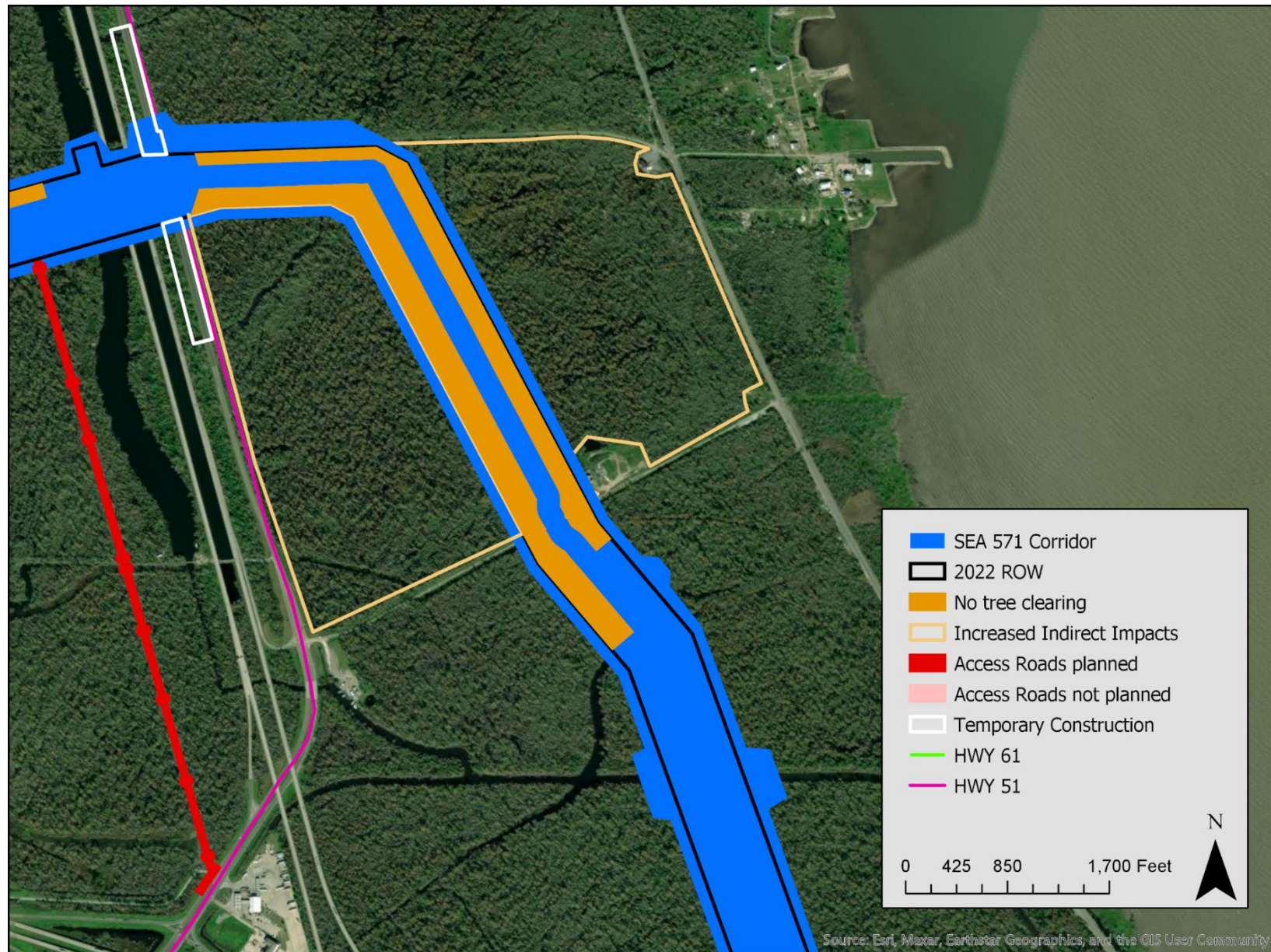


Figure 4. Areas where the Proposed Action would cause an increase in indirect impacts to wetlands (swamp and BLH).

2.2.1 Design Summit

All design changes considered herein were based on results of a design summit that was held in 2021 to examine all aspects of the project to reduce the cost while still providing the authorized 1-percent exceedance risk reduction. Preliminary cost estimates of these levee system as described in the 2016 EIS and SEA 571 exceeded Project funds. The design summit was the kickoff for design changes that are being considered in this SEA. New field data were incorporated into updated, more precise Hydraulic and Hydrologic models. Results of hydraulic re-designs lowered the required system heights and reduced the required pumping capacities. Additionally, levee re-designs included use of wick drains and staged construction to reduce levee embankment.

In summary the entire system was optimized to reduce costs while maintaining the same level of risk reduction. Levees would not be designed with overbuild to attempt to remain above the updated hydraulic design grades but would be designed at the year 2027 design grade with an additional 6 inches above the design grade. The year 2027 was selected as it is the anticipated completion of the system for turnover to the NFS. See Appendix III for more information.

2.2.2 Levees System

The levee system would be designed to the 2027 design grade with an additional 6-inch allowance for post-construction settlement. The predicted length of time the WSLP earthen embankments would remain above the required grade for the 1 percent (100 yr) Annual Exceedance Probability would vary reach by reach based on the final construction grade and foundation conditions. USACE would utilize instrumentation data (piezometers and settlement gages) acquired during construction to either validate or revise the predicted settlement curves and reassess the likely time the earthen embankments would remain above the 1 percent grade. Revised hydraulic design elevations are show in Table 2.

Reduction in levee heights, reduced pumping capacity, and utilization of wick drains and staged construction for levee embankments would reduce the levee footprint compared to SEA 571. A total of approximately 235.2 acres of swamp and 25.0 acres of BLH would not be cleared based on polygons provided by CEMVN Engineering and the Suir and Saltus remote sensing data. Construction of the levee system to the height for a 1 percent chance of exceedance storm surge in year 2027 would not require impacting the entire right-of-way. Therefore, no tree clearing areas would be established within the 2022 levee system right of way.

On June 23, 2022, the non-federal sponsors (NFS) requested CEMVN perform additional work at the WSLP-108 levee reach to accommodate a proposed 1,500-foot runway extension at the Port of South Louisiana Executive Regional Airport located in Reserve, Louisiana. The airport serves private aviation at the Port of South Louisiana, many international industrial facilities, companies, and the growing communities along the Mississippi River. There is no commercial passenger service.

The shift in the alignment would be necessary due to Federal Aviation Administration requirements for clear safety zones and the required landing glide slope and would increase the length of levee by approximately 1,000 feet. The levee alignment footprint to accommodate the runway extension protrudes outside the SEA 571 ROW corridor (Figure 2). The NFS is responsible for all additional costs associated with levee alignment shift for the runway extension.

Table 2. Revised Hydraulic Design Elevations			
Location	2027 Still Water Elevation 100YR 90% NAVD88	2027 Levee 100YR Construction Grade Elevation (ft. NAVD88)	Final T-Wall Elevations (ft. NAVD88)
WSLP-101	11.5	12.5	-
WSLP-102/Montz	12.2	13.9	17.9
WSLP-103	12.1	13.9	17.9
WSLP-104	10.6	11.5	-
WSLP-104 (I-55 PS)	11	12.0	17.4
WSLP-105	10.2	11.0	-
WSLP-105/Perrilloux	10.2	11	16.4
WSLP-105 (I-10)	10.1	11.0	16.4
WSLP-106	9.9	11.0	16.4
WSLP-107	8.6	9.6	15.9
WSLP-108/Miss B	7.3	8.6	14.9
WSLP-109	7.2	8.6	14.4
WSLP110/Hope	7.2	8.5	13.9
WSLP-111	7.2	8.5	13.9
WSLP-112	7.2	8.5	13.9
WSLP-113	7.2	8.5	13.9
Prescott	11.5	12.5	17.4
Bonne Carre N	11.1	12.5	-
Bonne Carre M	11.2	12.0	-
Bonne Carre S	11.5	12.5	-
St James	6.2	7.1	13.4

2.2.3 Drainage Canals

Interior drainage canals would be slightly modified to raise the invert from -8 feet to -5 feet while maintaining the same top width. Materials excavated from the interior drainage canals would be spread between the protected side levee berm and the top of bank of the canal. The exterior drainage canal would be removed from much of the levee system. Exterior drainage canals would be constructed as described in SEA 571 approximately 200 feet either side of the outfall channels at drainage structures and pump stations to assist in distributing water at the immediate outflows of the pump stations and drainage structures. Alterations to drainage canal design are the result of H&H models updated during the 2021 Design Summit.

2.2.4 Drainage Structures and Pumping Stations

H&H models updated during the 2021 Design Summit reduced required system heights and pumping capacities (Appendix III). As a result, pumping stations and drainage structure design were revised throughout the system. Montz North Canal and Ridgefield drainage structure locations were removed. Additional drainage structures added to Montz South Canal and Perriloux to accommodate for the losses at Montz South Canal and Ridgefield, respectively. Table 3 is a summary of the drainage structures and pump stations for the Proposed Action.

Table 3. Pumping Station and Drainage Structures

Station Name	Number of and size drainage structures	Pump capacity
Canadian National Railroad	1	No pumps
Hope Canal	3-10'X10'	No Pumps (SEA 571 had pumps)
Mississippi Bayou	4 10' X10'	No pumps
Reserve Relief Canal	1 16'X16'	2000 cfs
Perriloux	4 10'X10'	No pumps
Ridgefield	Removed and combined with Perriloux	No Pumps
I-55 Canal	2 16'X16'	2000 cfs
Montz North Canal	Removed and Combined with Montz South	No pumps
Montz South Canal	4 10'X10'	No Pumps
Prescott Canal	2 10'X10'	No Pumps (SEA 571 had pumps)

Power to the Reserve Relief Canal Pump Station would be provided via new transmission corridor that would run along access road F from US 61 (Figure 5). Additional wetland and BLH habitat would be impacted outside of the SEA 571 ROW corridor.

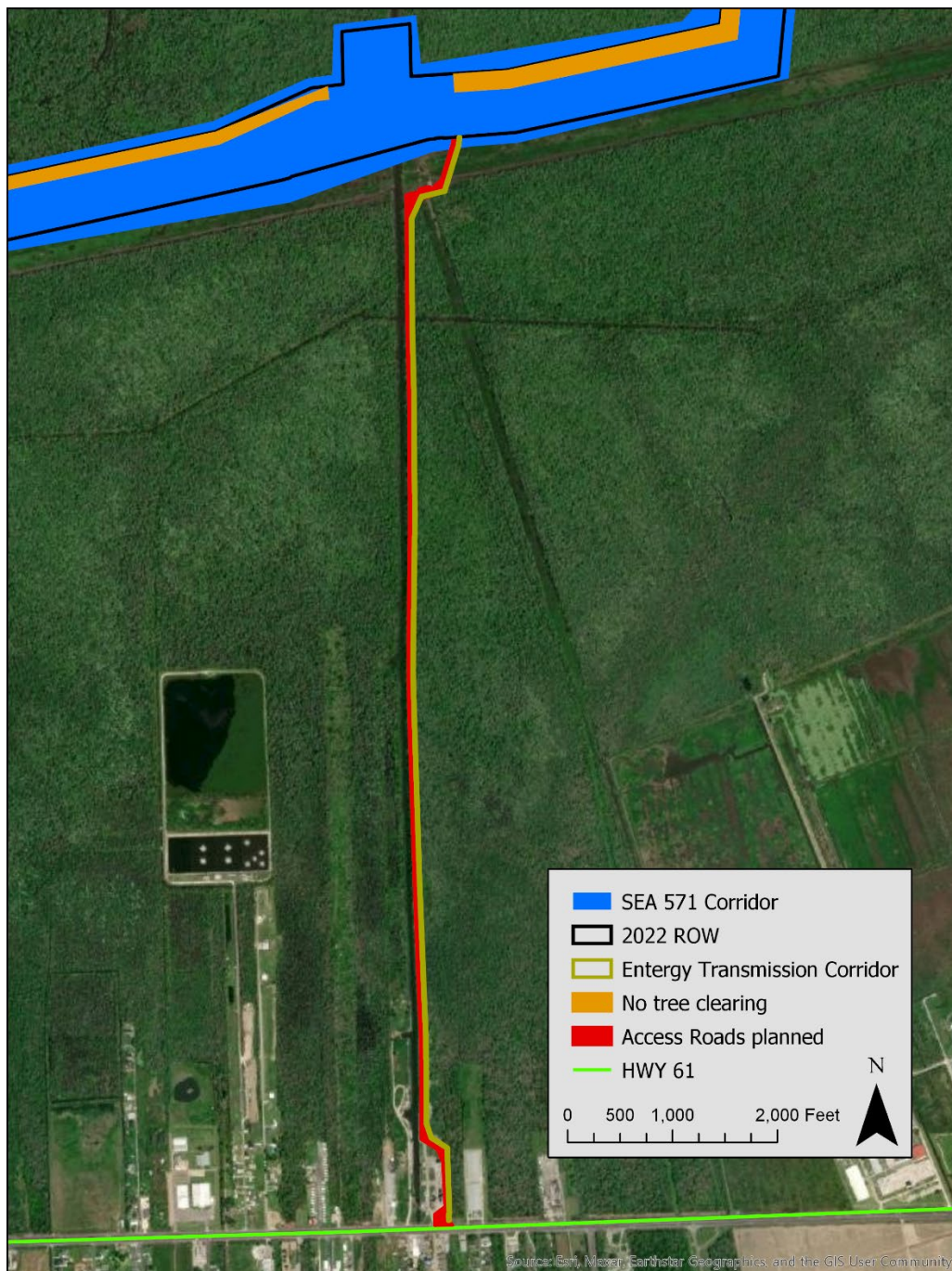


Figure 5. West Shore Lake Pontchartrain Project modifications showing Power transmission corridor (brown) and levee re-alignment to accommodate a proposed airport runway (square bump out in blue).

2.2.5 Other Structures

A vehicular floodgate at the surface La State Highway 51 just east of the elevated I-55 bridges would be constructed. This vehicular gate would require closure of the existing highway, necessitating a bypass road around the gate construction. The proposed bypass road would require temporary construction and disturbance of approximately 6.5 acres areas outside the SEA 571 ROW corridor.

At locations of single pipeline crossings along the levee the proposed method of relocation is still under consideration. These lines may be directionally drilled beneath the levee system. Another potential option would be to build a floodwall to pass the pipeline through. This would be considered if the directional drill method proves impractical from a geotechnical standpoint or more costly than a dedicated floodwall. If floodwalls are utilized, they would be constructed to the same elevation as the rest of the WSLP floodwalls (2070 1 percent flood elevations).

2.2.6 Temporary Construction Areas (Stockpiling and Staging)

The only planned stockpile area at this point is Stockpile A, however, other stockpile areas described in SEA #570 could still be used.

Approximately 0.25 acres outside of the construction ROW corridor described in SEA 571 would be used for temporary access roads and staging during construction near the Prescott Canal drainage structure (Figure 4).

Any other temporary construction areas utilized outside of the levee system ROW would be limited to existing developed sites and would avoid impacts to cultural, recreational, socioeconomic, farmland, environmental justice, and wetlands and other environmentally sensitive areas.

3 Affected Environment

3.1 Description of the Project Area

The Project Area is located within St. John the Baptist and St. Charles Parishes in southeastern Louisiana, between the Mississippi River and Lakes Maurepas and Pontchartrain. The towns of Montz, Laplace, Reserve, and Garyville are communities found within the Project Area (Figure 2). The Project Area occupies a portion of one of the oldest delta complexes in the Mississippi River Deltaic Plain. It is in the lower Mississippi River alluvial plain in the Pontchartrain Basin and includes residential and commercial developments south of I-10. West of Laplace, the majority of the developed areas in the Project Area are found between U.S. Highway 61 (US-61) and the Mississippi River levee. Much of the undeveloped area consists of forested wetlands, including swamp and bottomland hardwood forests. A small portion of the State of Louisiana's Maurepas Swamp Wildlife Management Area (MSWMA) falls within the northern section of the Project Area.

3.1.1 Climate, Climate Change, Sea-level Rise, and Subsidence

The climate in the vicinity of the Project Area is subtropical, marine with long humid summers and short moderate winters. The seasonal rainy period occurs from mid-December to mid-March with dry periods in May, October and November.

The 2014 USACE Climate and Resiliency Policy Statement states: "USACE shall continue to consider potential climate change impacts when undertaking long-term planning, setting priorities, and making decisions affecting its resources, programs, policies, and operations." Climate change was considered for the 2016 WSLP EIS. Climate Change information and

relative sea level rise (RSLR) estimates calculated during the 2016 WSLP EIS were used to predict habitat impacts for the Proposed Action (Appendix I).

Coastal Louisiana has one of the highest land loss rates in the country and this is exacerbated by human activities and climate change (Couvillon et al., 2017). Relative Sea level rise (RSLR) conditions were modeled for the 2016 WSLP EIS. Table 4 shows the model results from that study.

Table 4: Relative Sea Level Rise Estimates from the 2016 WSLP EIS				
Scenario	SLR (NAVD88 feet)		RSLR (NAVD88 feet)	
	2020	2070	2020	2070
Low SLR	0.06	0.33	0.3	1.81
Intermediate SLR	0.1	0.85	0.34	2.32
High SLR	0.23	2.47	0.47	3.95

3.1.2 Geology

The geology of the lower Mississippi River alluvial valley and the Louisiana coast is summarized in the LCA Ecosystem Restoration Study (USACE 2004), which is incorporated by reference. Lakes Maurepas and Pontchartrain occupy a portion of the old Mississippi River pathway known as the St. Bernard Delta. The St. Bernard delta complex was formed by Mississippi River deposits between 3,000 and 4,000 years ago (Frazier, 1967). The complex formed in what was then Pontchartrain Bay, enclosing a portion of it to form Lake Pontchartrain. The majority of other landform features include inland swamp, tidal channels, shallow lakes and bays, natural levee ridges along active and abandoned channels, barrier islands, and beaches.

3.2 Relevant Resources

This section contains a description of relevant resources that could be impacted by the Proposed Action. Relevant resources described are those recognized by: National, state, or regional agencies and organizations as required by laws, executive orders, regulations, and other official standards of technical or scientific agencies, groups, or individuals; and the general public. Table 5 provides summary information of the institutional, technical, and public importance of these resources.

Relevant resources that could be impacted by the proposed action are similar to those described in the 2016 WSLP EIS, SEA 570, and SEA 571 which are incorporated by reference. In this section, descriptions from referenced documents are summarized below by resource. Table 6 presents the relevant resources evaluated in the 2016 WSLP EIS, SEA 570, SEA 571, and whether the proposed action has impacts on these resources. Any relevant resources not impacted by the proposed action are not further evaluated in this SEA.

Table 5: Relevant Resources and their Institutional, Technical, and Public Importance			
Resource	Institutionally Important	Technically Important	Publicly Important
Wetlands	Clean Water Act of 1977, as amended; Executive Order 11990 of 1977, Protection of Wetlands; Coastal Zone Management Act of 1972, as amended; and the Estuary Protection Act of 1968., EO 11988, and Fish and Wildlife Coordination Act	They provide necessary habitat for various species of plants, fish, and wildlife; they serve as ground water recharge areas; they provide storage areas for storm and flood waters; they serve as natural water filtration areas; they provide protection from wave action, erosion, and storm damage; and they provide various consumptive and non-consumptive recreational opportunities.	The high value the public places on the functions and values that wetlands provide. Environmental organizations and the public support the preservation of marshes.
Wildlife	Fish and Wildlife Coordination Act of 1958, as amended and the Migratory Bird Treaty Act of 1918	They are a critical element of many valuable aquatic and terrestrial habitats; they are an indicator of the health of various aquatic and terrestrial habitats; and many species are important commercial resources.	The high priority that the public places on their esthetic, recreational, and commercial value.
Aquatic Resources/ Fisheries	Fish and Wildlife Coordination Act of 1958, as amended; Clean Water Act of 1977, as amended; Coastal Zone Management Act of 1972, as amended; and the Estuary Protection Act of 1968	They are a critical element of many valuable freshwater and marine habitats; they are an indicator of the health of the various freshwater and marine habitats; and many species are important commercial resources.	The high priority that the public places on their esthetic, recreational, and commercial value.
Threatened and Endangered Species	The Endangered Species Act of 1973, as amended; the Marine Mammal Protection Act of 1972; and the Bald Eagle Protection Act of 1940	USACE, USFWS, NMFS, NRCS, EPA, LDWF, and LDNR cooperate to protect these species. The status of such species provides an indication of the overall health of an ecosystem.	The public supports the preservation of rare or declining species and their habitats.
Water Quality	Clean Water Act of 1977, Fish and Wildlife Coordination Act, Coastal Zone Mg Act of 1972, and Louisiana State & Local Coastal Resources Act of 1978	USACE, USFWS, NMFS, NRCS, EPA, and State DNR and wildlife/fishery offices recognize value of fisheries and good water quality and the national and state standards established to assess water quality.	Environmental organizations and the public support the preservation of water quality and fishery resources and the desire for clean drinking water.
Cultural Resources	National Historic Preservation Act of 1966, as amended; the Native American Graves Protection and Repatriation Act of 1990; and the Archeological Resources Protection Act of 1979	State and Federal agencies document and protect sites. Their association or linkage to past events, to historically important persons, and to design and construction values, and for their ability to yield important information about prehistory and history.	Preservation groups and private individuals support protection and enhancement of historical resources.

Table 5: Relevant Resources and their Institutional, Technical, and Public Importance			
Resource	Institutionally Important	Technically Important	Publicly Important
Soils and Prime and Unique Farmland	Farmland Protection Policy Act of 1981	USDA's NRCS recognizes the importance of prime and unique farmlands. Prime farmland is available land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. Unique farmland is land other than prime farmland that is used for the production of specific high value food and fiber crops, such as citrus, tree nuts, olives, and vegetables.	Prime and unique farmland provides food, feed, and forage, fiber, and oilseed crops for public consumption.
Aesthetics and Visual Resources	USACE ER 1105-2-100, and National Environmental Policy Act of 1969, the Coastal Barrier Resources Act of 1990, Louisiana's National and Scenic Rivers Act of 1988, and the National and Local Scenic Byway Program	Visual accessibility to unique combinations of geological, botanical, and cultural features may be an asset to a study area. State and Federal agencies recognize the value of beaches and shore dunes.	Environmental organizations and the public support the preservation of natural pleasing vistas.
Recreation Resources	Federal Water Project Recreation Act of 1965 as amended and Land and Water Conservation Fund Act of 1965 as amended	Provide high economic value of the local, state, and national economies.	Public makes high demands on recreational areas. There is a high value that the public places on fishing, hunting, and boating, as measured by the large number of fishing and hunting licenses sold in Louisiana; and the large per-capita number of recreational boat registrations in Louisiana.
Environmental Justice	Executive Order 12898 and the Department of Defense's Strategy on Environmental Justice of 1995	The social and economic welfare of minority and low-income populations may be positively or disproportionately impacted by the tentatively selected plans.	Public concerns about the fair and equitable treatment (fair treatment and meaningful involvement) of all people with respect to environmental and human health consequences of federal laws, regulations, policies, and actions.

Table 6: Relevant Resources from SEA 571, SEA 570 and the 2016 WSLP EIS, and whether they are impacted by the Proposed Action.					
Relevant Resource	Included in 2016 WSLP EIS?	Included in SEA 570?	Included in SEA 571?	Included in SEA 571A?	Impacted by the proposed action?
Population and Housing	Y	N	N	N	N
Employment, Business, and Industrial Activity (including	Y	N	N	N	N
Public Facilities and Services	Y	N	N	N	N
Transportation	Y	Y	Y	N	N***
Community and Regional Growth	Y	N	N	N	N
Tax Revenues and Property Values	Y	N	N	N	N
Community Cohesion	Y	N	N	N	N
Environmental Justice	Y	Y	Y	Y	N
Soils, and Prime and Unique Farmlands	Y	Y	Y	Y	Y
Vegetation Resources*	Y	Y*	Y*	Y*	Y
Aquatic and Fisheries Resources	Y	Y	Y	Y	Y
Wildlife Resources	Y	Y	Y	Y	Y
Essential Fish Habitat (EFH)	N	N	N	Y	N
Threatened and Endangered Species	Y	Y	Y	Y	N
Flow and Water Levels**	Y	Y**	Y**	Y**	Y
Sedimentation and Erosion**	Y	Y**	Y**	Y**	Y

Water Quality and Salinity**	Y	Y**	Y**	Y	Y
Cultural Resources	Y	Y	Y	Y	Y
Aesthetics and Visual Resources	Y	Y	Y	Y	Y
Recreation Resources	Y	Y	Y	Y	Y
Noise	Y	Y	Y	N	N***
Air Quality	N	Y	Y	N	N***

*Wetland impacts are the only vegetation resource potentially being impacted by the Proposed Action, and therefore, wetlands are the only vegetation resource impacts discussed.

**Sedimentation and Erosion, and Water Quality and Salinity are considered collectively as Water Quality by SEA 570. The Hydrology and Water Quality Sections in SEA 571 and SEA 571A include these impacts.

***Impacts to this resource are the same as described in SEA 571

3.2.1 Hydrology

Historic and Existing Conditions

Changes in the Mississippi River have been responsible for changes in the flow and water levels in the vicinity of the project area over several geological periods. Seasonal flooding of the Mississippi River historically contributed to the flow and water level characteristics of the area. Large flood events would bring freshwater, sediment and nutrients to the back swamp areas. However, construction of river levees, beginning in the 1700s by local landowners, interrupted this natural process and has permanently altered hydrology in the vicinity of the project area. Currently, the area's water budget is effected by precipitation, evaporation, stream flow, and direct groundwater flow, as well as tidal flows in and out of the estuary. Lake Maurepas is a shallow, fresh to intermediate (*salinity*) basin, receiving daily mean freshwater discharge, primarily from the Amite and Tickfaw Rivers; and to a lesser extent, the Blind River (American Institute of Hydrology, 2006). Lake Pontchartrain is a shallow, brackish salinity basin that receives freshwater discharge from the Tangipahoa, Pearl, and Tchefuncte Rivers, as well as Bayous Lacombe and Liberty, and many smaller creeks.

3.2.2 Water Quality

Historic and Existing Conditions

As part of its surface water quality monitoring program, the Louisiana Department of Environmental Quality (LDEQ) routinely monitors 25 parameters on a monthly or bimonthly basis using a fixed station, long-term network (Monitored Assessments; LDEQ 1996). Based

upon those data and the use of less-continuous information (Evaluated Assessments), such as fish tissue contaminants data, complaint investigations, and spill reports, the LDEQ assesses water quality fitness for the following uses: primary contact recreation (swimming), secondary contact recreation (boating, fishing), fish and wildlife propagation, drinking water supply, and shellfish propagation (LDEQ 1996). Based upon existing data and more subjective information, water quality is determined to either fully, partially, or not support those uses. A designation of “threatened” is used for waters that fully support their designated uses but that may not fully support certain uses in the future because of anticipated sources or adverse trends in pollution.

According to the LDEQ “2018 Louisiana Water Quality Inventory: Integrated Report,” there are two subsegments that include the study area. The Pass Manchac subsegment (LA040601_00), which includes Pass Manchac from Lake Maurepas to Lake Pontchartrain, including interlacustrine waters from North Pass to the Mississippi River levee, was found to fully support all designated uses. The Lake Maurepas subsegment (LA040602_00) was found to fully support two designated uses, primary contact swimming and secondary contact recreation. The Lake Maurepas subsegment was found to not support the designated use for fisheries and wildlife propagation. There are two suspected causes for impaired use: dissolved oxygen and non-native aquatic plants.

3.2.3 Wetlands

Historic and Existing Conditions

Wetlands perform important functions of water filtration and water quality improvement, floodwater storage, fish and wildlife habitat, and biological productivity. The Project Area includes BLH, swamps, and estuarine emergent wetlands. Detailed descriptions of common plants are presented in the LCA report (USACE 2004, 2010) and representative plant species are listed in Appendix IV, Annex E.

Vast virgin stands of bald cypress-tupelo swamp habitat once stretched from the bottomlands of northern Louisiana to the Gulf of Mexico (Conner and Day 1976). The Maurepas Swamp was vegetated by an expanse of old growth, freshwater forested swamp that extended beyond the Project Area vicinity. Historically, forested wetlands in the Project Area and vicinity were subjected to flooding and drying events. Seasonal flooding by the Mississippi River provided nutrient and sediment input. The area was subjected to extensive logging through the 1930s resulting in loss of old-growth trees. Currently, forested wetlands in the vicinity are highly degraded due to subsidence, permanent inundation, lack of sediment and nutrient input, nutria (*Myocastor coypus*) herbivory, and saltwater intrusion (Shafer et al., 2016). Recent observations of forested wetlands within the Project Area and vicinity include high tree mortality rates, little to no observed regeneration, and low growth rates for many native swamp tree species (Shafer et al., 2009; Bradley Breland pers. communication, 2018). With the loss of forested wetlands/swamp habitats, a significant loss of wetland function in relation to wildlife and aquatic species, recreational opportunities, aesthetics, and storm surge protection has occurred.

Wetland Value Assessment

Wetland impacts associated with the entire WSLP Project (including those described in the 2016 WSLP EIS, SEA 570, SEA 571, SEA 576, 2023 WSLP EIS, and associated with the proposed action) were estimated by using the Wetland Value Assessment (WVA) Swamp Community Model for Civil Works Version 2.0 (Swamp WVA) and the WVA Bottomland Hardwoods Community Model for Civil Works Version 1.2 (BLH WVA). These models calculate average annual habitat units (AAHUs), which is based on habitat quality and quantity, for both the future with project (FWP) and future without project (FWOP) conditions. Both direct and indirect impacts to swamp and BLH habitats were assessed. These models are approved for regional use on USACE Civil Works projects (Appendix I).

The Swamp and BLH WVAs utilize an assemblage of variables considered important to the suitability of each habitat type for supporting a diversity of fish and wildlife species. The WVAs allow for a numeric comparison of each future condition and provides a quantitative estimate of project-related impacts to fish and wildlife resources.

The WVAs used to calculate impacts for the SEA 571 were re-evaluated to consider changes to the levee system associated with the Proposed Action. Assumptions for these WVAs were updated using field work and remotely sensed habitat data from the SEA 571 and updated hydrologic modeling. The currently certified version of the WVAs were utilized. Net direct impacts to wetlands were lower due to large areas within the 2022 levee system right-of-way where no vegetation impacts would occur unless necessary for future levee modifications required due to relative sea level rise increases. Indirect impacts to wetlands were found to be similar across the impact areas except for an approximately 245-acre area near I-55. See Appendix I for more information.

3.2.4 Wildlife Resources

Historic and Existing Conditions

Birds: Area wetlands provide neotropical migrants with essential stopover habitat on annual migrations (Zoller 2004) and critical bird breeding habitat (Wakeley and Roberts 1996). Area wetlands have historically supported an abundance of neotropical and other migratory and non-migratory birds, including the bald eagle (*Haliaeetus leucocephalus*), a recently delisted Endangered Species, and colonial nesting waterbirds (e.g., herons, egrets, ibises, night-herons, and roseate spoonbills). See Appendix IV, Annex A for representative bird species.

Mammals: Since 1985, populations of furbearers, such as beavers (*Castor canadensis*), mink (*Neovison vison*), foxes (*Vulpes* spp. and *Urocyon cinereoargenteus*), and North American river otter (*Lontra canadensis*), have typically remained stable across the Upper Pontchartrain Basin (LCWCRTF & WCRA 1999). White tailed deer (*Odocoileus virginianus*), northern raccoon (*Procyon lotor*), and North American opossum (*Didelphis virginiana*) are found within the Project Area. The West Indian manatee (*Trichechus manatus*), a Federally-listed Threatened Species, occurs in the vicinity of the Project Area. Nutria, an invasive rodent that eats seedling cypress and other tree species which could greatly reduce regeneration (Shafer et al., 2016), occurs in the Project Area. See Appendix IV, Annex B for representative mammal species.

Reptiles and Amphibians: Louisiana Department of Wildlife and Fisheries (LDWF) survey data from 1996 to 2000 indicate alligator nest densities in the area are classified as medium (approximately 1 nest per 250 acres). LDWF provided a list of reptiles and amphibians likely to occur within the Project Area vicinity that included 23 snake species, five lizard species, thirteen turtle species, fifteen frogs and toads, seven salamanders, and one crocodylian (Michon, pers. comm. 2019). This list can be found in Appendix IV; Annex C.

3.2.5 Aquatic and Fisheries Resources

Historic and Existing Conditions

Submerged Aquatic Vegetation (SAV) communities dominated by plants such as coontail (*Ceratophyllum demersum*), widgeon grass (*Ruppia maritima*), and wild celery (*Vallisneria spiralis*) were historically more common in the Project Area, but have been replaced by nuisance floating aquatic plants in many open water areas in Louisiana wetlands with low flow. Floating aquatic nuisance plants include water hyacinth (*Echhornia crassipes*) and giant salvinia (*Salvinia molesta*). These invasive species compete with native flora for resources such as nutrients and light, and in turn can negatively impact community structure and composition, and

ecosystem processes.

Plankton and benthic organisms serve as the lowest food resource level for many species of fish and shellfish. Plankton can often indicate benthic, nutrient, and water quality health (Stone et al. 1980). Limited available data from Lake Maurepas suggests the dominance of *Anabaena*, dinoflagellates, diatoms, and cyanobacteria with occasional strong presence of chlorophytes (Atilla et al. 2007, 2016 WSLP EIS).

Benthic macroinvertebrates tend to dominate deepwater swamp invertebrate communities. Characteristic species include crayfishes, clams, oligochaete worms, snails, freshwater shrimp, midges, amphipods, and various immature insects (Mitsch and Gosselink 1993). Limited data exists on benthic communities in the Project Area. Species present are likely typical of deepwater forested wetlands and slow-flowing rivers in the region. Crawfish and crabs may be harvested in and within the vicinity of the project area (Fox et al. 2007).

The relatively low salinity of these waters provides typical habitat for freshwater and marine transient fishes and shellfish, and the area has good recreation fishing opportunities (USACE 2010). Freshwater fish, such as largemouth bass (*Micropterus salmoides*) and other sunfishes (Family: Centrarchidae), catfishes (Family: Ictaluridae), and crappie (*Pomoxus* spp.) are taken by recreational fishermen. Many fishes have been sampled in the area, including estuarine, freshwater, catadromous, and anadromous species, with spotted gar (*Lepisosteus oculatus*) and striped mullet (*Mugil cephalus*) being the most common according to one comprehensive study (Kelso et al., 2005). See Appendix C, Annex D for representative fish species.

3.2.6 Threatened, Endangered, and Protected Species

Historic and Existing Conditions

One Threatened Species, the West Indian manatee (*Trichechus manatus*), and one delisted species, the bald eagle, are known to occur in the vicinity of the Project Area. The area is also known to support colonial nesting waterbirds (e.g., herons, egrets, and others), protected under the Migratory Bird Treaty Act (MBTA).

West Indian Manatee: West Indian manatees occasionally enter Lakes Pontchartrain and Maurepas, and associated coastal waters and streams during the summer months (i.e., June through September). Given the extensive areas of relatively undisturbed wetlands in the region and the paucity of food sources in the Project Area, it is considered unlikely for the manatee to frequent and utilize waterways within the Project Area. The Project Area does not contain West Indian manatee critical habitat.

Bald Eagle: The bald eagle was delisted as a federally threatened species in 2007 for most of the United States; however, it is protected under the Bald and Golden Eagle Protection Act (BGEPA), and the MBTA. Habitats suitable for use by the bald eagle are present in St. Charles and St. John the Baptist Parishes and occurrences of the bald eagle have been recorded there. The bald eagle is known to nest and forage in the vicinity, but recent coordination with USFWS indicates there are no known nests within 650 feet of the Proposed Action (Trahan, pers. comm. 2019). However, there are many bald eagle nests within the project vicinity, and new active, inactive, or alternate nests may exist, but not be known. The Project Area was surveyed for bald eagle nests via seven field surveys (December 10, 2018, January 24, 2019, February 14, 2019, February 25, 2019, February 27, 2019, May 7, 2021, and December 1, 2022), including three helicopter surveys (February 25, 2019, May 7, 2021, and December 1, 2022). In addition, eight WVA field survey days were also conducted in 2019 (May 30, June 28, August 16, August 21, August 22, August 26, September 18, and October 1). No evidence of active bald eagle nests were observed on any field visit. There are existing bald eagle nests documented in the

area; however, based on information provided by USFWS, all nests are beyond 650 feet from features of the proposed action.

Colonial Nesting Waterbirds: The Proposed Action would be located in an area where colonial nesting waterbirds, such as anhingas, cormorants, great blue herons, great egrets, snowy egrets, little blue herons, tricolor herons, reddish egrets, cattle egrets, green herons, black-crowned night-herons, yellow crowned night-herons, ibises, and roseate spoonbills occur. There are two historic colonial nesting waterbird sites within 1000 feet of the Proposed Action (Trahan, pers. comm. 2019). The Project Area was surveyed for colonial waterbird activity via seven field surveys (December 10, 2018, January 24, 2019, February 14, 2019, February 25, 2019, February 27, 2019, May 7, 2021, and December 1, 2022), including three helicopter surveys (February 25, 2019, May 7, 2021, and December 1, 2022). In addition, eight WVA field survey days were also conducted in 2019 (May 30, June 28, August 16, August 21, August 22, August 26, September 18, and October 1). No evidence of colonial waterbird nesting (or pre-nesting) activities were observed on any field visit.

3.2.7 Cultural Resources

A Programmatic Agreement (PA) regarding the West Shore Lake Pontchartrain Hurricane and Storm Damage Risk Reduction System was executed on May 16, 2014, among SHPO, the Advisory Council of Historic Preservation (ACHP) and the CEMVN pursuant to Section 106 of the National Historic Preservation act and its implementing regulation found at 36 CFR 800.14(b). CEMVN shall adhere to and comply with the stipulations as outlined in the programmatic agreement (Appendix VII, Annex G) to identify and evaluate cultural resources and complete the Section 106 process.

Historic and Existing Conditions

Eight cultural units are used to characterize the prehistoric cultural sequence in southeast Louisiana: Paleo-Indian (10000–8000 B.C.), Archaic (8000–1000 B.C.), Poverty Point (1700–500 B.C.), Tchefuncte (500 B.C.–A.D. 100), Marksville (A.D. 100–500), Baytown (A.D. 400–700), Coles Creek (A.D. 700–1200), and Mississippian/Plaquemine (A.D. 1200–1700). Historic perspectives generally cover the colonial period to approximately 1764, Acadian migration to the area, end of the Colonial period, the antebellum period, the Civil War, late 19th century reconstruction, and the early 20th century.

Historic properties in the project vicinity were identified based on a review of the National Register of Historic Places (NRHP) database, the Louisiana Cultural Resources Map, historic map research, and a review of cultural resources survey reports. The literature review revealed there has been extensive cultural resources investigations of the majority of the Area of Potential Effect (APE) and adjacent surround. These investigations include: Hunter 2014 (LDOA Report No. 22-5468), Kelley 2011 (LDOA Report No. 22-3879), Lee 2000 (LDOA Report No. 22-2327), Norton 2014 (LDOA Report No. 22-4580), Poplin 1988 (LDOA Report No. 22-1259), Robblee 1998 (LDOA Report No.2180), Rothrock 2015 (LDOA Report No., 22-4868), Ryan 2019 (LDOA Report No. 22- 4571-1), Ryan 2020 (LDOA Report No. 22-4571-2), Stanyard N.D. (LDOA Report No. 22-4417), and Wells 2014 (LDOA Report No. 22-4571). No cultural resources or historic properties were identified within the project area as a result of these investigations.

The proposed Prescott Canal Drainage Structure and the Reserve Relief Well Pump Station Power Transmission Corridor APEs are located entirely within previous survey corridors. Approximately 6.5 acres of the proposed I-55 Bypass Road APE are outside previous survey areas. Adjacent surveys [Lee 2000 (LDOA Report No. 22-2327), Ryan 2019 (LDOA Report No.

22-4571-1), Ryan 2020 (LDOA Report No. 22-4571-2)] did not find any historic properties in the vicinity of the proposed construction APE. Additionally, heavy construction and development of I-55, U.S. Hwy 51, and Peavine Road suggests a low probability of intact cultural deposits within the proposed I-55 Bypass Road APE. Approximately 6 acres of the proposed airport expansion APE are outside previous survey areas. Previous surveys within and adjacent to the proposed Airport Expansion [Rothrock 2015 (LDOA Report No., 22-4868), Ryan 2019 (LDOA Report No. 22-4571-1), Wells 2014 (LDOA Report No. 22-4571)] did not identify any historic properties suggesting a low probability of historic properties within the remaining 6 acres.

3.2.8 Soils and Prime and Unique Farmlands

Historic and Existing Conditions

Farmland classification soil survey data provided by NRCS in November 2022 determined that prime farmland is located within the Project Area. However, unique farmland is not located in the Project Area. Affected soils in the area include Caciennne silt loam, Caciennne silty clay, Carville silt loam, Gramercy silty clay, and Schriever clay which are best suited for food, feed, fiber, forage, and oilseed crops. All of the proposed staging and stockpile areas contain prime farmland. Prime farmland in the Project Area is currently dedicated to common Bermuda grass, improved Bermuda grass, soybeans, wheat, sugar cane, Bahia grass, and corn. No other agricultural activities are currently taking place in the Project Area.

3.2.9 Aesthetics and Visual Resources

Historic and Existing Conditions

Aerial photography shows visual conditions of the area changed over the past 20 years. The landscape along with its view sheds have changed due to development and the conversion of swamps into marsh and open water. The scenery has changed from natural to a more developed state with residential, commercial and industrial development dominating US-61, US-51 and US-44, and other corridors. The only major exception is I-10, which traverses the area, giving near unobstructed views of a native landscape that remains aesthetically pleasing. Primary view sheds have been and still are best taken from the local road system and in some instances the Mississippi River levee.

There are two Scenic Streams in the area's vicinity. Blind River stretches south 25 miles from Lake Maurepas, crossing under I-10 and ending near US-61 west of the Project Area. Bayous LaBranche and Trepagnier are located east of the Project Area sourcing from Lake Pontchartrain and stretching south, crossing under I-10 and US-61 and ending near Norco (Bayou Trepagnier) and Good Hope (Bayou LaBranche). Other water resources in the vicinity include the Mississippi River, numerous canals, streams, and creeks that crisscross the native habitat between I-10 and the developed areas along the river.

There is a Scenic Byway in the vicinity which includes the Great River Road traversing US-61. The Great River Road is one segment to an overall scenic byway that stretches on multiple thoroughfares from Canada to the Gulf of Mexico. It is state and federally designated and has an "All American Road" status, making it significant in culture, history, recreation, archeology, aesthetics, and tourism.

3.2.10 Recreational Resources

Historic and Existing Conditions

The Project Area overlaps with parts of the southern perimeter of the 124,567-acre MSWMA.

There are a few private camps in the MSWMA. The LDWF provides 16 self-clearing permit stations located throughout the MSWMA. Access into the MSWMA is generally by boat via the numerous boat launches in the area; however, several locations provide foot access. Many canals and bayous traverse the MSWMA. Consumptive recreation includes hunting deer, squirrels, rabbits, and raccoons; fishing for bass, sunfish and crappie; and trapping alligators and nutria. Non-consumptive recreation includes bird watching, sightseeing, and boating. There is a 0.5 mile nature trail and two tent-only camping areas in the MSWMA.

Within the Project Area, Cajun Pride Swamp Tours is located off Frenier Road near US-51. This commercial operation provides boat tours in their private refuge and in the Manchac Swamp. Belle Terre Country Club and Golf Course is located in the Project Area, providing various recreational facilities including a golf course, outdoor swimming pool, and tennis courts. There are local recreational parks including Regala Park, Montz Park, Bethune Park, and Laplace Recreation and Youth Organization (Larayo) Youth Park. Regala Park facilities include an outdoor swimming pool, softball/baseball fields, picnic pavilions, tennis courts, playground, racquetball courts, 1 mile walking path, and soccer field. Montz Park provides a walking path, baseball fields, basketball courts, playground, and picnic pavilions. Bethune Park provides baseball fields. Larayo Youth Park provides baseball fields, tennis courts, and a swimming pool.

3.2.11 Environmental Justice

Executive Order 12898 of 1994 (EO 12898) and the Department of Defense's Strategy on Environmental Justice of 1995 directs Federal agencies to identify and address any disproportionately high adverse human health or environmental effects of Federal actions to minority and/or low-income populations. Minority populations are those persons who identify themselves as Black, Hispanic, Asian American, American Indian/Alaskan Native, Pacific Islander, some other race, or a combination of two or more races. A minority population exists where the percentage of minorities in an affected area either exceeds 50 percent or is meaningfully greater than in the general population. Low-income populations as of 2017 are those whose income is at or below \$24,500 for a family of four and are identified using the Census Bureau's statistical poverty threshold. The Census Bureau defines a "poverty area" as a census tract or block group with 20 percent or more of its residents below the poverty threshold and an "extreme poverty area" as one with 40 percent or more below the poverty level.

An EJ analysis focuses on the potential for disproportionately high and adverse impacts to minority and low-income populations during the construction and normal operation of the Federal action. The analysis assesses if EJ communities are disproportionately exposed to high and adverse effects of the Federal action. If the impact is appreciably more severe or greater in magnitude on minority or low-income populations than the adverse effect suffered by the non-minority or non-low-income populations after taking offsetting benefits into account, then there may be a disproportionate finding. Avoidance and mitigation are then required.

Historic and Existing Conditions

The communities located in the study area include Garyville, Reserve, and LaPlace, all within St. John the Baptist Parish. The three of these communities are identified by the US Census Bureau (USCB) as a Census Designated Place (CDP).

In order to identify whether the potential alternative may disproportionately affect minorities or impoverished citizens, an analysis was conducted utilizing CDP data, obtained from the USCB's American Community Survey (ACS). The following information was collected in the study area.

Racial and Ethnic Characteristics – Race and ethnic populations in each CDP were characterized using

the following racial categories: White, Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, Some Other Race, and Two or more Races. Persons of Hispanic Origin are also identified. These categories are consistent with the affected populations requiring study under Executive Order 12898. See Table 6 for a listing of race and ethnic characteristics for the CDPs in the Study area.

Low-Income Population – In 2021 the U.S Census Bureau’s statistical poverty threshold was \$27,479 for a family of four with two children under the age of 18. The USCB defines a “poverty area” as a census tract or block group with 20 percent or more of its residents below the poverty threshold and an “extreme poverty area” as one with 40 percent or more below the poverty level. The percentage of persons living below the poverty level, as identified in the 2021 ACS, was one of the indicators used to determine the low-income population in a CDP. See Table 8 for a listing of low-income population by CDP.

Minority Status

A minority population is present where the percentage of minorities within the affected area exceeds 50 percent or is significantly greater than in the general population (USACE and CPRA 2010). Table 7 shows the minority populations of areas within the larger planning area, which include Garyville, Reserve, and LaPlace.

Approximately 65% of St. John the Baptist’ population identified as a minority, according to U.S Census Bureaus’ American Community Survey data for 2021, well above the State of Louisiana’s minority rate of ~38%. Reserve and LaPlace are considered Environmental Justice Communities, based on the percentage of minority residents (71.5%% and 62%, respectively). The Black or African Americans communities in Reserve (64.6%) and LaPlace (53.5%) represent the largest minority group in both towns. The Hispanic/Latino community in Reserve (9.2%) and LaPlace (6.8%) represent the second largest minority in both towns.

Table 7: Percentage Minority/Ethnic Population by CDP, Project Area								
	St. John the Baptist Parish		Garyville		Reserve		Laplace	
RACE	Estimate	Percent	Estimate	Percent	Estimate	Percent	Estimate	Percent
Total population	42,704		2,102		8,688		29,129	
One race	41,399	96.9	2,078	98.9	8,316	95.7	28,302	97.2
White	15,025	35.2	1,069	50.9	2,478	28.5	11,060	38
Black or African American	24,596	57.6	1,009	48	5,611	64.6	15,691	53.9
American Indian and Alaska Native	4	0	0	0	0	0	4	0
Asian	376	0.9	0	0	0	0	376	1.3
Native Hawaiian and Other Pacific Islander	0	0	0	0	0	0	0	0
Some other race	1,398	3.3	0	0	227	2.6	1,171	4
Two or more races	1,305	3.1	24	1.1	372	4.3	827	2.8

Hispanic or Latino (of any race)	2,864	6.7	0	0	799	9.2	1,975	6.8
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Source: United States Census Bureau, American Community Survey 5-year Estimate Data Profile

Low-Income Status

According to EPA’s EJ Promising Practices document, a population living below poverty is meaningful. An EJ focus is necessary when the percentage of people living below poverty within the affected area exceeds 20 percent or is significantly greater than in the general population. Table 8 shows the percentage households whose income in 2021 was below the poverty level within the larger planning area, which include Garyville, Reserve, and LaPlace.

Approximately 14.9% of St. John the Baptist’ population lived below the U.S Census Bureau’s statistical poverty threshold in 2021. Garyville and Reserve are considered Environmental Justice Communities, based on the percentage of households who lived below poverty (20.4% and 22%, respectively).

Table 8. Low-Income Population by CDP, Project Area	
	Low Income as a Percentage of Total Population
St. John the Baptist	14.9%
Garyville	20.4%
Reserve	22%
LaPlace	12.4%

Source: United States Census Bureau, American Community Survey 5-year Estimate Data Profile

4 Environmental Consequences

This section describes the environmental consequences of the No Action Alternative (Future Without-Project Conditions; FWOP) and the Proposed Action Alternative (Future Conditions with the Proposed Action; FWP). Indirect and direct impacts are discussed for each scenario and resource in Table 9. Cumulative effects are discussed in Section 4.1.

The No Action Alternative impacts summarize relevant information from the approved plan in the 2016 WSLP EIS, SEA 570, and SEA 571 because this scenario represents the predicted course of events absent approval of the proposed action. For an evaluation of the anticipated impacts if USACE were to take no action to construct the WSLP Project, including under the previously- approve plan, refer to the evaluation of the No Action Alternative and Future Without Project Condition contained in the 2016 WSLP EIS, which evaluation is incorporated here by reference.

Table 9: Comparison of No Action Alternative to Proposed Action		
Resource	No Action Alternative Impacts (includes impacts in SEA 571)	Proposed Action Impacts
Hydrology	<p><i>Direct and Indirect Impacts:</i> Hydrologic impacts from construction of the levee system described in SEA 571 included an increase number of and size of drainage structures that would better maintain existing hydrologic conditions and be improve tidal connectivity</p> <p>Increase in the number of pumping stations, which would allow for more effective flood risk reduction during tropical storm events with heavy rainfall.</p> <p>Levee shifts that would increase protected area size and increase the acreages of indirect interior hydrological impacts.</p> <p>Increased levee widths that could also negatively impact existing hydrology. These negative impact to existing hydrology would be somewhat mitigated by the increased the number of drainage structures and sizes.</p>	<p><i>Direct and Indirect Impacts:</i> The proposed action incorporates updated, more precise Hydraulic and Hydrologic models that lowered the required system heights and reduced the required pumping capacities to maintain existing hydrologic conditions. Additionally, levee re-designs included use of wick drains and staged construction to reduce levee embankment. Overall, the system was optimized to reduce costs while providing the same level of risk reduction as the No Action Alternative.</p> <p>New H&H modeling suggests additional hydrologic impacts beyond what was assessed in SEA 571 to an approximately 245-acre area near I-55 (Figure 4). These impacts would be associated with changes in flow patterns and drainage due to design changes in drainage structures and canals. No other additional indirect impacts associated with the proposed action would be expected outside of this 245-acre area.</p> <p>The proposed action would not cause significant induced flooding impacts outside of those described in SEA 571.</p>
Water Quality	<p><i>Direct Impacts:</i> Shifts in alignment would slightly increase in construction related water quality impacts from those described in the 2016 WSLP EIS. Increases in levee system ROW would have result in similar, but incrementally more associated direct impacts to wetlands that in turn would affect water quality.</p> <p><i>Indirect Impacts:</i> An increase in indirect impacts would be expected and proportionate to the increase in impounded area.</p>	<p><i>Direct Impacts:</i> Levee design changes would slightly decrease construction related water quality impacts from those described in SEA 571. Decreases in levee system ROW would have result in similar, but incrementally less associated direct impacts to wetlands that in turn would affect water quality. See wetlands section of this table for more details.</p> <p><i>Indirect Impacts:</i> An increase in indirect impacts would be expected and proportionate to the increase in impounded area.</p> <p>See Section 6.2 and Appendix VII for additional information regarding the current water quality certification and 404(b)(1) evaluation for the proposed project.</p>
	<p><i>Direct Impacts:</i> Construction of the SEA 571 levee would</p>	<p>Impacts associated with the proposed action would be similar to those described in SEA 571. See Table 10 for a breakdown of</p>

<p>Wetlands</p>	<p>directly impact approximately 1,138 acres of swamp (595 AAHUs) and approximately 242 acres of BLH (169 AAHUs).</p> <p><i>Indirect Impacts:</i> It would also indirectly impact approximately 9,754 acres of swamp (352 AAHUs) and 4,635 acres of BLH (124 AAHUs).</p> <p>All unavoidable impacts would be mitigated for using the plan in SEA 576.</p> <p>See Table 10 for a breakdown of wetland impacts associated with the No Action Alternative.</p>	<p>direct and indirect impacts to wetlands that would be caused by the proposed action.</p> <p><i>Direct Impacts:</i> No tree clearing areas would be established to construct the levee system. These areas are within the 2022 levee system right of way, but construction of the levee system to the height for a 1% chance of exceedance storm surge in year 2027 would not require impacting the entire right-of-way. A total of approximately 235.2 acres of swamp and 25.0 acres of BLH would not be cleared based on polygons provided by CEMVN Engineering and the Suir and Saltus remote sensing data.</p> <p>An additional ~1.2 acres of swamp and ~4.1 acres of BLH would be impacted outside of the SEA 571 corridor to construct a temporary bypass road near the I-55 pump station and drainage structure. All of these impacts would be on LDWF property and within the eastern habitat area. These impacts would be considered permanent, because it is not likely the area would be able to return to existing conditions due to the degraded nature of the site and low regeneration rates. There would be a total of -0.6 and -2.9 AAHUs of impacts to swamp and BLH habitats, respectively.</p> <p>An additional ~0.16 acres of swamp and ~0.87 acres of BLH would be impacted outside of the SEA 571 corridor for temporary construction activities near the Prescott Canal drainage structure. None of these impacts would be on LDWF property. All impacts would be within the eastern habitat area. These impacts would be considered permanent, because it is not likely the area would be able to return to existing conditions due to the degraded nature of the site and low regeneration rates. There would be a total of -0.08 and -0.62 AAHUs of impacts to swamp and BLH habitats, respectively.</p> <p>An additional ~2.4 acres of swamp and ~1.76 acres of BLH would be impacted outside of the SEA 571 corridor to construct a power transmission corridor along the Reserve Relief canal access road. None of these impacts would be on LDWF property. Impacts would be within the eastern and central habitat areas. There would be a total of -1.25 and -1.32 AAHUs of impacts to swamp and BLH habitats, respectively.</p> <p>Overall, the proposed action would directly impact approximately</p>
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		<p>201 less acres of swamp (104 more AAHUs) and 18 less acres of BLH (13 more AAHUs).</p> <p>However, impacts to these 219 acres could occur in the future, if RSLR necessitates construction of a levee system with a larger footprint. These impacts would be assessed in the future as needed and would be fully mitigated for in accordance with the WSLP Project mitigation plan as described in the 2023 WSLP SEIS.</p> <p><i>Indirect Impacts:</i> Indirect impacts to wetlands were found to be similar to those described in SEA 571, except for approximately 245 acres near I-55 where new H&H model runs suggest there would be additional hydrologic impacts beyond what was assessed in SEA 571 (Appendix III). These 245 acres, 201 acres of swamp (net -3 AAHUs) and 44 acres of BLH (net -6 AAHUs) would be spread across the Indirect impacts interior low, indirect impacts interior high, and exterior impacts area as described in the SEA 571. This In addition, approximately 30 acres, 19 acres of swamp and 11 acres of BLH, of this area would be new indirect impact acres on the exterior of the levee system. That is, these 30 acres would not be affected in the FWOP condition. Approximately 89 acres would be on LDWF property. See Appendix VI for more details.</p> <p>All impacts to wetlands would be offset through either the purchase of mitigation bank credits or the construction of new, restored or enhanced habitats to replace the lost habitats in accordance with the Clean Water Act, Section 404(b)(1) and the Water Resources Development Act of 1986, Section 906, as amended. The mitigation plan is described in the 2023 WSLP SEIS.</p>
Wildlife Resources	<p><i>Direct and Indirect Impacts:</i> Construction of the SEA 571 levee system would directly or indirectly impact approximately 5,935 acres of high quality wildlife habitat (forested wetlands). During construction any wildlife present would relocate to avoid the construction but could quickly return to any areas that have not converted to other land uses. Some aquatic wildlife ingress and egress from the protected side of the levee would be limited.</p>	<p><i>Direct and Indirect Impacts:</i> Impacts associated with the proposed action would be similar to those for the no action alternative. There would be incremental increases in negative impacts associated with increases in impacts to wetland resources as described in that section of this table.</p>
	<p><i>Direct and Indirect Impacts:</i> Construction of the SEA 571 levee system would convert approximately 1,114 acres of</p>	<p><i>Direct and Indirect Impacts:</i> Impacts associated with the proposed action would be similar to those for the no action alternative. There</p>

<p>Aquatic and Fisheries Resources</p>	<p>existing benthos swamp habitat into upland grass covered (levee) habitat. Sessile organisms would be buried during construction and expire. Mobile species of fish, shellfish and other aquatic resources would either avoid the area during construction (fish) or be moved out of the way due to water displacement (plankton). Up to 5,935 acres of forested wetland and swamp habitats utilized by aquatic and fisheries resources would be indirectly impacted via reduced migration of organisms and altered hydrology and water quality.</p>	<p>would be incremental increases in impacts associated with increases in negative impacts to wetland resources and water quality as described in those sections of this table.</p>
<p>Threatened, Endangered, and Protected Species</p>	<p><i>Direct and Indirect Impacts:</i> Activities discussed in SEA 571 were found to not likely to adversely affect any listed species.</p>	<p><i>Direct and Indirect Impacts:</i> Impacts associated with the proposed action would be similar to those for the no action alternative. The proposed action is not likely to adversely affect and listed species.</p> <p>See Section 6.2 and Appendix VII for additional information on impacts to threatened, endangered, and protected species.</p>
<p>Cultural Resources</p>	<p><i>Direct and Indirect impacts:</i> Based on review of existing data and field surveys, there are no significant cultural resources located within the proposed project area. Therefore, the USACE has determined that the Proposed Action will have no direct or indirect adverse impacts on significant historic properties. The USACE consulted with the SHPO and Federally recognized Tribes with a determination of “no adverse effect to historic properties” in a letter dated 13 November 2019. The SHPO concurred with the USACE effects determination in their letter dated 6 January 2020. The Muscogee (Creek) Nation concurred with the USACE effects determination in an email dated 4 December 2019. No other Federally recognized Indian Tribes responded. The USACE would continue to utilize the PA for the West Shore Lake Pontchartrain Hurricane Storm Damage Risk Reduction System as executed on May 16, 2014, for any subsequent Section 106 cultural investigative studies.</p> <p>Impacts to cultural and historic resources in southern Louisiana have resulted from both natural processes, (e.g., erosion) and human activities (e.g., land development, dredging, agriculture, and vandalism). Impacts to cultural and historic resources in the Project</p>	<p><i>Direct and Indirect impacts:</i> Given the absence of identified historic properties, the intense survey coverage, previous construction and development, and the low probability of the presence of unidentified resources, USACE has determined that the existing surveys constitute a reasonable and good faith effort at identification and evaluation of historic properties and based on it, that it is unlikely that any unidentified properties are present in the currently proposed project area.</p> <p>Following the provisions of the PA for the West Shore Lake Pontchartrain Hurricane Storm Damage Risk Reduction System as executed on May 16, 2014 and based on the fact that the existing information supports the conclusion that no historic properties would be affected by implementing the proposed action described in SEA 571A, the USACE consulted with the SHPO and Federally recognized Tribes with a determination of “No Historic Properties Affected” in a letter dated 10 May 2023 and expects concurrence by 10 June 2023.</p> <p>See Section 6.9 and Appendix VII for additional information on consultation and processes to address any post-review impacts to Cultural Resources.</p>

	<p>Area would likely continue at current trend over the next 50 years due to both natural processes including anthropogenic modifications of the landscape as well as human alterations. Cultural resources located within the Project Area would be at continued risk of ongoing industrial and residential development, as well as natural erosion caused by wetland degradation over the next 50 years.</p>	
<p>Soils and Prime and Unique Farmlands</p>	<p><i>Direct Impacts:</i> Due to levee system alignment changes and access road changes, approximately 169 additional acres of soils would be impacted, the majority of which would be hydric soils (Cancienne and Carville, Barbary, Schreiver and Gramercy soils) in St. John the Baptist Parish. A total of approximately 60 acres of land classified as prime farmlands would be converted to nonagricultural use.</p> <p><i>Indirect Impacts:</i> Up to an approximately 5,868 acres of impacts to hydric soils would occur as a result of indirect impacts from the levee system. See Wetlands section of this table for more information.</p>	<p><i>Direct Impacts:</i> No additional direct impacts are anticipated with the proposed action.</p> <p><i>Indirect Impacts:</i> Approximately .3 acres of land classified as prime farmlands would be used temporarily during construction. These acres would be returned to their original use following construction activities.</p>
<p>Aesthetic and Visual Resources</p>	<p><i>Direct Impacts:</i> An additional 169 acres of minimal negative impacts associated with the updated levee system and access roads ROWs would be incurred to aesthetic and visual resources. These impacts would be similar in nature to those described in the 2016 WSLP EIS and SEA 570. Residential areas may see incremental increases in dust and noise levels during construction. These impacts would be temporary, and conditions should return to preconstruction levels after completion of the project.</p> <p><i>Indirect Impacts:</i> An additional 5,868 acres of indirect impacts are estimated, as described in the wetlands section of this table. These indirect wetland impacts could result in negative impacts to aesthetic and visual resources. There would be no significant incremental impacts to the River Road Scenic Byway associated with the Proposed Action.</p>	<p><i>Direct and Indirect Impacts:</i> Additional negative impacts from those described in SEA 571 would be incurred to aesthetic and visual resources with the proposed action. Approximately 400 acres along the ROW would not be cleared of trees as originally estimated. A vegetative buffer would remain along portions of the ROW thereby minimizing some of the direct and indirect negative impacts to aesthetic and visual resource associated with the levee system as described in the 2016 WSLP EIS, SEA 570, and SEA 571.</p>

<p>Recreational Resources</p>	<p><i>Direct Impacts:</i> Similar direct negative impacts to recreational resources as described in 2016 WSLP EIS and SEA 570 would occur. There would be approximately 169 acres of additional impacts associated with levee system and access road modifications. Approximately 66 of these acres would be to forested wetlands. These impacts would have negative impacts to recreational resources, such as boating, fishing, and hunting. There could be beneficial impacts to swamp tour businesses associated with the levee system shift near the I-55 and I-10 interchange (Figure 3).</p> <p><i>Indirect Impacts:</i> An additional 5,868 acres of indirect impacts are estimated, as described in the wetlands section of this table. These indirect wetland impacts could result in negative impacts to boating, fishing, and hunting.</p>	<p><i>Direct and Indirect Impacts:</i> No additional negative impacts would be incurred to recreational resources with the proposed action. Approximately 400 acres along the ROW would not be cleared of trees as originally estimated. A vegetative buffer would remain along portions of the ROW thereby minimizing some of the direct and indirect negative impacts to recreational resources associated with the levee system as described in the 2016 EIS, SEA 570, and SEA 571.</p>
<p>Environmental Justice</p>	<p><i>Direct and Indirect Impacts:</i> The construction of SEA 571 levee system may have temporary adverse minimal short-term impacts (such as increased dust, noise, or traffic) to low income and minority neighborhoods residences, but these impacts would not be disproportionate. Overall, there would be benefits to EJ and non-EJ communities, in the form of storm surge risk reduction</p>	<p><i>Direct and Indirect Impacts;</i> Impacts from the proposed action will be the same as described in SEA 571A. The Proposed Action may have temporary adverse minimal short-term impacts, such as increased dust, noise, or traffic, to low income and minority neighborhoods. However, these impacts would not be disproportionate. Additionally, temporary construction areas utilized outside of the levee system ROW would be limited to existing developed sites and would avoid impacts to EJ communities. Overall, the WSLP structural alignment would provide an increased level of risk reduction to residents of all races and income levels within St. John the Baptist Parish.</p>

4.1 Cumulative Impacts Analysis

CEQ Regulations define cumulative impacts (CI) as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such other actions. CI can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR § 1508.1(g)(3)).

Coastal Louisiana, including the Project Area, has been greatly impacted by natural subsidence, levees, hurricanes, and oil and gas infrastructure. Direct and indirect impacts of past, present and reasonably foreseeable future events were considered in the analysis of the Proposed Action consequences. These impacts include historical and predicted future land loss rates for the area and other restoration projects in the vicinity.

The Proposed Action includes modifications to the WSLP levee system in St. John the Baptist and St. Charles Parishes, Louisiana as described in the 2016 WSLP EIS, SEA 570, and SEA 571. The levee system described in the 2016 WSLP EIS was authorized for construction as part of the WIIN Act (Public Law 114-322) in 2016. Construction of the WSLP Project was funded by the BBA 2018 (Public Law 115-123).

Table 10: Overall Project negative impacts by habitat type		
	Acres*	AAHUs*
SEA 571 Cumulative Swamp Direct**	1,138	-595
SEA 571 Cumulative Swamp Indirect**	9,754	-352
SEA 571 Cumulative BLH Direct**	242	-169
SEA 571 Cumulative BLH Indirect**	4,635	-124
SEA 571A Additional Swamp Direct***	-201	104
SEA 571A Increased Swamp Indirect Impacts	201	-3
SEA 571A Additional BLH Direct***	-18	13
SEA 571A Increased BLH Indirect Impacts	44	-6
Maurepas Diversion Swamp Direct Negative	95	-52
Maurepas Diversion Swamp Indirect Negative	7,539	-154
Maurepas Diversion BLH Direct Negative	79	-29
Maurepas Diversion BLH Indirect Negative	1,830	-7
Maurepas Diversion Fresh Marsh Direct Negative	0	0
Maurepas Diversion Fresh Marsh Indirect Negative	2,743	-20
Total Swamp Direct	1,032	-544
Total Swamp Indirect	17,494	-509
Total Swamp	18,526	-1,052
Total BLH Direct	303	-185
Total BLH Indirect	6,509	-137
Total BLH	6,812	-322
Total Marsh Direct	0	0
Total Marsh Indirect	2,743	-20
Total Marsh	2,743	-20

*SEA 571 cumulative impacts represent the updated levee system described in SEA 571,

which includes impacts assessed in the 2016 WSLP EIS and SEA 571

** SEA 571A additional direct impacts represents the net acres and net AAHUs. The WSLP levee system as described in SEA 571A would have a net reduction in wetland acres impacted and a net increase in wetland AAHUs.

Wetland resource cumulative effects include historical degradation of forested wetlands, likely future trends of degradation within the vicinity, and other reasonably foreseeable activities negatively impacting wetland resources. Forested wetlands in the vicinity of the proposed action and across coastal Louisiana have experienced a decline over the recent past. It is likely that this trend will continue into the future and wetland impacts as part of the proposed action would add to this trend. Several scale restoration plans are being implemented, such as Lake Pontchartrain Basin Foundation's Maurepas Landbridge Swamp Restoration Project (Hillmann et al., 2017) in the vicinity of the proposed action. However, there are no restoration projects being planned, funded, or implemented that are expected to be large enough to completely reverse the likely long-term decline of forests in the area (Shafer et al., 2016).

The CIs for the WSLP Project Levee system, including impacts from the proposed action, SEA 571, SEA 570, the 2016 EIS, and 2023 WSLP SEIS would have direct, permanent negative impacts to approximately 1,032 acres of swamp (-544 AAHU) and 303 acres of BLH (-185 AAHUs). As a result of altered land uses and hydrologic impacts, there would be indirect, permanent, negative impacts to approximately 17,494 acres of swamp (-509 AAHUs), 6,509 acres of BLH (-137 AAHUs), and 2,743 acres of marsh (-20 AAHUs). All wetland impacts associated with the WSLP Project levee system, -1,052 AAHUs of impact to swamp, -322 AAHUs of impact to BLH, and -20 AAHUs of impacts to marsh would be fully mitigated for in accordance with the Clean Water Act Section 404 using the plan described in the 2023 WSLP EIS. See Appendix I for the detailed WSLP Project levee system WVA analysis.

Changes in the levee system, such as removal of the exterior drainage canal, design changes to the interior drainage canal, and design changes to drainage structures, reduced the overall system footprint and eliminated the need to clear the entire 2022 levee system right-of-way. If the areas not cleared during the proposed project are to be disturbed during future construction or maintenance events, re-evaluation of habitat impacts and associated mitigation may be required.

Hydrology and water quality cumulative effects would include the incremental direct and indirect effects of the proposed action on flows and water levels in addition to other past, present, and reasonably foreseeable future actions including previous, existing and authorized levee systems in the Pontchartrain Basin, and the authorized and funded WSLP Project levee system. Impacts associated with the approximately 203 miles of Hurricane and Storm Damage Risk Reduction System levees are reported in the numerous Individual Environmental Reports (produced under NEPA Emergency Alternative Arrangements) and the "Comprehensive Environmental Document, Phase II, Greater New Orleans HSDRRS", (USACE 2021). Impacts associated with the approximately 18.27-mile WSLP levee are discussed in the 2016 WSLP EIS, SEA 570, and SEA 571. Adjustments in the number and design of drainage structures and pump stations that are part of the proposed action would impact hydrology similarly to the system as described in SEA 571 with the exception of approximately 245 acres where there would be additional hydrologic impacts. Water quality impacts associated with the proposed action are likely to be minor compared to other past, present, and reasonably foreseeable projects. Therefore, there would not be a significant cumulative change in hydrology and water quality due to impacts associated with this Proposed Action. Hydraulic analysis associated with the WSLP levee system, including the WSLP 2016 EIS, SEA 570, SEA 571, and the proposed action can be found in Appendix V. Hydrologic impacts associated with the mitigation features can be found in the 2023 WSLP SEIS.

Wildlife resources, fisheries, and other aquatic resources cumulative effects would mirror the trend

of wetland loss. The cumulative losses of forested wetland habitats, as described above, would have a negative long-term impact on terrestrial and avian wildlife resources. Aquatic resources and fisheries resources would also experience negative long-term and cumulative effects as forested wetlands are anticipated to convert to emergent wetlands and eventually open water in the area of the Proposed Action and vicinity. However, since impacts to forested wetland habitats would be mitigated, impacts to these resources would be temporary and not anticipated in result in an overall increase in cumulative impacts to wildlife resources, fisheries, and other aquatic resources from implementation of the Proposed Action.

CEMVN determined that the WSLP Project levee system (which combines impacts associated with the proposed action, 2016 WSLP EIS, SEA 570, and SEA 571) is not likely to adversely affect threatened and endangered species, and MBTA and BGEPA trust species. Coordination with the USFWS on the affect to these species is ongoing.

Cumulative impacts to cultural resources would likely be the additive combination of impacts by this and other Federal, state, local, and private restoration efforts. Impacts to cultural and historic resources in southern Louisiana have resulted from both natural processes, (e.g., erosion) and human activities (e.g., land development, dredging, agriculture, and vandalism). Impacts to cultural and historic resources in the area would likely continue at current trend over the next 50 years because of both natural processes including anthropogenic modifications of the landscape as well as human alterations. To reduce impacts to cultural resources resulting from the implementation of this project, CEMVN would follow the steps as outlined in the programmatic agreement (Appendix VII) to identify and evaluate cultural resources and complete the Section 106 process. If significant historic properties are impacted or new historic properties are identified within the proposed Project Area, strategies would be developed to avoid those resources or to minimize or mitigate for adverse effects, in accordance with the programmatic agreement.

The proposed action would not significantly impact soils and prime and unique farmland, as there are many acres of prime farmland in the vicinity and land use would be returned to its original use following construction activities. Additionally, there would be no significant impacts to aesthetics and visual resources as a result of the incremental changes to natural vistas associated with the proposed action.

In Louisiana, recreational resources would continue to experience negative impacts from persistent coastal and wetland degradation and loss. Within the study area vicinity, potential diversion projects could provide fresh water and improve wetlands. Recreational access through canals and bayous may decrease during levee system construction, but recreational infrastructure would realize a reduction in the risk of damage from hurricane/tropical storm surge events. Cumulative impacts associated with the WSLP Project levee alignment to LDWF property wetlands are presented in Tables 13 and 14. The loss of habitat on LDWF property would occur within the Maurepas Swamp Wildlife Management Area, causing a negative impact to recreational use to a portion of this 124,567-acre WMA. However, once mitigation for these impacts is completed, no long-term impacts to recreation are anticipated.

Any adverse cumulative impacts to Environmental Justice communities associated with Proposed Action are not disproportionate since the minority and low-income composition is similar throughout the Parish as a whole. Positive cumulative impacts to minority and/or low- income populations associated with providing risk reduction are expected to occur as a result of the lower flood risk in the area.

5 Mitigation

Overall, the proposed Project would reduce the mitigation need of the WSLP Project to swamp (net increase of 101 AAHUs) and BLH habitats (net increase of 7 AAHUs). WSLP Project impacts to marsh habitats would be unaffected by the proposed action. Table 10 shows negative WSLP Project impacts by habitat type. All WSLP Project habitat impacts, including the proposed action, would be fully mitigated for in accordance with the 2023 WSLP SEIS.

However, impacts to these 219 acres (108 AAHUs) could occur in the future, if RSLR necessitates construction of a levee system with a larger footprint. These impacts would be assessed in the future as needed and will be fully mitigated for in accordance with all relevant laws and policies using the WSLP Project mitigation plan as described in the 2023 WSLP SEIS.

Direct impacts associated with the Proposed Action consist of approximately 201 less acres of negative impacts to swamp habitat (approximately 104 more AAHUs), and approximately 18 less acres of direct, negative impacts to BLH habitats (approximately 13 more AAHUs) as compared to SEA 571. Indirect impacts to wetlands were found to be similar to those described in SEA 571, except for approximately 245 acres near I-55 where there would be additional hydrologic impacts beyond what was assessed in SEA 571. In addition, approximately 19 more acres of swamp (3 less AAHUs) and 11 more acres of BLH (6 less AAHUs) in this area would be new indirect impact acres on the exterior of the levee system. These impacts, along with impacts associated with the No Action Alternative are presented as the cumulative impacts associated with the WSLP Project in Table 10. All of these impacts would be fully mitigated for as part of the mitigation plan described in the 2023 WSLP SEIS.

The current approved mitigation plan for the WSLP project can be found in the 2023 WSLP EIS. Swamp impacts from the WSLP project and the Maurepas Diversion (MSA-2) would be mitigated through construction and operation of MSA-2. BLH impacts resulting from both WSLP and MSA-2 would be mitigated per the approved plan discussed in EA #576. Marsh impacts resulting from construction and operation of the MSA-2 would be mitigated through construction of one or a combination of mitigation bank credits and the Guste Island marsh creation project (Table 11). Please see the 2023 WSLP SEIS for more details on the mitigation plan at <https://www.mvn.usace.army.mil/Missions/Environmental/NEPA-Compliance-Documents/Bipartisan-Budget-Act-2018-BBA-18/West-Shore-Lake-Pontchartrain/>.

Table 11. WSLP Project mitigation by habitat		
Type	Acres	AAHUs
Maurepas Diversion MSA2 - Swamp	8,814	1,239
SEA 576 - BLH St. James ^{*,**}	Up to ~73	Up to ~36
SEA 576 - BLH Mitigation Banks ^{*,**}	TBD	TBD
Maurepas Diversion - Marsh (Guste Island) [*]	~75	20
Marsh Mitigation Banks [*]	TBD	TBD

*BLH and Marsh impacts would be mitigated through one or a combination of the Projects listed in the table above.

**EA #576 discussed approximately 1,504 AAHUs of swamp and 343 AAHUs of BLH impacts due to WSLP.

6 Compliance with Environmental Laws and Regulations

There are many Federal and state laws pertaining to the enhancement, management and protection of the environment. Federal projects must comply with a variety of environmental laws, regulations, policies, rules, and guidance. Compliance with applicable laws would be accomplished before or concurrent with 30-day public and agency review of this SEA 571A and prior to execution of the associated proposed Finding of No Significant Impact.

6.1 Clean Air Act of 1972

The Clean Air Act (CAA) sets goals and standards for the quality and purity of air. It requires the Environmental Protection Agency to set NAAQS for pollutants considered harmful to public health and the environment. The Project Area is in St. John the Baptist and St. Charles Parishes, which are currently in attainment of NAAQS. A general conformity determination is not required.

6.2 Clean Water Act of 1972 – Section 401 and Section 404

The CWA sets and maintains goals and standards for water quality and purity. Section 401 requires a Water Quality Certification (WQC) from the LDEQ that a proposed project does not violate established effluent limitations and water quality standards. On April 6, 2023, the LDEQ determined that the requirements of a Water Quality Certification have been met and the previously issued WQC (WQC 200512-01) would remain valid for the Proposed Action. The current WQC and correspondence with the LDEQ is located in Appendix VII, Annex A.

As required by Section 404(b)(1) of the CWA, an evaluation to assess the short- and long-term impacts associated with the discharge of dredged materials into waters of the United States resulting from this Project is ongoing. Section 404(b)(1) public notice is expected to be concurrent with the public notice period for this draft SEA 571A. The Section 404(b)(1) evaluation is located in Appendix VII, Annex B.

6.3 Coastal Zone Management Act of 1972

The Coastal Zone Management Act (CZMA) requires that "each federal agency conducting or supporting activities directly affecting the coastal zone shall conduct or support those activities in a manner which is, to the maximum extent practicable, consistent with approved state management programs." Coordination with the Louisiana Department of Natural Resources (LDNR) for the Proposed Action is ongoing.

6.4 Endangered Species Act of 1973

The Endangered Species Act (ESA) is designed to protect and recover Threatened and Endangered (T&E) species of fish, wildlife, and plants. The USFWS identified one T&E species, the West Indian manatee, which is known to occur or believed to occur within the vicinity of the Proposed Action. On March, 25 2020, USFWS reviewed SEA 571 for effects to Federal trust resources under their jurisdiction and currently protected by the Endangered Species Act of 1973, concurring that the project, as proposed, was not likely to adversely affect these resources (Appendix VII, Annex D). In addition, a formal Biological Assessment was not required. Since the majority of the proposed project would occur within the footprint previously cleared for SEA 571, USACE does not expect the proposed project to change the USFWS' previous determination. Coordination with USFWS to reaffirm their previous determination that the proposed project would not likely adversely affect T&E species is ongoing. The final USFWS determination will be included in the Final SEA 571A.

6.5 Fish and Wildlife Coordination Act of 1934

The Fish and Wildlife Coordination Act (FWCA) provides authority for the USFWS involvement in evaluating impacts to fish and wildlife from proposed water resource development projects. The FWCA requires that fish and wildlife resources receive equal consideration to other project features. The FWCA also requires federal agencies that construct, license or permit water resource development projects to first consult with the USFWS, NMFS and state resource agencies regarding the impacts on fish and wildlife resources and measures to mitigate these impacts. Section 2(b) requires the USFWS to produce a coordination act report (CAR) that details existing fish and wildlife resources in a Project Area, potential impacts due to a proposed project and recommendations for a project. The USFWS reviewed the proposed action and provided a draft CAR with project specific recommendations on February 24, 2023 (Appendix VII, Annex E).

6.6 Hazardous, Toxic, and Radioactive Waste

The discharge of dredged material into waters of the United States is regulated under the Clean Water Act (CWA). In the absence of a known Hazardous, Toxic, and Radioactive Waste (HTRW) concern, the Proposed Action would not qualify for an HTRW investigation. Engineer Regulation (ER) 1165-2-132 provides that in the Planning, Engineering and Design (PED) Phase that, for proposed project in which the potential for HTRW problems has not been considered, an HTRW initial assessment, as appropriate for a reconnaissance study, should be conducted as a first priority. If the initial assessment indicates the potential for HTRW, testing as warranted and analysis similar to a feasibility study should be conducted prior to proceeding with the project design. The NFS will be responsible for planning and accomplishing any HTRW response measures, and will not receive credit for the costs incurred.

The proposed modifications in the WSLP Post-Design Summit project fall within the HTRW study area that was covered in SEA 570 and SEA 571. Since construction of the WSLP project is currently on-going, no additional HTRW Phase I Environmental Site Assessment is required. A data base search was conducted, however, for the three proposed project modification areas that are outside of the original ROW. No HTRW issues were identified within any of the newly proposed areas and the probability of encountering HTRW is low in connection with those proposed areas. If a recognized environmental condition is identified in relation to the Project Area, CEMVN would take the necessary measures to avoid the recognized environmental condition so that the probability of encountering or disturbing HTRW would continue to be low.

6.7 Magnuson-Stevens Fisheries Conservation and Management Act

The law governing marine fisheries management in the U.S. Essential Fish Habitat (EFH) does not intersect the proposed alignment or the enclosed area in the near term. The USACE has determined that the Recommended Plan would have no impacts to EFH. In a letter dated October 1, 2013, the National Marine Fisheries Service stated the WSLP Project, as described in the 2016 WSLP Draft EIS, would not adversely impact EFH and that an EFH assessment is unnecessary (Appendix VII, Annex F).

6.8 Migratory Bird Treaty Act

The bald eagle was removed from the List of Endangered and Threatened Species in August 2007 but continues to be protected under the Bald and Golden Eagle Protection Act (BGEPA) and the Migratory Bird Treaty Act (MBTA). Colonial nesting wading birds, neotropical migratory birds, and other birds are protected under the MBTA (50 CFR 10.13). A USACE Biologist and USFWS Biologist have surveyed for nesting birds prior to WSLP construction to include the proposed action discussed herein. The entire work area would be monitored by an experienced biologist twice per year, in late fall (November and December) and late spring (April or May). These monitoring events and their results would continue to be coordinated with USFWS and LDWF. No activities by bald eagles or MBTA trust species (e.g., a nest or colonial nesting area within 1,500 feet of the construction footprint) that require a change in construction (e.g., no

work zone or other buffer) have been observed to date. Surveys for bald eagle nests and colonial nesting waterbird nests would continue throughout construction, and coordination with the USFWS and the LDWF pursuant to the MBTA and the BGEPA is ongoing.

6.9 National Historic Preservation Act and Tribal Consultation

In compliance with Section 106 of the act and 36 CFR Part 800, Federal agencies must take into account the effects of their actions on historic properties and afford the ACHP) a reasonable opportunity to comment on such undertakings. Historic properties include any prehistoric or historic district, site, building, structure, or object that is included in, or eligible for inclusion in, the National Register of Historic Places. A Federal agency shall consult with any federally recognized Indian Tribe that attaches religious and cultural significance to such properties. Agencies shall afford the State Historic Preservation Officer (SHPO) and Indian tribes a reasonable opportunity to comment before decisions are made. Section 106 consultation was initiated for the WSLP project with the SHPO and Indian tribes on May 3, 2013. USACE has determined that the effects on historic properties cannot be fully determined before plan approval, and pursuant to 36 CFR 800.14(b) CEMVN has elected to fulfill its obligations under Section 106 of the National Historic Preservation Act of 1966, as amended, through the execution and implementation of a Programmatic Agreement (PA). In accordance with the stipulations of the PA, the USACE has consulted with the LA SHPO and Federally recognized Tribes (the Alabama Coushatta Tribe of Texas, the Chitimacha Tribe of Louisiana, the Choctaw Nation of Oklahoma, the Coushatta Tribe of Louisiana, the Jena Band of Choctaw Indians, the Mississippi Band of Choctaw Indians, the Muscogee Nation, the Seminole Nation of Oklahoma, the Seminole Tribe of Florida, and the Tunica-Biloxi Tribe of Louisiana) regarding the proposed action as described in SEA 571A with a determination of “No Historic Properties Affected” in a letter dated 10 May 2023. The USACE anticipates concurrence by 10 June 2023, and would document completion of the consultation before coming to any finding based on SEA 571A. A copy of the executed PA, and an indicative consultation letter is included in Appendix VII, Annex G.

6.10 Executive Order 11988

Executive Order 11988 (EO 11988) requires Federal agencies to avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of flood plains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. The Proposed Action would, in part, support the construction of the WSLP levee alignment in St. John the Baptist and St. Charles Parishes. The eight-step EO 11988-Floodplain Management evaluation process and a determination of compliance with EO 11988 is documented in the 2016 WSLP EIS, which is incorporated here by reference.

6.11 Executive Order 11990

Executive Order 11990 (EO 11990) directs Federal agencies to avoid to the extent possible, long and short term adverse impacts associated with the destruction or modification of wetlands, and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. The mitigation plan described in SEA 576 was developed to fully mitigate for unavoidable impacts associated with the Proposed Action.

6.12 Executive Order 12898

EO 12898, Federal Actions to Address Environmental Justice for Minority and Low-Income Populations, directs all Federal agencies to determine whether a proposed action would have a disproportionately high and adverse impact on minority and low-income populations (EPA, 2011b). Disproportionate effects refer to circumstances where there exists significantly higher and more adverse health and environmental effects on minority populations and low-income

populations (EPA, 2019). The objective of the environmental justice policy is to ensure that minority and low-income populations are fully and equitably considered during the project development process.

There are no significant direct or indirect disproportionate negative impacts to EJ communities from construction or operation of the Proposed Action.

7 Conclusion

The Proposed Action would consist of modifications to the levee system described in SEA 571 to aid in the constructability, improve engineering, reduce the number of pumping stations and drainage structures, construct a new power transmission corridor for the Reserve Relief Pump Station, and accommodate a proposed runway extension for the Port of South Louisiana's Executive Regional Airport in Reserve, Louisiana. Modifications would reduce the overall cost of the WSLP system while still providing the authorized 1% exceedance risk reduction. Direct impacts associated with the Proposed Action consist of approximately 201 less acres of negative impacts to swamp habitat (net of approximately 104 more AAHUs of swamp), and approximately 18 less acres of direct, negative impacts to BLH habitats (net of approximately 13 more AAHUs of BLH) as compared to SEA 571. Indirect impacts to wetlands were found to be similar to those described in SEA 571, except for approximately 245 acres near I-55 where there would be additional hydrologic impacts beyond what was assessed in SEA 571.

Direct and indirect negative impacts to wildlife, aquatic, and fisheries resources, including ESA, BGEPA, and MBTA trust species would be a result of the negative impacts to forested habitat, alterations in hydrology, and negative impacts to water quality. The incremental loss to these resources, compared to those described SEA 571, would be minor.

The loss of habitat on LDWF property would occur within the Maurepas Swamp Wildlife Management Area, causing a negative impact to recreational use to a portion of this 124,567-acre WMA. However, since habitat impacts would be mitigated to the extent practicable on LDWF property, impacts to these resources would be temporary.

There would be temporary impacts to soils and prime and unique farmlands associated with the use of stockpiling/borrow areas. These acres would be returned to their original use following construction activities. No wetlands would be impacted from use of the borrow areas. No significant increases in traffic are expected from transportation of material from borrow locations to stockpiling areas or to the levee system ROW. There could be some minor impacts to EJ communities associated with dust, noise, and/or traffic, but these are expected to be temporary and not disproportionate.

This office has assessed the environmental impacts of the Proposed Action and has determined that the Proposed Action, with implementation of the mitigation plan found in SEA 576, would have no significant adverse impact on the human and natural environment.

8 Prepared By

SEA 571A and the associated FONSI were prepared by Kristin Gunning, Biologist. Table 12 lists the preparers of relevant sections of this report and the project managers. Ms. Gunning can be reached at U.S. Army Corps of Engineers, New Orleans District; Regional Planning and Environment Division South; 7400 Leake Avenue; New Orleans, Louisiana 70118.

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9 References

- Atilla, N., N. Rabalais, W. Morrison, W. Mendenhall, C. Normandeau, Q. Dortch., R.E. Turner. 2007. Phytoplankton community Composition in Lake Pontchartrain. Abstract, American Society of Limnology and Oceanography.
- Beavers, Richard C. and Edward R. Chatelain. 1979 Cultural Resource Survey and Assessment of the Proposed Marathon Pipeline Company 30" St. James to Garyville, Louisiana Pipeline Route, St. John the Baptist and St. James Parishes, Louisiana. R. Christopher Goodwin and Associates, Inc. New Orleans. SHPO report 22-0498 and 22-0641.
- Conner, W.H.; Day, J.W. 1976. Productivity and composition of a baldcypress-water tupelo site and a bottomland hardwood site in a Louisiana swamp. *Am. J. Bot.* 63, 1354–1364.
- Foreman, Jacob, Matthey Helmer, Oscar A., Rothrock III, Merideth A. Moreno, and Kevin J. Pintz 2016. Phase I Cultural Resources Survey of the Proposed Ascension Pipeline Project, Ascension, St. James, and St. John the Baptist Parishes, Louisiana. SWCA Environmental Consultants, Baton Rouge. SHPO report 22-5158.
- Fox, D. M., Stouffer, P. C., Rutherford, D. A., Kelso, W.E., La Peyre M., and Bambarger, R.. 2007. Impacts of a freshwater diversion on wildlife and fishes in the Maurepas Swamp. Prepared for U.S. Environmental Protection Agency, Region 6; Agreement #DW-14-95045601-1; Work Order 79. 152 pp.
- Frazier, D. E. 1967. Recent deltaic deposits of the Mississippi River, their development and chronology. *Transactions of the Gulf Coast Association of Geological Societies.* 17:287-315.
- Glass, William J. and Paul D. Jackson 2013. A Phase I Cultural Resources Survey within the Former Angelina Plantation, St. John the Baptist Parish, Louisiana. TerraXplorations, Inc. Mobile, Alabama. SHPO report 22-4288.
- Glass, William J., Sandra Davidson, and Paul D. Jackson. 2014. Phase II Archaeological Testing and Evaluation of Locus A within the Angelina plantation (16SJB68) in Mt. Airy, St. John the Baptist Parish, Louisiana. TerraXploitations, Inc. Mobile, Alabama. SHPO report 22-4690.
- Hahn, Thurston H. G., III, and Charles E. Pearson. 1988. A Cultural Resources Survey of the St. Charles Parish Hurricane Protection Levee, St. Charles Parish, Louisiana. Coastal Environments, Inc. Baton Rouge. SHPO report 22-1288.
- Hahn, Thurston H. G., III, Donald G. Hunter, Douglas C. Wells, Sarah A. Hahn, Joanne Ryan, and David B. Kelley. 2011. Management Summaries Conducted at Helvetia (16SJ21), Wilton (16SJ20), Colomb (16SJ30), and St. Rose (16SJ34) Plantations St. James Parish, Louisiana. Coastal Environments, Inc. Baton Rouge. SHPO report 22-3017.
- Hillmann, E., Henkel, T., Butcher, K., Baker, D. , Smith, P. and Lopez, J. 2017. Tree planting and monitoring on the Maurepas Land Bridge, Louisiana: February 2014 to May 2016. Lake Pontchartrain Basin Foundation. 31pp.

Hubachen, Karl R. 2014. Phase I Cultural Resources Survey for the Proposed 16-inch Marathon Garyville Pipeline Connection, St. James and St. John the Baptist Parishes, Louisiana. Morris P. Herbert, Inc. Houston. SHPO report 22-4531.

Kelley, David B., Douglas C. Wells, and Anne Marie Maher Blank. 2011. Phase I Cultural Resources Survey of the Proposed Praxair South Louisiana Hydrogen Expansion Project, Ascension, St. James, St. John the Baptist and St. Charles Parishes, Louisiana. Ecology and Environment, Inc. Baton Rouge. SHPO report 22-3879.

Kelley, D. B. and Maher Blank, A. M.. 2013. Phase I Cultural Resources Survey of the Proposed Praxair Marathon Hydrogen Pipeline Lateral, St. John the Baptist Parish, Louisiana a Negative Findings Report. Prepared for Ecology and Environment, Inc. Baton Rouge, Louisiana by Coastal Environments, Inc. Baton Rouge. SHPO report 22-4327.

Kelso, W.E., Rutherford, D.A., and Bambarger, R. 2005. Freshwater fishes. Impacts of a freshwater diversion on wildlife and fishes in the Maurepas swamp. Louisiana State University, School of Renewable Natural Resources, Baton Rouge, Louisiana. Prepared for U.S. Environmental Protection Agency, Region 6, Dallas, Texas. 122 pp.

Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority. 1999. Coast 2050: Toward a Sustainable Coastal Louisiana, the Appendices. Appendix E—Region 4 supplemental information. Louisiana Department of Natural Resources. Baton Rouge, Louisiana. 173 pp.

Louisiana Department of Environmental Quality (LDEQ) 1996. Quality Assurance Project Plan for Louisiana Ecoregion Project. Office of Environmental Assessment, Water Quality Assessment Division. Baton Rouge, Louisiana.

Lee, Aubra L., Benjamin D. Maygarden, Mary Elizabeth Weed, Michael Godzinski, Sara Orton, and Gail Lazarus. 2003. Cultural Resources Assessment of the Proposed Port of South Louisiana Connector, St. James and St. John the Baptist Parishes, Louisiana. Earth Search, Inc. New Orleans. SHPO report 22-2572.

Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at <https://websoilsurvey.sc.egov.usda.gov/>. Accessed [February 2019].

Price, G. R. Dennis. 1977. A Cultural Resources Survey and Evaluation of the Big Three Industries Pipeline Corridor-Greismar to Norco, Louisiana. Green, Price, and Green. SHPO report 22-0011.

Price, G. R. Dennis. 1987. A Cultural Resources Survey of a 24-inch Diameter United Gas Pipe Line Company Pipeline in Ascension, St. Charles, St. James and St. John the Baptist Parishes, Louisiana. Heartfield, Price, and Green, Inc. SHPO report 22-1210.

Rothrock III, Moreno, O. A. and Moreno, M. A. 2015. Phase I Cultural Resources Survey of the Proposed Maurepas Pipelines Project, Ascension, St. James, St. John the Baptist, and St. Charles Parishes, Louisiana. Prepared for QPS Engineering, LLC. The Woodlands, Texas by SWCA Environmental Consultants Houston, Texas. SHPO report 22-4868.

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- Stone, J. H., Drummond, N. A. , Cook, L. L., Theriot, E. C., and Lindstedt, D. M. 1980. The distribution and abundance of plankton of Lake Pontchartrain, Louisiana, 1978. In Stone, J. H. (ed.), *Environmental Analysis of Lake Pontchartrain, Louisiana, Its Surrounding Wetlands, and Selected Land Uses*. Coastal Ecology Laboratory, Center For Wetland Resources, Louisiana State University, Baton Rouge: 437–591.
- Stanton, Travis, Michael Godzinski, Gail Lazarus, Aubra L. Lee, Benjamin D. Maygarden, Sara S. Orton, and Mary Elizabeth Weed. 2004. *Intensive Cultural Resources Survey of the Proposed Port of South Louisiana Connector, St. James and St. John the Baptist Parishes, Louisiana*. Earth Search, Inc. New Orleans. SHPO report 22-2628.
- Twiner, Cindy. 1986. State Project No. 256-31-11 F.A.P. No. RS-SR-385-1 (002), Jct. LA 44-Jct. U. S. 61, LA highway 54, St. John the Baptist Parish. *Cultural Resources Survey of Jct. U.S. 61, St. John the Baptist Parish*. U.S. Department of Transportation and Louisiana Department of Transportation and Development. SHPO report 22-1103
- US Army Corps of Engineers (USACE). 2021. *Comprehensive Environmental Document Phase II Greater New Orleans Hurricane and Storm Damage Risk Reduction System*.
- US Army Corps of Engineers (USACE). 2010. *Final Integrated Feasibility Study and Supplemental Environmental Impact Statement for the Small Diversion at Convent/Blind River St. James Parish, Louisiana*. 566 pages.
- US Army Corps of Engineers (USACE). 2004. *Louisiana Coastal Area (LCA), Louisiana. Ecosystem Restoration Study*.
- Wakeley, J.S.; and Roberts, T.H. 1996. Bird Distributions and Forest Zonation in a Bottomland Hardwood Wetland. *Wetlands* 16:3. P. 296-308.
- Watkins, Joel H. 1994. *A Cultural Resources Survey of Temporary Work Sites Associated with a 13.16 Mile Pipeline Replacement Project, St. James and St. John the Baptist, Parishes, Louisiana*. University of Alabama, Moundville. SHPO report 22-1807.
- Wells, Douglas C. 2008. *Phase I Cultural Resources Survey of the River Reintroduction Corridor, Maurepas Swamp (PO-29), St. John the Baptist Parish, Louisiana*. Coastal Environments, Inc. Baton Rouge, LA. SHPO report 22-3023.
- Wells, Douglas C., Michael P. Carpenter, and Maegan A. Smith. 2014. *Management Summary: Phase I Cultural Resources Survey and Reconnaissance of Alternate C, West Shore Lake Pontchartrain Levees Project, St. John the Baptist and St. Charles Parishes, Louisiana*. Prepared for U.S. Army Corps of Engineers by Coastal Environments, Inc. Baton Rouge, LA. SHPO report 22-4571.
- Zoller, J.A. 2004. *Seasonal Differences in Bird Communities of a Louisiana Swamp and Manipulation of the Breeding Densities of Prothonotary Warblers*. M.S. Thesis, Southeastern Louisiana University, Hammond, LA.