



Jean Lafitte National Historical Park and Preserve Augmentation Features Supplemental
Environmental Assessment and National Historic Preservation Act Assessment of Effects, West
Bank and Vicinity Hurricane and Storm Damage Risk Reduction System Augmentation,
Jefferson Parish, Louisiana
SEA 581



U.S. Army Corps of Engineers
Mississippi Valley Division
Regional Planning and Environment Division South
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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), in cooperation with the National Park Service (NPS), Jean Lafitte National Historical Park and Preserve (JELA), have prepared this Supplemental Environmental Assessment (SEA) for the New Orleans District (CEMVN) to evaluate augmentation measure(s) for the Bayou aux Carpes Clean Water Act (CWA), Section 404(c) site (BAC Site).

This SEA #581 has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) and the Council on Environmental Quality's (CEQ's) Regulations (40 CFR 1500-1508), as reflected in USACE Engineering Regulation ER 200-2-2 and the NPS NEPA Handbook. Per the CEQ's regulations on implementing NEPA (2020), the NPS has accepted the status of Cooperating Agency for this SEA. This SEA provides sufficient information on the potential adverse and beneficial environmental effects to allow the agencies to make an informed decision on the appropriateness of an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).

In 1985, the Environmental Protection Agency (EPA) issued its CWA Section 404(c) Final Determination for Bayou aux Carpes, in accordance with 33 U.S.C. §1344(c), and 40 CFR Part 231 (Appendix 1). The EPA took the action to designate the BAC Site as CWA, Section 404(c) due to concerns that construction of the Harvey Canal – Bayou Barataria Levee Project, whose purpose was to provide flood control and land reclamation benefits, would have resulted in additional future land reclamation proposals involving discharge of fill material into the BAC Site by private property owners. Such discharge could have resulted in the eventual loss of BAC Site wetlands to development. The BAC Site is currently managed by the NPS as part of the Jean Lafitte National Historic Park and Preserve's (JELA) Barataria Preserve.

Following Hurricanes Katrina and Rita in 2005, Congress authorized USACE to complete construction of an improved West Bank and Vicinity (WBV), Hurricane and Storm Damage Risk Reduction System (HSDRRS). This system would ultimately include construction of a storm surge barrier feature that would extend along the northeastern boundary of the BAC Site along the west bank of Bayou Barataria [Individual Environmental Report 12 (IER 12); Appendix 2]. This work would result in unavoidable permanent impacts to approximately 9.6 acres of forested wetlands (2.3 acres bottomland hardwoods (BLH) and 7.3 acres swamp) to the BAC Site.

The CEMVN made a formal request, by letter dated November 4, 2008, to the EPA to modify the Section 404(c) Final Determination for Bayou aux Carpes to allow construction of the 4,200 linear foot West Closure Complex (WCC) WBV 404(c) flood wall, including a 100-foot wide corridor (Appendix 3). The EPA issued the Modification to the 1985 CWA Section 404(c) Final Determination for Bayou aux Carpes to allow construction of the WBV 404(c) flood wall (Appendix 4). As part of the Modification, the CEMVN committed to fully mitigate and compensate for unavoidable impacts to the BAC Site as a result of the flood wall construction, consistent with Federal regulations. Information on these impacts and the mitigation plan for them can be found in the Programmatic Information Report #37, Tier 1 Environmental Assessment (EA) titled "Jean Lafitte National Historical Park and Preserve Mitigation Features Environmental Assessment and National Historic Preservation Act Assessment of Effects, Jefferson Parish, LA" and its supplement, Environmental Assessment (EA) #548.

In addition to the compensatory mitigation, the EPA requested (Appendix 5) and the CEMVN committed to evaluate and consider for implementation additional ecological augmentation features that would add an extra measure of environmental benefits due to the unique status of the BAC Site (the subject of SEA 581; Appendix 6). The CEMVN agreed to fund and implement such ecological augmentation features as part of the WBV Project, if the results of its investigations indicated an overall gain in environmental benefits to offset potential unanticipated indirect adverse impacts to BAC Site wetlands. The results of those investigations are the subject of this SEA. The initial array of augmentation features considered herein was identified in IER 12 (Appendix 2).

1.1 Proposed Action

The CEMVN, in cooperation with the NPS, proposes to partially restore the hydrologic connection between Bayou aux Carpes and Bayou Barataria (Gulf Intracoastal Waterway or GIWW). This work would involve removing earthen and shell material that was deposited to plug Bayou aux Carpes circa 1974 where these two waterways previously met. The BAC Site and relevant features are shown in Figure 1.

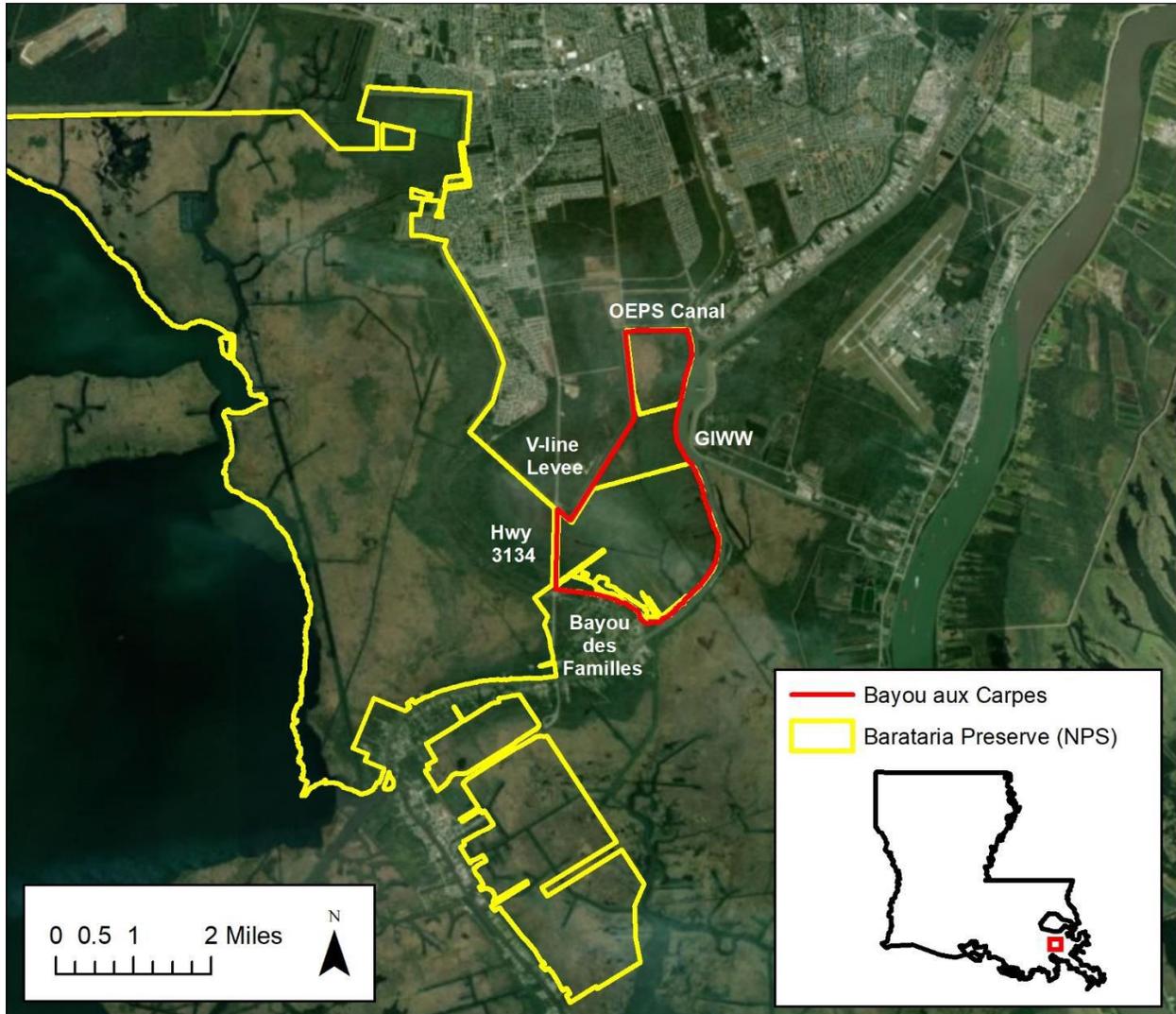


Figure 1. BAC Site and vicinity. The BAC Site is bounded on the north by the Old Estelle Pump Station outfall canal, on the east by the GIWW, on the south by the GIWW and Bayou des Familles, and on the west by State Highway 3134 and the "V-line Levee", and most of its extent lies within the JELA.

1.2 Authority

The authority for the Proposed Action was provided as part of several hurricane protection projects spanning southeastern Louisiana, including the Lake Pontchartrain and Vicinity (LPV) Hurricane Protection Project and the WBV Hurricane Protection Project. Congress and the Administration granted a series of supplemental appropriations acts following Hurricanes Katrina and Rita to repair and upgrade the project systems damaged by the storms that gave additional authority to the USACE to construct 100-year HSDRRS projects.

The Westwego to Harvey Canal Hurricane Protection Project was authorized by the Water Resources Development Act (WRDA) of 1986 (P.L. 99-662, Section 401(b)). The WRDA of 1996 modified the project and added the Lake Cataouatche Project and the East of Harvey Canal Project (P.L. 104-303, Section 101(a)(17) & P.L. 104-303, 101(b)(11)). The WRDA of

1999 combined the three projects into one project under the current WBV Project name (P.L. 106-53, Section 328).

The Department of Defense, Emergency Supplemental Appropriations to Address Hurricanes in the Gulf of Mexico, and Pandemic Influenza Act of 2006 (3rd Supplemental - P.L. 109-148, Chapter 3, Construction, and Flood Control and Coastal Emergencies) authorized accelerated completion of the project and restoration of project features to design elevations at 100 percent Federal cost. The Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery of 2006 (4th Supplemental - P.L. 109-234, Title II, Chapter 3, Construction, and Flood Control and Coastal Emergencies) authorizes construction of a 100-year level of risk reduction; the replacement or reinforcement of floodwalls; and the construction of levee armoring at critical locations.

Additional Supplemental Appropriations include: the U.S. Troop Readiness, Veterans' Care, Katrina Recovery, and Iraq Accountability Appropriations Act, 2007 (5th Supplemental - P.L. 110-28, Title IV, Chapter 3, Flood Control and Coastal Emergencies, Section 4302); the 6th Supplemental (P.L. 110-252, Title III, Chapter 3); and the Consolidated Security, Disaster Assistance, and Continuing Appropriations Act, 2009 (7th Supplemental P.L. – 110-329, Title I, Chapter 3).

1.3 Purpose and Need for the Proposed Action

The purpose of the Proposed Action would be to construct an augmentation feature(s) that would provide environmental benefits to the BAC Site's ecologically significant wetlands to offset any unanticipated indirect impacts associated with the WBV 404(c) floodwall. A description of these wetlands and their significance is included in Section 4.2.3.

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				
Date and Report Title		Relevance to Proposed Action		
		Data Source	Plan Formulation	FWOP* Conditions
1985	EPA's Final Determination Designating Bayou aux Carpes as a 404(c) area	X		
2004	LCA Ecosystem Restoration Study	X	X	X
2009	Individual Environmental Report #12 Gulf Intracoastal Waterway (GIWW), Harvey, and Algiers Levees and Floodwalls Jefferson Orleans, and Plaquemines Parishes, Louisiana (IER 12)	X	X	X
2009	Modification to the 1985 Clean Water Act Section 404(c) Final Determination for Bayou aux Carpes	X	X	X
2009	Canal Reclamation at Barataria Preserve Environmental Assessment	X	X	X
2013	USGS Baseline monitoring of Bayou aux Carpes 404(c) marshes, Jefferson Parish, from 2009-2012	X	X	X
2013	Bayou aux Carpes EPA Clean Water Act Section 404(c) Site: Improved Circulation Study	X	X	X
2014	Bayou aux Carpes 404c NDVI and Habitat Analysis Summary	X	X	X
2014	Bayou aux Carpes EPA designated 404c Wetland Model Study Revisions			
2015	Programmatic Information Report #37, Tier 1 Environmental Assessment (EA) titled "Jean Lafitte National Historical Park and Preserve Mitigation Features Environmental Assessment and National Historic Preservation Act Assessment of Effects, Jefferson Parish, LA" and its supplement, EA #548	X	X	X
2019	Augmentation Measures Evaluation Report	X	X	X

*Future without Project (FWOP)

1.5 Public Concerns

Approximately 15 public comments were received during a public hearing on February 11, 2009, and 26 public comments were received during the public review of the Draft IER 12. These comments cover a myriad of topics and can be found in Appendix B of IER 12 (Appendix 2). Four public comments mention concern regarding negative impacts to the BAC Site for construction of sections of the WBV HSDRRS system as described in IER 12. One public comment mentioned issues associated with augmentation measures and monitoring. One comment explicitly requested public input and review prior to a final decision regarding augmentation. The USFWS wrote a letter that expressed support for constructing augmentation

measure(s) for the BAC Site. The EPA comments also included concerns regarding BAC Site impacts. However, since that time (2009), much coordination regarding BAC Site impacts and augmentation evaluations has occurred with all of the resource agencies, but in particular the EPA (e.g., modification to the determination Appendix 4).

2 Plan Formulation

Much of the plan formulation for this project is documented elsewhere. The IER 12 (Appendix 2) and the Bayou aux Carpes Augmentation Measures Evaluation Report (Appendix 7) document the initial array and selection process of the tentatively selected plan (TSP), respectively.

Another important aspect of the plan formulation is coordination with the Interagency Environmental Team (IET), which includes representatives from the EPA, NPS, Louisiana Department of Natural Resources, Coastal Protection and Restoration Authority of Louisiana, US Fish and Wildlife Service (USFWS), National Marine Fishery Service, Louisiana Department of Wildlife and Fisheries, Louisiana Department of Environmental Quality (LDEQ), and the US Geological Survey (USGS). In the EPA's 2009 modification to the BAC Site's Final Determination, it requires that the CEMVN coordinate with the IET and document their concurrence or non-concurrence at several key steps, including the TSP.

2.1 Initial Array of Measures

The Record of Decision for IER 12 identified six augmentation measures that would be considered for implementation (Table 2, Figure 2). The plan formulation and screening of the initial array is documented in the Bayou aux Carpes Augmentation Measures Evaluation Report, which can be found in Appendix 7 and is summarized below.

Table 2: Initial Array of Measures	
Measure 1	Gap the dredged material disposal bank along the southern side of the Old Estelle Pump Station (OEPS) outfall canal to partially restore historic sheet flow regime to the BAC 404c Site and provide a dedicated source of freshwater and additional nutrients
Measure 2	Modify the spoil bank along the Southern Natural Gas Pipeline (SNGP) canal to provide hydrologic exchange between the northern and southern sections of the BAC Site, thereby partially restoring the historic flow regime.
Measure 3	Modify the shell plug at Bayou aux Carpes to provide hydrologic exchange between the GIWW and the BAC Site, thereby partially restoring the historic sheet flow regime.
Measure 4	Close the SNGP canal to promote hydrologic flow within the BAC Site, thereby partially restoring historic sheet flow regime.
Measure 5	Gap or degrade keyhole oil well access canal banks to promote hydrologic flow within the BAC Site, thereby partially restoring historic sheet flow.
Measure 6	Gap or degrade oil well access roads to promote hydrologic flow within the BAC Site, thereby partially restoring historic sheet flow regime.

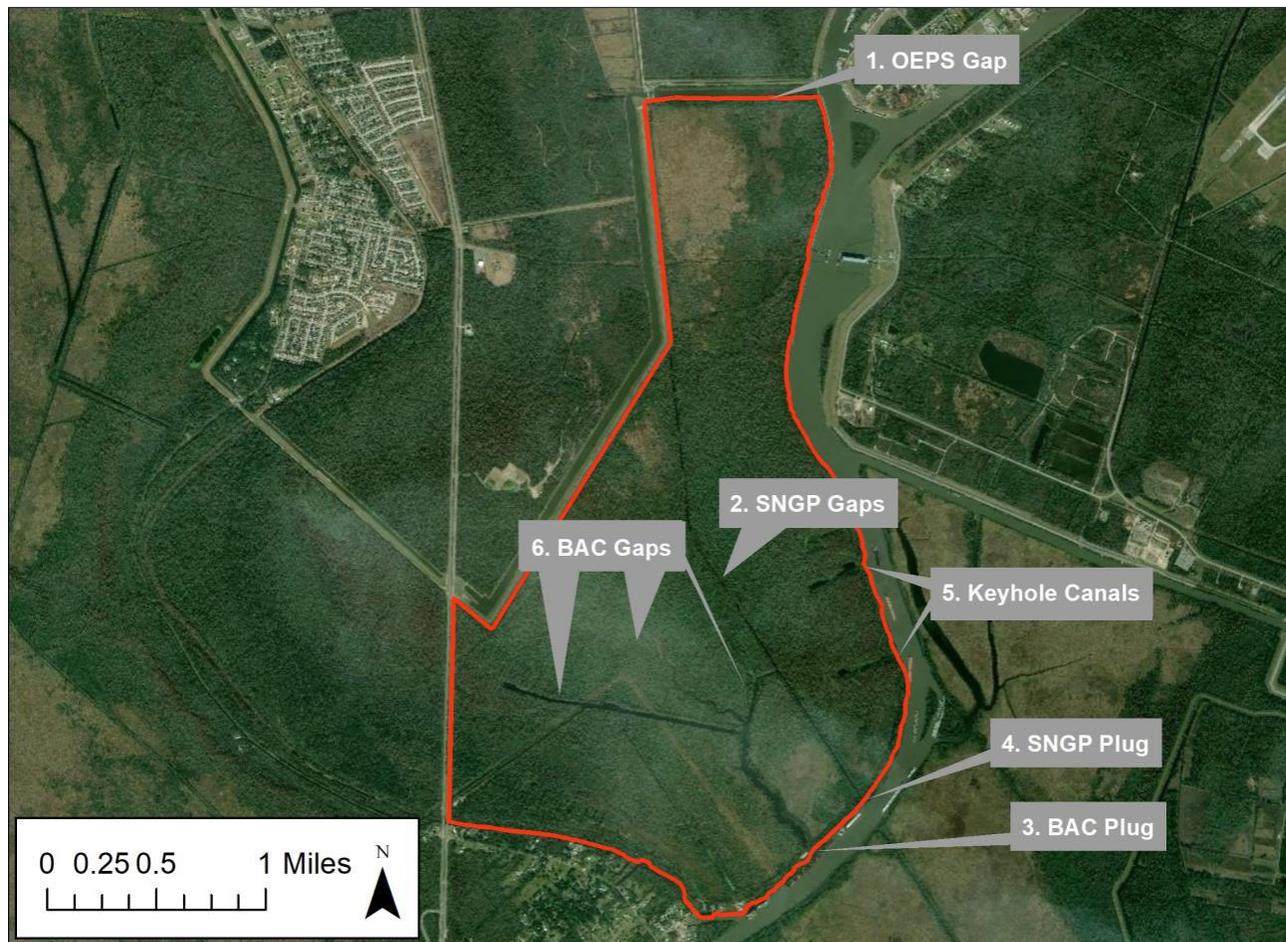


Figure 2. Map showing the BAC Site and location of the six augmentation measures initially considered.

The EPA Region 6, NPS, and USFWS stated that Measures 4, 5, and 6 should no longer be considered via email correspondence on March 14, 2013, and therefore these three measures were eliminated. Measure 1 was eliminated because it had the highest relative risk and lower net benefits, in terms of improved BAC hydrology, than Measure 3. Measure 2 was eliminated because hydrodynamic modeling suggested it would have little to no benefits in terms of improved BAC Hydrology. The Augmentation Measures Evaluation Report describes the screening process for these measures in detail (Appendix 7).

Measure 3 was selected as the preferred measure, because it was the highest performing measure with an acceptable level of risk (Appendix 7). Concurrence among the IET (EPA stated “does not object; would formally reply upon receipt of formal request from USACE for approval”) occurred at a meeting on September 24, 2020 (Appendix 8). The LDEQ and the USGS were invited but did not participate in this meeting.

2.2 **Final Array of Alternatives**

Of the initial array of six augmentation measures evaluated, only Measure 3 was carried for more detailed environmental analysis, as it was the only measure determined to be technically feasible that would meet the project purpose and need. As such, only two alternatives resulted:

1. No Action Alternative
2. Alternative 1 (Measure 3)

2.3 Disposal Planning for Alternative 1

Following IET acceptance of Alternative 1 as the tentatively selected plan (TSP), a disposal plan was developed for the material to be cleared and excavated. Six disposal plan options (DPOs) were initially considered based on IET comment responses on the Augmentation Measures Evaluation Report and through continued coordination with the IET (Table 3, Figure 3, Appendix 8).

Table 3: Disposal Plan Options (DPOs) Associated with Alternative 1	
DPO 1	Dispose and/or stockpile material behind the foreshore rock dike below the WBV 404(c) floodwall for later beneficial use by the NPS.
DPO 2	Stockpile material in one or more of the keyhole canals along the GIWW, for later beneficial use by the NPS.
DPO 3	Dispose material beneficially in the interior keyhole canal adjacent to the head of Bayou aux Carpes near the intersection w/ the SNGPL canal.
DPO 4	Use material to close the SNGP canal at its juncture with the GIWW
DPO 5	Dispose material at the WCC disposal area on the east bank of the GIWW below the WCC structure
DPO 6	Expand the disposal area adjacent to the plug as much as possible, dispose excess remaining material to off-site landfill.

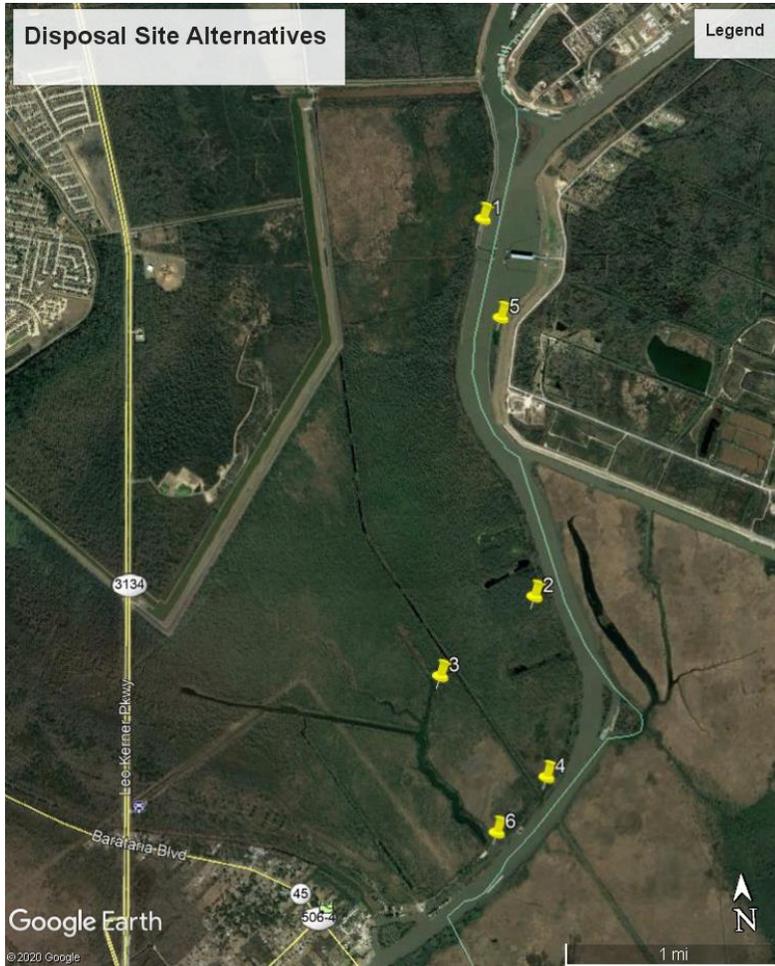


Figure 3. Map showing Disposal Plan Options associated with Alternative 1.

Disposal Plan Options (DPOs) 1, 2, 4, and 5 were eliminated due to implementation issues, access issues, and potential for adverse environmental impacts (Appendix 8). The final disposal plan would use excavated material beneficially to create shallow water habitat within the vicinity of the plug to the extent practicable by using a combination of DPOs 3 and 6. Expansion of the disposal area in the vicinity of the plug, as described in DPO 6, would be utilized first. Material would have been deposited as described in DPO 3, if two conditions are met:

1. More material would be excavated than could be beneficially used within the vicinity of the plug (DPO 6), and
2. The material could be moved via barge in Bayou aux Carpes to this location without excavating additional material for barge floatation.

Based on recent elevation surveys from the area and further engineering and design determined that condition 1 would not be met. Therefore, the material excavated to construct Alternative 1 would be used beneficially in the plug vicinity.

3 Alternatives Including the Proposed Action

3.1 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), no augmentation features would be constructed. Sheet flow within the BAC Site would be partially restored with construction of the Recommended Action described in the NPS’s 2009 Canal Reclamation at Barataria Preserve EA, which would degrade spoil bank material along man made canals into these canals within the BAC Site. The Recommended action includes the SNGP canal, keyhole canals, and two canals adjacent to Bayou aux Carpes. However, restoration of the tidal connection between Bayou aux Carpes with the GIWW, would not occur (Proposed Action).

3.2 Alternative 1, Proposed Action

The Bayou aux Carpes plug removal project (Project) would consist of the removal of an earthen embankment, identified as a “plug”, which was placed where BAC intersects the GIWW in 1974. The majority of work associated with the Proposed Action would occur within the EPA designated BAC Site on property that is managed by the NPS as part of the JELA’s Barataria Preserve. Other Project activities would occur in state owned water bottoms and roadways. Removal of this earthen embankment has been designed to create a sinuous connection between Bayou aux Carpes and the GIWW to partially restore hydrologic connectivity and increase wetland functions and values of the BAC Site, while minimizing erosion within the BAC from waves generated in the GIWW. Construction duration would be anticipated to last approximately 90 days. Figure 4 shows the plan view of approximate maximum construction areas. Construction would consist of four activities:

1. Accessing the Project Area,
2. Clearing vegetation,
3. Excavating earthen material to remove the plug, and
4. Disposing excavated material within the BAC plug vicinity.

Construction activities as described and illustrated in this section represent the maximum area necessary to construct a feasible sinuous channel that would achieve augmentation goals of partially restoring hydrologic connection. Estimated quantities of borrow material and estimated capacities of disposal area are not equal (i.e., they do not add up) for two reasons:

1. This allows for flexibility for disposal options. That is, material can be placed within the best, in terms of perceived environmental benefits, places within disposal areas, and
2. The quantities described in this section are estimates with contingency and therefore represent maximum expected amounts.

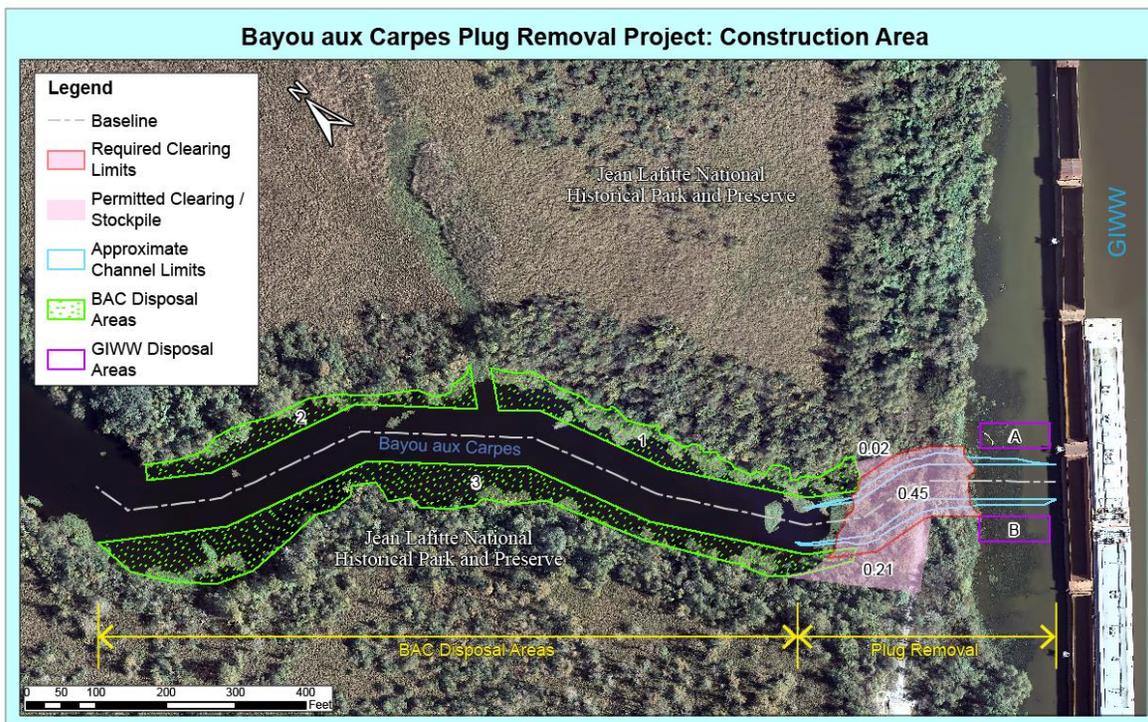


Figure 4. Approximate construction area

3.2.1 Project Area Access

Construction access to the Project Area would be by barge and watercraft via the GIWW and/or by truck and trailer via land. Mooring of barges and watercraft may utilize nearby infrastructure, such as timber mooring dolphins, located within the GIWW adjacent to the BAC plug if necessary. An existing unpaved road that extends off Orleans Way from Sharpe Road (506-4) to the site could be utilized to transport equipment and personnel during construction. Trimming of branches and removal of debris may be necessary for access along the unpaved road, but no trees would be felled outside of the Required and Permitted Clearing Limits described below (Fig 5). Any private roads outside of the Required and Permitted Clearing Limits (Figure 5) damaged as a result of Project construction would be returned to existing conditions.

3.2.2 Vegetation clearing (Figure 5)

Construction clearing limits would be divided into two categories, Required Clearing Limits and Permitted Clearing Limits (Figure 5). The total vegetation clearing limits for this project would be up to approximately 0.68 acres. There would be approximately 0.144 acres of wetland impacts associated with this clearing. See Section 5 for more information.

3.2.2.1 Required Clearing Limits

The Required Clearing Limits represent the maximum area that vegetation clearing would be required for plug removal. The Required Clearing limit would be approximately 0.45 acres.

3.2.2.2 Permitted Clearing Limits

Additional clearing that could be used for construction are identified as “Permitted Clearing Limits Left” and Permitted Clearing Limits Right” (Figure 5). The Permitted Clearing Limits would provide space for staging, temporary stockpiling of cleared vegetation and/or excavated earthen material, and land access to the disposal areas within BAC. All earthen material stockpiled in the Permitted Clearing Limits would be removed and placed in the BAC disposal areas. All cleared trees stockpiled in the Permitted Clearing Limits would be removed and placed on top of disposed excavation material within the BAC Disposal Areas. The Permitted Clearing Limit, Left would be approximately 0.21 acres. The Permitted Clearing Limit, Right would be approximately 0.02 acres. The total Permitted Clearing Limits would be approximately 0.23 acres.

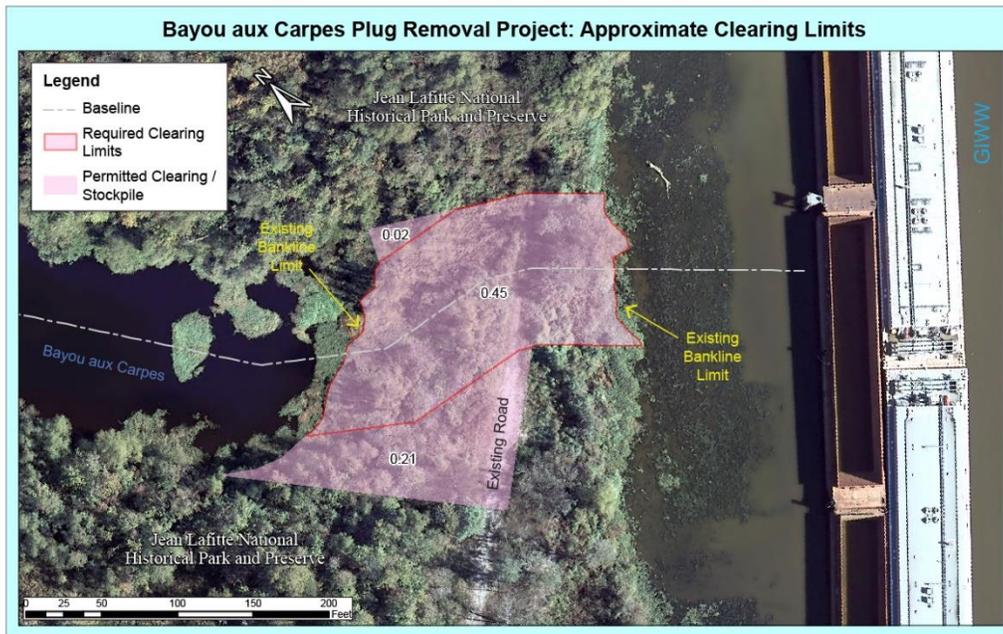


Figure 5. Close up of Approximate Clearing Limits.

3.2.3 EXCAVATION (Figure 6)

A total of up to approximately 3,500 cubic yards (cy) would be excavated and disposed of during construction. See Figure 6 for approximate excavation limits.

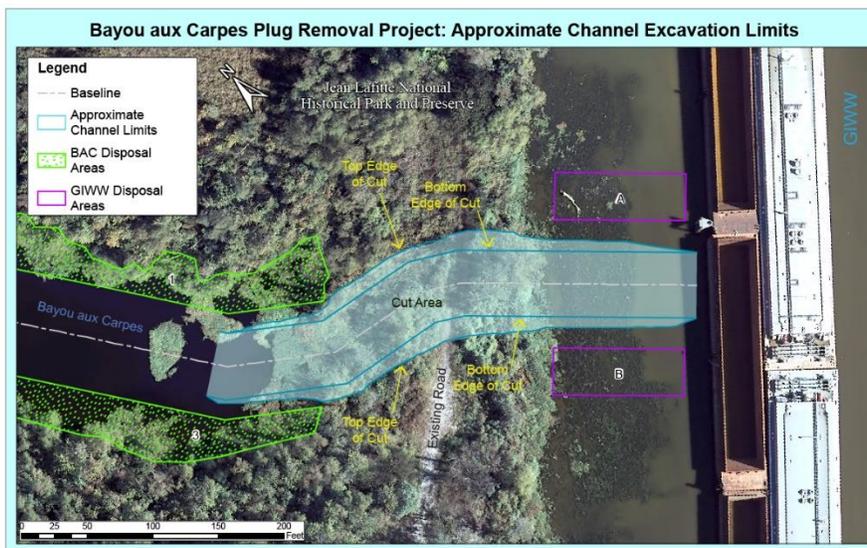


Figure 6. Approximate channel excavation limits (blue line) with elevation survey data collected in August 2020.

The excavation cut would be to an elevation of approximately -4.0 feet NAVD88 (2009.55) and would have a bottom width of up to approximately 50 feet. From the bottom edge of cut, at elevation -4.0 feet NAVD88 (2009.55), the cut slope would slope up approximately 1 foot vertically to 2.5 feet horizontally (approximately 1:2.5) to the top edge of cut at the existing natural ground.

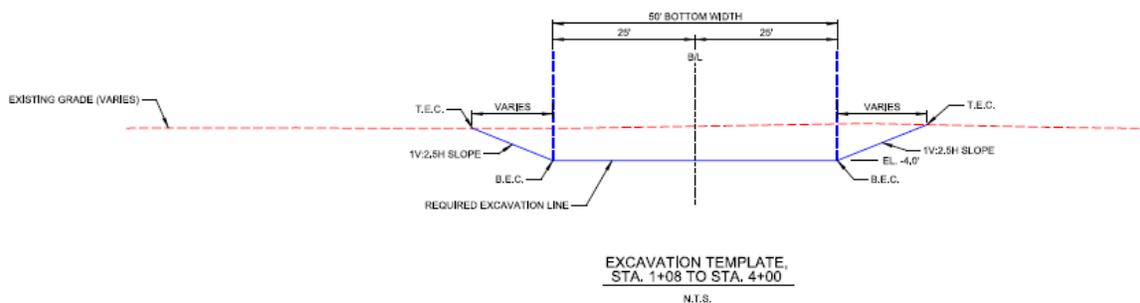


Figure 7. Approximate excavation template for maximum channel size. T.E.C means top edge of cut, B.E.C means bottom edge of cut, B/L means baseline, STA. means station, V means vertical, and H means horizontal.

3.2.3.1 Excavation Tolerance

A maximum tolerance of 0.5 feet below elevation -4.0 feet NAVD88 (2009.55), and side slopes lines, would be allowed.

3.2.3.2 Excavation Quantities

Approximately 2,300 cy would be excavated from the earthen and shell plug to the template dimensions. Excavated material would be placed in the identified BAC disposal areas.

Approximately 700 cy would be excavated/dredged in the GIWW to allow hydraulic exchange between Bayou aux Carpes and the GIWW. Some of this material would be placed in the identified "GIWW Spoil Disposal Area A" and "GIWW Disposal Area B" (Figure 8). Dryer material would be transported to and disposed within the BAC Disposal Areas (Figure 8).

Approximately 200 cy would be excavated/dredged in the BAC Site to the template dimensions. Excavated material would be placed in the identified BAC disposal areas.

3.2.4 DISPOSAL (Figure 8)

3.2.4.1 GIWW Spoil Disposal Areas A & B

Each GIWW disposal area would be approximately 36 feet wide by 100 feet long and would have an initial disposal height no greater than elevation +3.0 feet NAVD88 (2009.55). Since material that would be placed within the GIWW disposal areas would likely have a high moisture content, it is expected that this material would not stack to any permanent shape above the water surface. It is estimated that each GIWW disposal area would have the capacity of up to approximately 380 cy.

After all excavation and disposal associated with the Proposed Action, but before the end of construction and demobilization, all material within the GIWW disposal areas would be degraded to a height of no greater than elevation +1.0 feet NAVD88 (2009.55).

3.2.4.2 BAC Disposal Areas

There would be three disposal areas within the BAC Site (total of approximately 1.95 acres) that would extend from the existing Bayou aux Carpes bank line to no less than approximately 40 feet from the middle of the Bayou. The disposal areas would slope up from existing water bottom at the interior 40-foot limit and would have a slope no greater than 1 foot vertical to 3 feet horizontal up to an elevation of +0.5 feet NAVD88 (2009.55). Disposal height would be no greater than elevation +0.5 feet NAVD88 (2009.55), or 0.5 feet below the existing bank line, whichever is lower.

All three proposed BAC disposal areas have a total estimated capacity of 4,400 cy. Up to approximately 3,500 cy of material would be excavated and deposited within these disposal areas; therefore, it would be expected that the BAC disposal areas would not be filled to full capacity. Once disposal of excavated material is completed, cleared trees would be placed on top of the BAC disposal areas.

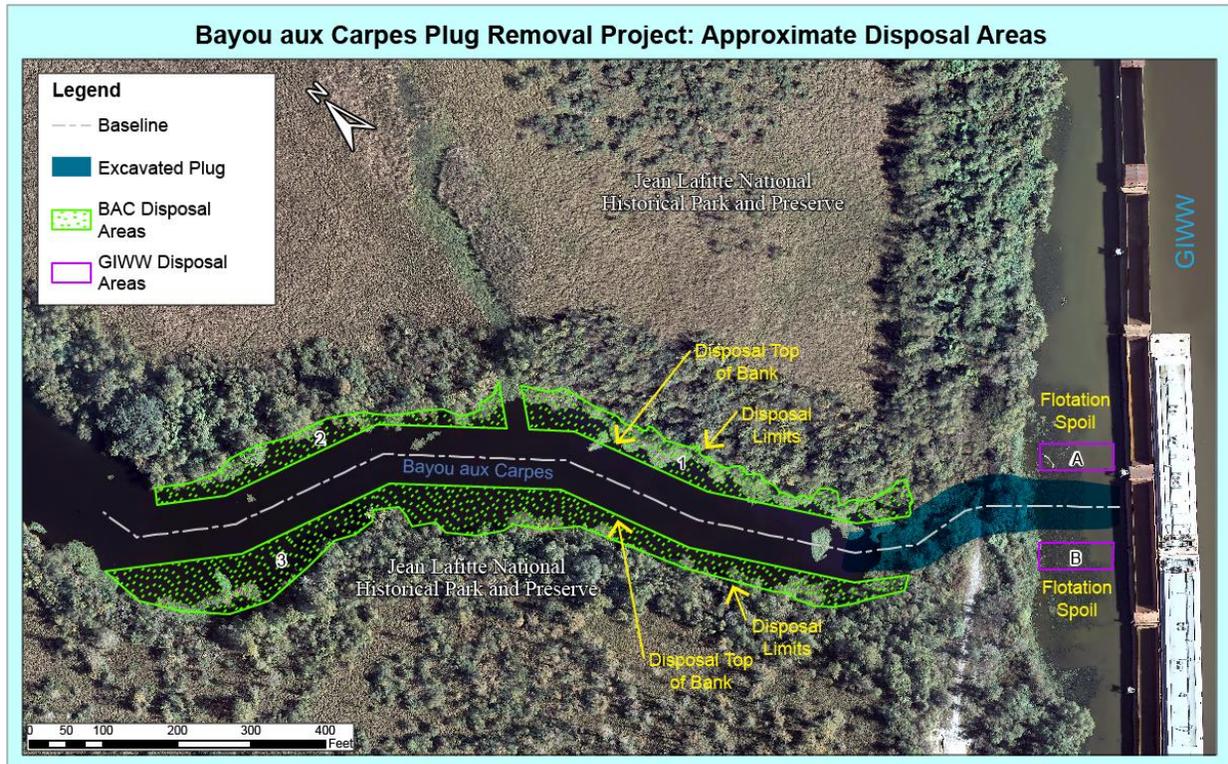


Figure 8. Approximate disposal areas

4 Affected Environment

4.1 Description of the Project Area

The BAC Site lies in the upper Barataria Basin within the Mississippi River Deltaic Plain in Jefferson Parish, Louisiana (Figure 1). It is bounded on the north by the OEPS outfall canal, on the east by the GIWW, on the south by the GIWW and Bayou des Familles, and on the west by State Highway 3134 and the "V-line Levee" (Figure 9). Most of the BAC Site is managed and owned by the NPS as part of JELA's Barataria Preserve; however, there is a privately owned parcel of land known as the Harvey Tract that bisects the BAC Site (Figure 9).

A detailed description of the BAC Site and relevant resources is included in the BAC Site Augmentation Evaluation Report (Appendix 7).

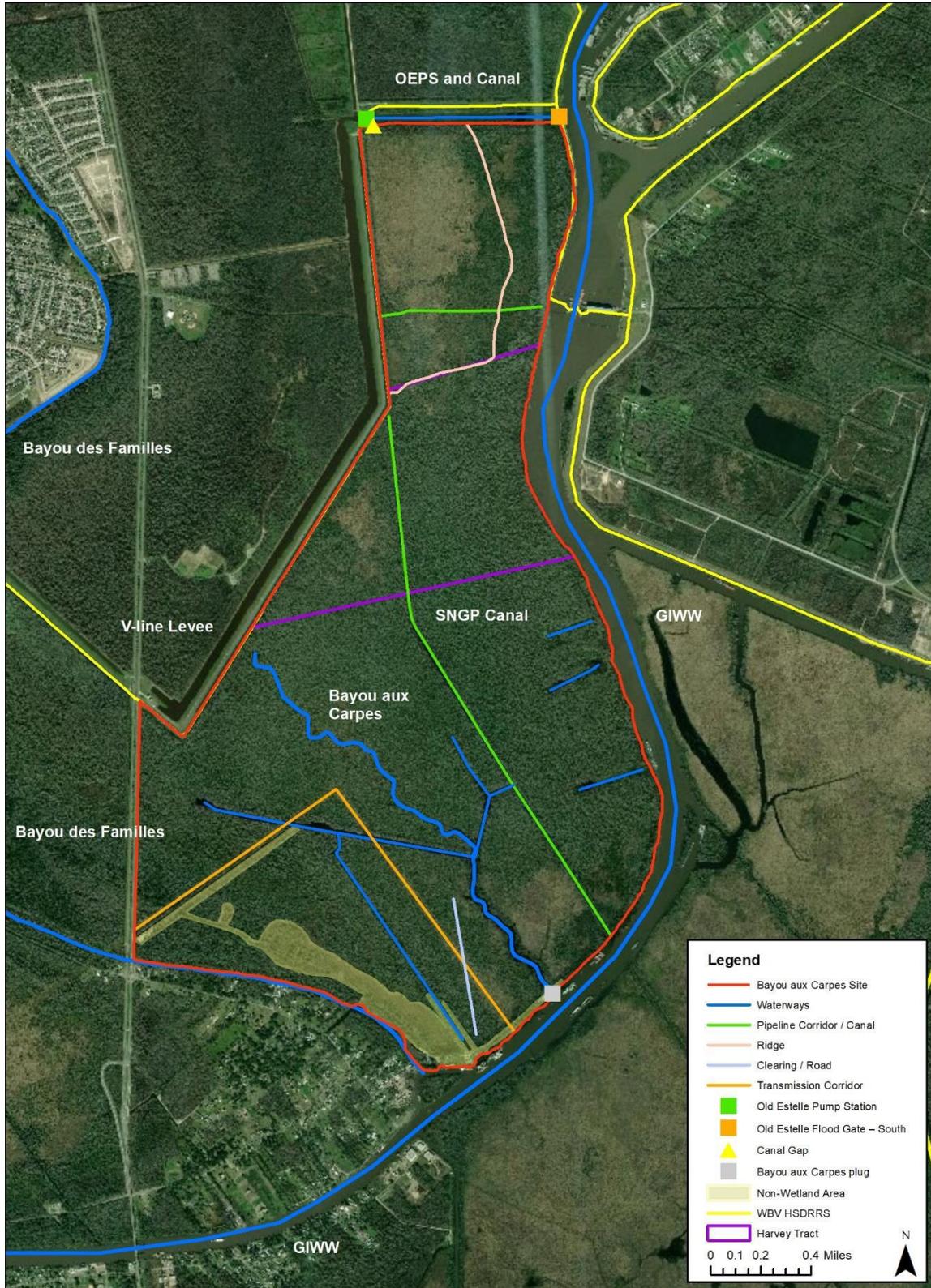


Figure 9. BAC Site and waterways and other features.

4.1.1 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 impacts have caused and are expected to continue to cause massive coastal habitat changes and land loss in coastal Louisiana (Couvillon et. al., 2017). Climate change impacts are expected to affect the Project Area through increased sea level, water surface salinities, coastal land loss, and potentially more frequent high intensity tropical storm impacts (Wash et al., 2015; Couvillon et al., 2017) Subsidence also contributes to coastal land loss, and rates in the Project Area vicinity have been found to be and are predicted to continue to be high (CITATION).

4.1.2 Geology

The geology of the lower Mississippi River Alluvial Valley, the Louisiana coast, and Barataria Basin is summarized in the LCA Ecosystem Restoration Study (USACE 2004), which is incorporated by reference. The BAC Site includes bayous, swamps, marshes, canals, levees, and spoil banks. Some of the bayous, such as Bayou aux Carpes, were likely distributaries of the Mississippi River in the past.

The soils of the JELA Barataria Preserve, including the BAC Site, is described in the NPS’s 2009 Canal Reclamation at Barataria Preserve EA, which is incorporated by reference. Most of the soils are Kenner muck, which consists of very deep, very poorly drained, very slowly permeable, predominantly organic substrates.

4.2 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 4 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 Augmentation Evaluation Report (Appendix 7) and the 2009 Canal Backfilling at Barataria Preserve EA (Appendix 9). In this section, descriptions from these documents are summarized below by resource.

The scientific name associated with all common species names will be presented the first time the common name is utilized. Afterward, only the common name will only be used.

Table 4: 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; NPS Procedural Manual 77-01: Wetlands Protection; 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; serve as ground water recharge areas; provide storage areas for storm and flood waters; serve as natural water filtration areas; provide protection from wave action, erosion, and storm damage; and provide various consumptive and non-consumptive recreational opportunities.	The public believes wetland functions and values are important. 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 public places high priority 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 public places high priority 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 Management 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 the 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.

Table 4: Relevant Resources and their Institutional, Technical, and Public Importance			
Resource	Institutionally Important	Technically Important	Publicly Important
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.
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 public places a high value 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.
Air Quality	Clean Air Act of 1963, Louisiana Environmental Quality Act of 1983	State and Federal agencies recognize the status of ambient air quality in relation to the National Ambient Air Quality Standards (NAAQS).	Virtually all citizens express a desire for clean air.
Navigation	Rivers and Harbors Act of 1899 and River and Harbor Flood Control Act of 1970 (PL 91-611).	N/A	Navigation concerns affect area economy and are of significant interest to community.

4.2.1 Hydrology

Historic and Existing Conditions

The CWA Section 404(c) Final Determination for Bayou aux Carpes concluded that it has significant value for shellfish beds and fishery areas (including spawning and breeding areas), wildlife, and recreational areas. The CWA 404(c) Final Determination also mentions that the BAC Site provides significant values to water quality. The EPA's Modification to the 1985 CWA Section 404(c) Final Determination for impacts related to fill associated with WBV designates BAC Site wetlands as unique and productive, and found two wetland types to be ecologically significant: 1) naturally generating bald cypress swamps; and 2) flotant marsh (Appendix 5).

The hydrology in the BAC Site and vicinity was greatly modified prior to its CWA Section 404(c) designation, mainly through the construction of canals, placement of spoil material, levee construction, and energy infrastructure (Figure 9). Historically, this area was a part of a much larger wetland complex, with Bayou aux Carpes providing natural drainage at its confluence with Bayou Barataria. Bayou Barataria was improved (i.e., dredged and widened) prior to the 1950s and is now a part of the GIWW system. The confluence of the GIWW and Bayou aux Carpes was plugged circa 1974. Currently the SNGP canal provides the only completely open exchange (i.e., without a control structure) between the BAC Site and the GIWW. The SNGP canal is connected to Bayou aux Carpes via old oil and gas access canals (Figure 9).

A thorough presentation of the history of hydrologic modifications since the 1930s and existing hydrologic conditions is included in the Augmentation Evaluation Report (Appendix 7).

4.2.2 Water and Soil Quality

Historic and Existing Conditions

Information regarding the existing conditions of water and soil quality of the BAC Site comes from the USGS's Baseline Monitoring of Bayou aux Carpes 404(c) Marshes, Jefferson Parish, from 2009-2012 Report (Appendix 10), the LDEQ's "2018 Louisiana Water Quality Inventory: Integrated Report", and the NPS's Gulf Coast Network Water Quality Report: Status of Water Quality of Jean Lafitte National Historical Park and Preserve—Barataria Preserve, Natural Resource Data Series NPS/GULN/NRDS—2015/969 (Meiman, 2015).

A summary of the site's existing water and soil quality is presented below. A thorough presentation of the historic and existing water and soil quality information is included in the Augmentation Evaluation Report (Appendix 7).

4.2.2.1 Surface Water Quality

Many water sources influence the BAC Site and vicinity. These may be generalized into tidal influences and three freshwater influences: 1) waters associated with the Mississippi River; 2) stormwater drainage; and 3) direct rainfall. The interaction between the BAC Site and all these water sources varies as water follows an elevation gradient. The net effect of any one water source depends on the contributions of all the other sources.

Tidal forces influence the surface water salinity in the BAC. Based on available data, BAC Site water surface salinities are typically less than 1.0 parts per thousand (ppt). However, spikes in

salinity have been recorded in the recent past. Some salinity spikes have been associated with tropical storm systems that carry high salinity waters into the Project Area and vicinity.

Fresh water from the Mississippi River is periodically conveyed into the Barataria Basin near the BAC Site from sources including the Harvey and Algiers Locks via the GIWW, the Atchafalaya River via the GIWW, and potentially the Davis Pond Freshwater Diversion structure (Swarzenski, 2003; Meiman, 2015). According to the LDEQ “2018 Louisiana Water Quality Inventory: Integrated Report,” the GIWW near the BAC Site (Intracoastal Waterway-From Bayou Villars to Mississippi River (Estuarine) subsegment LA020601_00) was found to fully support two designated uses, primary contact swimming and secondary contact recreation. This subsegment was found to not support the designated use for fisheries and wildlife propagation. The suspected causes for its impaired use was turbidity. Turbidity could be related to Mississippi River water influence or from more local sources (e.g., shoreline erosion or resuspension or bed material).

USGS collected and analyzed stormwater samples at three locations within the BAC Site and vicinity during a period of high precipitation in March 2012 (Appendix 10). Atrazine and Fipronil were above detectable limits for all sites tested, but highest concentrations were found at sites outside of the BAC Site.

Evidence suggests that rainwater may be one of the most influential water sources for the BAC Site (Meiman, 2015).

4.2.2.2 Porewater and Soil Quality

The USGS performed porewater surveys for marsh sites within the BAC Site from 2009 to 2012, and compared them to nearby reference sites located in the Barataria Preserve’s western marsh landscape as a part of the Baseline Monitoring of Bayou aux Carpes 404(c) Marshes, Jefferson Parish, from 2009-2012 Report (Appendix 7). Results of this study suggest that porewater from sites closer to the OEPS outfall canal was affected by a source other than rainwater and seawater. This source could be stormwater runoff. Of the three sites evaluated near the OEPS outfall canal, the site closest to a channel directly connecting to the OEPS outfall canal had soils that were likely negatively affected from OEPS outfall canal waters. In contrast, results from the site closet to Bayou aux Carpes suggest these soils are in relatively poor condition as a result of seawater impacts.

4.2.3 Wetlands

Historic and Existing Conditions

Historically, the BAC Site was part of a vast complex of coastal wetlands associated with the Mississippi River Delta. The BAC Site is now somewhat segmented from this complex in terms of habitat and hydrology (i.e., it is part of a much smaller contiguous expanse of coastal wetlands due to leveeing that has been further impacted by oil and gas exploration). See the Augmentation Measures Evaluation Report for further information on wetland habitats (Appendix 7). The Bayou aux Carpes 404c Normalized Difference Vegetation Index (NDVI) and Habitat Analysis Summary Report analyzes historic and recent habitat dynamics for the BAC Site (Appendix 11).

Approximately 3,000 acres of unique and productive wetlands within the BAC Site are an important regional and national asset providing ecological, flood storage, and water quality

benefits to the watershed. The NPS's Vegetation Mapping Inventory Program (VMI) report, which maps habitat types for the JELA Barataria Preserve, indicates 20 different habitat classifications, including open water, ruderal (habitat with vegetation indicative of high levels of anthropogenic disturbance), and natural vegetation types (Hop et al, 2017). Three of the top four habitat classifications, by area, are wetland habitat types, making up 52% of the total area.

4.2.3.1 Forested Wetlands

Historically the forested wetlands of the BAC Site were part of a much larger wetland complex. Some of this area has transitioned to other habitat types. Much of the BAC Site is forested wetlands, with Bald Cypress Wooded Marsh and Bald Cypress Tupelo Flooded Forest being the top two habitat types by area based on the VMI analysis (Hop et al, 2017).

Naturally regenerating cypress swamp is specified in EPA's Modification to the 1985 CWA 404(c) Final Determination as one of the two unique and ecologically valuable wetland habitat types found within the BAC Site (Appendix 1). Some of the cypress swamp in the BAC Site is naturally regenerating, as saplings have been recently observed in the understory.

4.2.3.2 Marsh Wetlands

Flotant marsh is also specified in EPA's Modification to the 1985 CWA 404(c) Final Determination is the other unique and ecologically valuable wetland habitat types found within the BAC Site (Appendix 1). Flotant marsh is characterized by marsh vegetation on organic substrates 'floating' above an underlying mineral substrate, often with an aqueous layer in-between the two more consolidated substrate layers,

The largest contiguous section of marsh is in the northern section, which has been marsh since at least 1936. It was part of a much larger expanse of marsh prior to the 1950s, when the BAC Site marsh became separated as a result of construction of the "V-line levee" and associated canals as well as the OEPS outfall canal. Currently much of the marsh in this section is characterized as flotant. In addition, the historic widening, deepening, and maintenance of the GIWW produced spoil material that has been placed along the channel bank line resulting in direct (i.e., conversion of habitat types) and indirect (i.e., altered hydrology) negative impacts to adjacent sensitive marsh habitat. Much of the historic marsh outside of the BAC Site has transitioned to other habitat types since 1945.

A second area of marsh within the BAC exists east of Bayou aux Carpes near its juncture with the GIWW. Some of this marsh has converted to other habitat types since the 1930s (Appendices 8 and 11).

4.2.4 Uplands

Historic and Existing Conditions

Uplands within the BAC Site vicinity include parts of spoil banks along various maintained waterways, such as the GIWW. Other upland areas in the vicinity include developed areas to the north and west of the BAC Site. Historically, much of these uplands were wetlands that were converted to uplands as a result of manmade activities (Appendix 7).

4.2.5 Wildlife Resources

Historic and Existing Conditions

The CWA Section 404(c) designation was based, in part, on significant values to wildlife.

During field studies in 1984 and 1985, at least 70 wildlife species were found within the BAC Site. The site provides valuable habitat for resident waterfowl and migratory game species (e.g., wood ducks (*Aix sponsa*), mallards (*Anas platyrhynchos*), and other waterfowl) and non-game species (e.g., great blue herons (*Ardea herodias*) and great egrets (*Ardea alba*)). Bald eagles (*Haliaeetus leucocephalus*) and osprey (*Pandion haliaetus*) have been observed in the area as well. Several species of non-game, resident and migratory birds (e.g., red-headed woodpecker (*Melanerpes erythrocephalus*), prothonotary warbler (*Protonotaria citrea*), and wood thrush (*Hylocichla mustelina*)) that are known or expected to utilize the Project Area have exhibited substantial population declines throughout their respective ranges over the last 30 years, primarily as the result of habitat loss and fragmentation.

The USFWS's 1985 Habitat Evaluation Procedures (HEP) analysis determined that BLH and wooded swamp habitats rated moderate to high value for all species evaluated (i.e., eastern gray squirrel (*Sciurus carolinensis*), pileated woodpecker (*Dryocopus pileatus*), American mink (*Neovison vison*), wood duck, great egret, American alligator (*Alligator mississippiensis*), and muskrat (*Ondatra zibethicus*)). Upland forested habitat rated low for gray squirrel and pileated woodpecker but was found to be optimal for mink. Scrub-shrub wetlands rated high for wood duck wintering and alligator habitat, and moderate for mink, great egret, and muskrat. Fresh marsh rated high to moderate as alligator, mink, and muskrat habitat.

4.2.6 Aquatic and Fisheries Resources

Historic and Existing Conditions

The CWA Section 404(c) designation was based, in part, on significant values to shellfish beds and fishery areas (including spawning and breeding areas).

Twenty-three freshwater fish species, and 27 taxa of macroinvertebrates were observed during USFWS 1985 surveys. Bayou aux Carpes has valuable spawning, feeding, and nursery habitat for recreationally important freshwater fish such as largemouth bass (*Micropterus salmoides*) and various other sunfishes, crustaceans such as crawfish and grass shrimp (*Palaemonetes* spp.), and estuarine species such as striped mullet (*Mugil cephalus*) and blue crab (*Callinectes sapidus*). Analysis of samples collected in 1985 indicated that forage species were the most abundant category of fish species. The invasive Apple Snail (*Pomacea maculata*) has also colonized the area.

Aquatic vegetation, such as floating aquatic vegetation (FAV) and submerged aquatic vegetation (SAV) can be found in low energy waterways throughout the BAC Site. Generally, SAV are indicative of good water quality and provide important habitat for many fishes and macroinvertebrates (Rozas and Odum, 1987). Some of the FAV is non-native water hyacinth (*Eichhornia crassipes*) which is an invasive species.

4.2.6.1 Essential Fish Habitat

The Gulf of Mexico Fisheries Management Council (GMFMC), in cooperation with the NMFS), has delineated essential fish habitat (EFH) for federally managed species identified in Gulf fisheries management practices (FMPs). EFH under the Magnuson-Stevens Act is defined as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity”. Federally managed species likely to occur in the proposed Project Area are managed under the following FMPs for the Gulf of Mexico: white shrimp, brown shrimp, and red drum (Table 5; GMFMC, 2005).

Table 5 EFH Table			
Common Name	Scientific Name	Life Stage	EFH
Red drum	<i>Sciaenops ocellatus</i>	Larvae	Estuarine SAV, estuarine mud/soft bottom
		Post Larvae	Estuarine Emergent Marsh, Estuarine SAV, Estuarine Sand/Shell/Mud/Soft Bottom
		Early Juvenile	Estuarine Emergent Marsh, Estuarine Mud/Soft Bottom
		Late Juvenile	Estuarine SAV
		Adult	Estuarine Emergent Marsh, Estuarine SAV, Estuarine Sand/Shell/Mud/Soft Bottom
Brown shrimp	<i>Farfantepenaeus aztecus</i>	Early Juvenile	Estuarine Emergent Marsh, Estuarine SAV, Estuarine Sand/Shell/Mud/Soft Bottom
White shrimp	<i>Litopenaeus setiferus</i>	Early Juvenile	Estuarine Emergent Marsh, Estuarine Mud/Soft Bottom

4.2.7 Protected Species

Historic and Existing Conditions

4.2.7.1 Threatened and Endangered Species

One Threatened Species, the West Indian manatee is known to occur in the vicinity of the Project Area. West Indian manatees may occasionally enter the upper Barataria Basin and associated coastal waters and streams during the summer months (i.e., June through September). Given the paucity of food sources in the Project Area and the seasonality of their occurrence, it is considered unlikely for the manatee to frequent and utilize waterways within the BAC Site. The Project Area does not contain West Indian manatee critical habitat.

4.2.7.2 Bald and Golden Eagle Preservation Act Trust Species

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 Migratory Bird Treaty Act (MBTA). Habitats suitable for use by the bald eagle are present in Jefferson Parish and occurrences of the bald eagle have been recorded within JELA and the

BAC Site. There are two known bald eagle nests within the BAC Site, and other active, inactive, or alternate nests may exist, but not be known (Sprinkle, pers. Comm. 2020).

4.2.7.3 Migratory Bird Treaty Act Trust Species

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 could be found. However, there are no known historic colonial nesting waterbird sites within the BAC Site (Sprinkle, personal communication, 2020).

4.2.8 Cultural Resources

Historic and Existing Conditions

A review of the Louisiana Cultural Resources Map (on-line) indicates that there are three archaeological sites within 1 kilometer of the proposed project. Site 16JE234 and site 16PL260 are identified as prehistoric shell middens, and neither would be impacted by the proposed project. The third archaeological site, 16JE233, is recorded as the bayou plug and occupies that portion of Construction Area. The site was recorded in 2006 during a visual inspection by boat in support of post-Katrina debris removal. The site record for 16JE233 indicates that the site was recorded as a possible prehistoric *Rangia* shell midden and historic two-track road existing on the west bank of Bayou Barataria and a natural levee.

Based on the evidence provided in Appendix 12, the USACE has determined that site 16JE233 was inaccurately recorded as a possible prehistoric shell midden and that the presence of *Rangia* clam shell as recorded during the 2006 boat survey is the result of levee construction and the plugging of Bayou aux Carpes that occurred in 1974.

Additionally, following the definitions in USACE Tribal Consultation Policy which implements E.O. 13175, there are no tribal lands, nor are there specific tribal treaty rights related to access or traditional use of the natural resources in Jefferson Parish. There are many protected tribal resources within the parish, but there is no evidence of them being in the study area.

In accordance with the agencies' responsibilities under the NHPA Section 106 process and E.O. 13175, we will offer the following Federally-recognized Indian tribes the opportunity to review and comment on the proposed action: Alabama-Coushatta Tribe of Texas, Chitimacha Tribe of Louisiana, Choctaw Nation of Oklahoma, Coushatta Tribe of Louisiana, Jena Band of Choctaw Indians, Mississippi Band of Choctaw Indians, Muscogee (Creek) Nation, Seminole Nation of Oklahoma, Seminole Tribe of Florida, and Tunica-Biloxi Tribe of Louisiana. The outcome of this consultation will be included in the Final EA and/or decision documents. Consultation with the SHPO and Federally-recognized Indian tribes is on-going and will be concluded prior to the final SEA and FONSI.

4.2.9 Aesthetics and Visual Resources

Historic and Existing Conditions

Land use in the vicinity of the BAC Site is generally rural and comprised of inland swamps, and, to a limited extent, developed land. Visually harmonious forests are dissected by oil and gas

canals and an electrical power transmission corridor. Primary viewpoints into the BAC site's natural landscape are from Leo Kerner Parkway to the west and by boat from the GIWW to the East. The primary water resources include the main channel of the GIWW and the SNGP canal. User activity is low in this area and is dominated by residential commuters along Leo Kerner Parkway and commercial shipping within the GIWW.

4.2.10 Recreational Resources

Historic and Existing Conditions

The JELA Barataria Preserve houses numerous facilities including the Barataria Visitor Center, the Environmental Education Center, and numerous hiking and canoeing trails. Despite its proximity to a metropolitan area, the Preserve exhibits exceptional examples of natural and cultural resources reflective of the Mississippi River Delta. The NPS documented a total of 163,137 visitor contacts park wide in JELA.

Recreational resources such as boating, fishing, trapping, and some hunting are available within the bounds of the BAC Site and the JELA Barataria Preserve. The public currently has access, primarily via watercraft, to portions of the tract by way of the SNGP canal junction with the GIWW. This also includes access to the Harvey Tract, a section of privately owned land within the BAC Site. In addition, the Jean Lafitte Swamp Tour operates within the BAC under a Commercial Use Agreement with JELA. The swamp tour business provides an eco-tourism service, via which visitors experience BAC Site forested wetlands from a powered pontoon boat.

4.2.11 Air Quality

The EPA, under the requirements of the Clean Air Act (CAA), has established NAAQS for six contaminants, referred to as "criteria" pollutants (40 CFR 50). These are 1) carbon monoxide (CO), 2) nitrogen dioxide (NO₂), 3) ozone (O₃), 4a) particulate matter less than 10 microns in diameter (PM₁₀), 4b) particulate matter less than 2.5 microns in diameter (PM_{2.5}), 5) lead (Pb), and 6) sulfur dioxide (SO₂). The NAAQS include primary and secondary standards. The primary standards were established at levels sufficient to protect public health with an adequate margin of safety. The secondary standards were established to protect the public welfare from the adverse effects associated with pollutants in the ambient air. The primary and secondary standards are presented in Table 6.

Table 6. National Ambient Air Quality Standards				
Criteria Pollutant	Primary Standard		Secondary Standard	
	Concentration Limit	Averaging Time	Concentration Limit	Averaging Time
Carbon monoxide	9 ppmv (10 mg/m ³)	8-hour ⁽¹⁾	None	
	35 ppmv (40 mg/m ³)	1-hour ⁽¹⁾		
Sulfur dioxide	0.03 ppmv (80 µg/m ³)	Annual (arithmetic mean)	0.5 ppmv (1300 µg/m ³)	3-hour ⁽¹⁾
	0.14 ppmv (365 µg/m ³)	24-hour ⁽¹⁾		
Nitrogen dioxide	0.053 ppmv (100 µg/m ³)	Annual (arithmetic mean)	Same as primary	
Ozone	0.075 ppmv (150 µg/m ³)	8-hour ⁽²⁾	Same as primary	
	0.12 ppmv (235 µg/m ³)	1-hour ⁽³⁾	Same as primary	
Lead	0.15 µg/m ³	Rolling 3-month average	Same as primary	
	1.5 µg/m ³	Quarterly average	Same as primary	
Particulate Matter (PM ₁₀)	150 µg/m ³	24-hour ⁽⁴⁾	Same as primary	
Particulate Matter (PM _{2.5})	15 µg/m ³	Annual ⁽⁵⁾ (arithmetic mean)	Same as primary	
	35 µg/m ³	24-hour ⁽⁶⁾	Same as primary	

(1) Not to be exceeded more than once per year.
 (2) The 3-year average of the fourth-highest daily maximum 8-hour average at each monitor within the area over each year must not exceed 0.075 ppmv.
 (3a) The expected number of days per calendar year with maximum hourly averages above 0.12 ppm must be equal to or less than 1.
 (3b) As of June 15, 2007, the U.S. EPA revoked the 1-hour ozone standard in all areas except for certain parts of 10 states.
 (4) Not to be exceeded more than once per year on average over 3 years.
 (5) The 3-year average of the weighted annual mean PM_{2.5} concentrations from single or multiple community-oriented monitors must not exceed 15 µg/m³.
 (6) The 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within the area must not exceed 35.5 µg/m³.

The EPA Green Book Nonattainment Areas for Criteria Pollutants (Green Book) maintains a list of all areas within the United States that are currently designated “nonattainment” areas with respect to one or more criteria air pollutants. Nonattainment areas are discussed by county or

metropolitan statistical area (MSA). The MSAs are geographic locations, characterized by a large population nucleus, that are comprised of adjacent communities with a high degree of social and economic integration. MSAs are generally composed of multiple counties. Review of the Green Book indicates that Jefferson Parish is currently in attainment for all NAAQS pollutants, including the 8-hour ozone standard (<https://www.epa.gov/green-book>). This classification is the result of area-wide air quality modeling studies. Therefore, further analysis required by the CAA general conformity rule (Section 176(c)) would not apply for the Proposed Action.

4.2.12 Navigation

The GIWW, a major navigation waterway, exists within the Project Area and vicinity. The GIWW is a navigable inland waterway that runs from Florida to Texas, and has been an important waterway as it connects and/or is in the vicinity of many of the largest ports in the U.S., including the Port of South Louisiana, which is the busiest port in the US. The GIWW in the Project Area vicinity is used by commercial and recreational watercraft. There are mooring dolphins and pilings along the banks of the GIWW in the vicinity of the Project Area where barges can tie up.

5 Environmental Consequences

This section describes the environmental consequences of the No Action Alternative (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 7. Cumulative effects are discussed in Section 5.1.

The No Action Alternative impacts utilize relevant information from the approved plans in IER 12 and NPS's 2009 Canal Reclamation at Barataria Preserve EA, because this scenario represents the predicted course of events absent approval of the Proposed Action and are summarized in Table 7.

Table 7: Comparison of No Action Alternative to Proposed Action		
Resource	No Action Alternative Impacts (includes impacts in 2016 EIS and SEA 570)	Proposed Action Impacts
Hydrology	<p><i>Direct and Indirect Impacts:</i> The NPS’s proposed Canal Reclamation at Barataria Preserve Project would restore some hydrologic functions by back filling parts of some canals within the BAC Site. This would likely improve vicinity wetland functions and values in the BAC Site; however, hydrologic benefits in the vicinity of the Proposed Action would likely be limited based on hydrological modeling and the distance between the Backfilling Project to the Bayou aux Carpes plug (Appendix 7).</p> <p>Without implementation of the Proposed Action, no augmentation feature would be constructed to provide additional environmental benefits to the 404c area.</p>	<p><i>Direct Impacts:</i> The Proposed Action would reconnect Bayou aux Carpes with the GIWW. This would partially restore historic connectivity and flow regimes.</p> <p><i>Indirect Impacts:</i> The Proposed Action would increase flow exchange by approximately 86 acres within the BAC based on two-dimensional hydrodynamic modeling outputs (Appendix 12).</p> <p>These direct and indirect impacts would not substantially decrease any negative impacts associated with climate change or subsidence, but implementation of the Proposed Action could improve BAC Site resiliency to climate change impacts by, for instance, allowing for better drainage during high intensity tropical storm events that may become more common as a result of climate change.</p>

Table 7: Comparison of No Action Alternative to Proposed Action		
Resource	No Action Alternative Impacts (includes impacts in 2016 EIS and SEA 570)	Proposed Action Impacts
Water and Soil Quality	<p><i>Direct and Indirect Impacts:</i> It is likely that the water and soil quality would continue to persist as described in the existing conditions chapter. Any high salinity waters entering the lower portion of the BAC would have to drain the area through via the SNGP. This would continue to impact the wetlands adjacent to Bayou aux Carpes as the only tidal connection occurs via a very circuitous route using oil and gas canals and the SNGP. This results in incomplete flushing and long residency time for salt water.</p>	<p><i>Direct Impacts:</i> There would be some highly localized temporary negative impacts to water quality associated with increased turbidity during construction.</p> <p><i>Indirect Impacts:</i> There would likely be decreased negative impacts (i.e., benefits when compared to the FWOP conditions) associated with high water and high salinity events due to increased drainage. There was some evidence of high salinity potentially disproportionately impacting the Project Area vicinity relative to other areas within the BAC Site following a high salinity event (Augmentation Evaluation Report). This negative disproportionate impact could be associated with decreased drainage and flushing due to the Bayou aux Carpes plug. It should be noted that the Proposed Action could allow for relatively higher salinity water to enter Bayou aux Carpes and the vicinity more often. However, removal of the plug would result in less residency time for the higher salinity water and would facilitate flushing of the area by fresh water as compared to the existing conditions. As such, net benefits relative to surface water and porewater salinities are expected with respect to FWOP conditions.</p> <p>There could be periodic negative impacts associated with increased turbidity during certain meteorological and hydrological conditions. The GIWW has typically has higher turbidity than Bayou aux Carpes and when water flows from the GIWW into Bayou aux Carpes after construction there would be periods of increased turbidity within Bayou aux Carpes and potentially other locations within the BAC Site. These impacts are expected to be somewhat ameliorated by the added sinuosity. These periodic impacts are expected to be infrequent and highly localized.</p>

Table 7: Comparison of No Action Alternative to Proposed Action		
Resource	No Action Alternative Impacts (includes impacts in 2016 EIS and SEA 570)	Proposed Action Impacts
Wetlands	<p><i>Direct and Indirect Impacts:</i> Without implementation of the Proposed Action, trends in wetland degradation within the BAC Site and vicinity would likely persist in the future as they are described in the existing conditions section of this document.</p> <p>There would be some benefits expected from the NPS's proposed Canal Reclamation at Barataria Preserve Project. However, drainage and hydrologic conditions in the wetlands adjacent to Bayou aux Carpes itself would continue to be impacted by the plug at the confluence of Bayou aux Carpes and the GIWW.</p> <p>The NPS's proposed Canal Reclamation at Barataria Preserve Project would provide some future net benefits to wetlands by partially restoring hydrology and sheet flow in the vicinity of the SNGP. These impacts would likely be minimal in the vicinity of the Proposed Action based on modeling results (Appendix 12) and the distance between the NPS project and the Proposed Action.</p>	<p><i>Direct Impacts:</i> Up to approximately 0.144 acres of wetlands would be negatively impacted during construction (Appendix 12). The majority of tree species impacted would be Chinese tallow and rough leafed dogwood, based on field observations. The channel cut would be constructed such that it would avoid native trees to the maximum extent practicable. That is, the channel would be cut to achieve augmentation goals while impacting as few native trees as practicable. Additionally, up to approximately 1.95 acres of wetlands would be created through beneficial use of excavated material adjacent to Bayou aux Carpes.</p> <p><i>Indirect Impacts:</i> Flow exchange would increase for approximately 86 acres of wetlands within the BAC Site. It is anticipated that these positive impacts would be greater than negative impacts associated with construction. Therefore, the Proposed Action would likely result in net benefits to wetlands.</p>
Uplands	<p><i>Direct and Indirect Impacts:</i> Upland areas associated with the Bayou aux Carpes plug, shell road and vicinity, would likely persist as low-quality habitat in the future due to the compacted material used for the plug (shell and clay).</p>	<p><i>Direct Impacts:</i> Up to approximately 0.17 acres of low-quality upland habitat would be negatively impacted with construction of the Proposed Action. The majority of these impacts (approximately 0.11 acres) would be to developed land (i.e., shell road) according to the VMI data (Hop et al., 2017; Appendix 12).</p>

Table 7: Comparison of No Action Alternative to Proposed Action		
Resource	No Action Alternative Impacts (includes impacts in 2016 EIS and SEA 570)	Proposed Action Impacts
Wildlife Resources	<p><i>Direct and Indirect Impacts:</i> Impacts to wildlife resources as a result of changes to wetlands, water quality, and hydrology from institution of the Bayou aux Carpes plug would continue. See those sections for details. Without implementation of the Proposed Action, no uplands would be impacted and no increase in wetland functions and values, and therefore no benefits to wildlife resources, as a result of restored hydrology would occur.</p>	<p><i>Direct and Indirect Impacts:</i> Permanent direct and indirect impacts to wildlife would be a result of changes to wetlands, uplands, water quality, and hydrology. There would be negative impacts (approximately 0.17 acres) to low quality upland habitats and 0.5 acres to wetlands. These impacts would be decreased by avoiding impacts to native trees during construction to the maximum extent practicable. There would be temporary impacts to wildlife associated with noise and equipment usage during construction. There would be net benefits to wildlife in the form of increased wetland functions and values associated with increased flow exchange and restored historic hydrologic patterns.</p>
Aquatic and Fisheries Resources	<p><i>Direct and Indirect Impacts:</i> Impacts to aquatic and fisheries resources as a result of changes to wetlands, water quality, and hydrology from institution of the Bayou aux Carpes plug would continue. See those sections of this table for details. Without implementation of the proposed action, benefits to aquatic and fisheries resources associated with restored hydrology and increased wetland functions and values would not occur.</p>	<p><i>Direct and Indirect Impacts:</i> Direct and indirect impacts to aquatic and fisheries resources would be a result of changes to wetlands, uplands, water quality, and hydrology. There would be negative impacts (approximately 0.16 acres) to floating and submerged aquatic vegetation. SAV exists in the project vicinity, but much of this is covered by floating invasive Water hyacinth where construction would occur (WSI, 2015). Excavated plug material would be deposited to create high quality shallow water habitat that could be used as spawning habitat for resident fishes (e.g., Sunfishes, Family: Centrarchidae) and EFH trust species (e.g., red drum, brown shrimp, and white shrimp). In addition, felled trees would be placed to create coarse woody debris that would be beneficial to certain resident fishes (e.g., Crappies; <i>Pomoxis</i> spp.) There would be net benefits to aquatic and fisheries resources in the form of increased wetland functions and values associated with increased flow exchange and increased organism access to higher quality EFH.</p>

Table 7: Comparison of No Action Alternative to Proposed Action		
Resource	No Action Alternative Impacts (includes impacts in 2016 EIS and SEA 570)	Proposed Action Impacts
Protected Species	<p><i>Direct and Indirect Impacts:</i> Habitat in the project vicinity would likely be similar to existing conditions for the no action alternative. Impacts to protected species would be a result of changes to wetlands, uplands, water quality, and hydrology. See those sections for details. There would be no benefits to protected species associated with restored hydrology and increased wetland functions and values as a result of implementation of the Proposed Action.</p>	<p><i>Direct and Indirect Impacts:</i> Activities associated with the Proposed Action were found to not likely to adversely affect any listed species. With removal of the plug and restoration of historic hydrologic conditions, there could be net benefits to protected species associated with changes to wetlands and aquatic and fisheries resources access as they pertain to foraging, nesting and resting habitat, if any protected species are found to utilize the Project Area.</p>
Cultural Resources	<p><i>Direct and Indirect impacts:</i> Without implementation of the Proposed Action, the plug at the confluence of Bayou aux Carpes and Bayou Barataria would remain in-place and there would be no impacts to previously recorded or unknown cultural resources within the area. Cultural resources would continue to be subject to the impacts of human and natural land use patterns and processes that have dominated the area in the past.</p>	<p><i>Direct and Indirect impacts:</i> With implementation of the Proposed Action, the plug at the confluence of Bayou aux Carpes and Bayou Barataria would be removed. All excavation to remove the plug and the placement of the excavated material would take place in the immediate vicinity of the plug and would not impact any known or unknown cultural resources that exist in the Construction Area and has made a determination of No Historic Properties Affected.</p> <p>While Jefferson Parish has a long history of occupation by Native American communities, prior to its establishment and throughout its history, there are currently no protected tribal resources, tribal rights, or Indian lands that have the potential to be significantly affected by the Proposed Actions within in the study area. Therefore, in accordance with USACE Tribal Policy and E.O. 13175, MVN has determined that no tribal resources, rights, or lands would be significantly affected by implementing this action.</p>

Table 7: Comparison of No Action Alternative to Proposed Action		
Resource	No Action Alternative Impacts (includes impacts in 2016 EIS and SEA 570)	Proposed Action Impacts
Aesthetic and Visual Resources	<i>Direct and Indirect Impacts:</i> Without implementation of the Proposed Action, aesthetic and visual resources are likely to persist as they currently exist.	<i>Direct and Indirect:</i> The construction of a sinuous connection between the GIWW and Bayou aux Carpes would maintain and improve wildlife habitat, thus working to directly protect the overall visual character. The use of excavated material beneficially would also enhance and add to the existing network of shallow water habitats while directly contributing to the visually harmonious atmosphere of the area. With the plug removal there would be negative, temporary direct impacts to visual resources in the Project Area and vicinity caused by the project equipment and construction activity until work activities are completed.
Recreational Resources	<i>Direct and Indirect Impacts:</i> Without implementation of the Proposed Action, the conditions within the recreational environment would continue as they have in the past and would be dictated by the natural land use patterns and processes that have dominated the area.	<i>Direct and Indirect Impacts:</i> The proposed plug removal would improve the public's opportunity to observe and utilize fish and wildlife resources within the BAC Site. Recreational opportunities for the general public in and around the construction area and vicinity would experience short-term adverse impacts caused by the construction equipment as described in other sections. The associated noise could disturb local recreational activities such as bird watching, fishing and hunting, until work activities are completed. These impacts would be minor and temporary and should not negatively or significantly impact area wildlife over the long-term.
Air Quality	<i>Direct and Indirect Impacts:</i> Jefferson Parish would be expected to remain within Attainment for the No Action Alternative.	<i>Direct and Indirect Impacts:</i> Long term Impacts would be similar to the No Action Alternative. There would be some, short-term direct and indirect impacts to air quality associated with construction. Once all construction activities a cease, air quality within the vicinity is expected to return to pre-construction conditions. Thus, the ambient air quality in Jefferson Parish would not change from current conditions, and the status of attainment for the parish would not be altered.

Table 7: Comparison of No Action Alternative to Proposed Action		
Resource	No Action Alternative Impacts (includes impacts in 2016 EIS and SEA 570)	Proposed Action Impacts
Navigation	<i>Direct and Indirect Impacts:</i> Navigation would be expected to continue as it does in the existing conditions without implementation of the Proposed Action.	<i>Direct and Indirect Impacts:</i> There would be direct, negative, temporary impacts associated with construction. Nearby mooring structures (e.g., dolphins and pilings) could be used by construction crews and thus be unavailable to other watercraft during construction. This impact would only last during construction. There would be long term direct positive impacts after construction associated with restored direct access from the GIWW to Bayou aux Carpes for small watercraft. There are no long term indirect or direct negative impacts associated with the Proposed Action.

5.1 **Cumulative Impacts Analysis**

The 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.”

Coastal Louisiana, including the BAC Site, 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 would partially restore the hydrologic connection between Bayou aux Carpes and the GIWW and would increase wetland functions and values in the vicinity through this reconnection. There are other projects that would also impact and have impacted the BAC Site, including the NPS’s proposed Canal Reclamation at Barataria Preserve, and the construction of the WBV 404(c) floodwall.

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. Although the Proposed Action would minimally contribute to wetland impacts, the overall benefits from the would work to reduce overall cumulative impacts to wetlands within the Barataria Basin. Additionally, several large-scale restoration projects are being planned, such as the Mid Barataria Sediment Diversion and the NPS’s proposed Canal Reclamation at Barataria Preserve Project that would further work to reduce overall cumulative impacts to wetlands within the basin. The Mid Barataria Sediment Diversion is a large-scale wetland and hydrologic restoration project that could beneficially impact thousands of acres wetlands south of the Project Area. Presently, it has a dedicated funding source, and is working to obtain all necessary permits for construction (<https://www.permits.performance.gov/permitting-projects/mid-barataria-sediment-diversion>). The NPS’s proposed Canal Reclamation at Barataria Preserve Project would improve the hydrology of the JELA’s Barataria Preserve, including the BAC Site. This project has dedicated funding, and NEPA compliance. While the Proposed Action, the NPS’s proposed Canal Reclamation at Barataria Preserve Project, and the Mid Barataria Sediment Diversion would likely improve local and basin-scale wetland functions and values, it is likely that there will be less coastal wetlands in the future than what exists today due to natural and anthropogenic impacts, especially those that contribute to relative sea level rise (RSLR).

Wildlife resources, fisheries and other aquatic resources, and water quality CIs would continue to mirror the trend of wetland loss. Wetland loss associated with climate change and sea level rise would have a negative long-term impact on terrestrial and avian wildlife resources. Although currently existing aquatic and fisheries resources would also experience negative long-term and cumulative effects, as the habitat transitions, support of different aquatic and fisheries resources would be expected. Water quality is also anticipated to decrease with impacts associated with climate change. However, implementation of the Proposed Action would provide benefits to wildlife resources, fisheries and other aquatic resources, and water quality as described in Table 7.

Hydrologic conditions would be altered with climate change. Key drivers of Mississippi delta land loss, relative sea level rise and increased hurricane energy, are projected to continue increasing (Sweet et al., 2017). Increasing open water area at basin to local scales are expected to shift physical hydrologic conditions for remaining terrestrial wetland areas.

In Louisiana, recreational resources would continue to experience negative impacts from persistent coastal and wetland degradation and loss. Within the study area vicinity, potential Mississippi River water and sediment diversion projects could provide fresh water and improve wetlands. Recreational access through canals and bayous in coastal Louisiana may decrease as a result of the construction of hurricane risk reduction projects. However, the result of the Proposed Action would provide an incremental increase in recreational access to the BAC Site.

Air quality and navigation impacts associated with the Proposed Action would be temporary, minor, and during construction only. Therefore, the Proposed Action would not significantly increase cumulative effects for these resources.

The GIWW and related activities, including mooring barges and commercial watercraft in front of and adjacent to the plug at BAC, have altered the natural aesthetic of the area to a somewhat more industrial aesthetic. As such, construction activities would blend into this aesthetic. When completed, the Proposed Project would restore a more natural aesthetic to the area. As such, there would likely be no significant adverse impacts to aesthetics and visual resources as a result of the incremental changes to natural vistas associated with the Proposed Action. Conversely, the Proposed Action would slightly improve the visual aesthetics of the area.

6 Monitoring and Adaptive Management

The CEMVN agreed to plan and implement a Monitoring and Adaptive Management (MAM) Plan and document interagency participation in the development and execution of this plan for the Proposed Action. A MAM Team would be assembled from members of the IET willing to participate in developing and executing the MAM Plan. Final comments from the MAM Team are being requested during public review of SEA 581. The draft MAM plan can be found in Appendix 13. This plan includes monitoring for Augmentation success, as well as monitoring for unintended negative consequences that would be related to Adaptive Management triggers. Hydrodynamic model results would be used to determine monitoring locations. Data from reference sites would be used to account for ongoing environmental changes, such as those associated with climate change. Reference sites would be outside of where the hydrodynamic model results suggest changes in exchange flow would occur.

The purpose of monitoring would be:

1. to determine if the Augmentation is successful,
2. to determine if an adaptive management action is needed due to unintended negative consequences, and
3. to collect data to support augmentation success targets and unintended negative consequences

The MAM Plan would include periodic field data collection and analysis to be presented to the MAM Team lead by the CEMVN or the Non-Federal Sponsor (NFS). Periodic assessments would be presented to the MAM Team for evaluation and adaptive management decisions.

There are four potential adaptive management actions:

1. Re-plug the confluence with new material,
2. Modify channel geometry, and
3. Install a water control structure at the site of the earthen and shell plug.
Natural attenuation, with documentation, to allow natural processes to proceed without modification.

Decisions regarding adaptive management actions would be based on monitoring data and associated adaptive management triggers.

6.1 Augmentation Success

The goal of the Augmentation Measure would be to partially restore hydrologic connection between Bayou aux Carpes and the GIWW. The restored hydrologic connection would be demonstrated upon completion of construction. Elevation surveys that would include the construction area and adjacent bankline of Bayou aux Carpes, a field visit, and photo documentation of a newly created water surface connection between Bayou aux Carpes and the GIWW would demonstrate success.

Increased exchange flow within Bayou aux Carpes is identified as a secondary goal in the MAM Plan. It is closely related to increased hydrologic connection. Hydrologic measurements such as water surface elevation and discharge would be used to demonstrate success of this secondary goal.

6.2 Unintended Negative Consequences

Risks associated with project implementation were determined during plan formulation (Appendix 7). These were used to guide identification of potential unintended negative consequences and to inform adaptive management decisions. There are three parameters that would be monitored to decrease uncertainty associated with these risks:

1. Increased salinity exposure – Water column salinity within Bayou aux Carpes and soil porewater salinities within BAC Site wetlands would be measured.
2. Negative changes to swamp and marsh vegetation communities – community structure and percent cover would be measured at nearby swamp and marsh habitats.
3. Establishment of woody invasive plant species – the vegetation clearing area and any disposal areas within Bayou aux Carpes would be monitored for establishment of woody invasive species for 3 years following construction.

6.3 Supporting Data

Elevation surveys, water surface elevation data, and discharge surveys that would occur after construction to demonstrate augmentation success would continue to be collected after augmentation success is demonstrated. These data would provide information regarding channel geomorphology changes following construction such as erosion and accretion. These data would also be used to support other monitoring data and adaptive management decisions.

7 Coordination and Public Involvement

A Public Notice announcing public review for SEA 581 was published in the Baton Rouge and New Orleans Advocate for 30 days beginning on February 1, 2021 and ending on March 3, 2021. All comments received during the public review period and responses to these comments would be provided in Appendix 14 to the final SEA.

Preparation of this SEA and FONSI was coordinated with appropriate Congressional, Federal, Tribal, state, and local interests, as well as environmental groups and other interested parties.

USACE is the lead agency for this SEA. The NPS has accepted the status of Cooperating Agency for this SEA.

The following agencies, as well as other interested parties, received copies of the draft EA and draft FONSI:

U.S. Department of the Interior, Fish and Wildlife Service
U.S. Environmental Protection Agency, Region VI
U.S. Department of Commerce, National Marine Fisheries Service
U.S. Natural Resources Conservation Service, State Conservationist
U.S. Coast Guard Sector New Orleans
U.S. Coast Guard Marine Safety Unit Baton Rouge
Maritime Navigation Safety Association
The Associated Branch (Bar) Pilots
Crescent River Port Pilots Association
New Orleans Baton Rouge Steamship Pilot Association
Associated Federal Pilots
Big River Coalition
Lower Mississippi River Committee (LOMRC)
Coastal Protection and Restoration Authority Board of Louisiana
Advisory Council on Historic Preservation
Governor's Executive Assistant for Coastal Activities
Louisiana Department of Wildlife and Fisheries
Louisiana Department of Natural Resources, Coastal Management Division
Louisiana Department of Natural Resources, Coastal Restoration Division
Louisiana Department of Environmental Quality
Louisiana State Historic Preservation Officer
Plaquemines Parish Government
Alabama-Coushatta Tribe of Texas
Chitimacha Tribe of Louisiana
Choctaw Nation of Oklahoma
Coushatta Tribe of Louisiana
Mississippi Band of Choctaw Indians
MCN – Muscogee (Creek) Nation
Jena Band of Choctaw Indians
Seminole Tribe of Florida
Seminole Nation of Oklahoma
Tunica-Biloxi Tribe of Louisiana

8 Compliance with Environmental Laws and Regulations

This SEA will be used to support the NEPA compliance requirements for the Federal agencies with jurisdiction over parts of the TSP, including USACE and NPS.

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 will be accomplished before or concurrent with 30-day public and agency review of this SEA 581 and prior to execution of the associated proposed FONSI.

8.1 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 Jefferson Parish, which is currently in attainment of NAAQS. A general conformity determination is not required.

8.2 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. Coordination with LDEQ regarding Section 401 compliance is ongoing.

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 and fill materials into waters of the United States resulting from this Project will be completed. The Draft Section 404(b)(1) public notice would be mailed out for public review comment period during the public review period of this SEA.

The EPA determined that the work associated with the proposed action would satisfy Exemption 3 of their 1985 CWA 404(c) determination for the BAC Site via letter dated December 10, 2020 (Appendix 14). Exception 3 removes from prohibition "...discharges associated with projects with the sole purpose of habitat enhancement and specifically approved by the EPA". As part of this Final Determination, the EPA determined that the following conditions and best management practices are necessary to ensure that any discharges of dredged or fill material to comply with the terms of the 1985 BAC Site Final Determination:

- 1) The CEMVN will confirm in writing with any contractors conducting work as a part of this project the boundaries of the project worksite, per the Proposed Action, so as to prevent unapproved impacts to adjacent wetlands through unauthorized machinery/equipment access or unapproved discharges of dredged or fill material. Discharges of dredged or fill material are restricted to those areas specified in the project proposal.
- 2) During final project design, the CEMVN shall utilize all feasible engineering and construction practices to minimize the potential for impacts to the Bayou aux Carpes wetlands outside the project footprint.

- 3) The approved mode of transportation of excavated material to the final discharge site, as proposed by the District, is for barge transport. Should other means of transport be proposed, the District must seek approval from EPA Region 6 prior to implementation.
- 4) Prior to project implementation, the CEMVN shall confer with the USFWS and comply with any specified endangered species requirements identified by the USFWS.
- 5) Prior to construction, the CEMVN shall be responsible for obtaining all necessary Federal, state and/or local authorizations and conducting all required regulatory coordination and approvals prior to implementing proposed project.
- 6) Throughout the life of the project, the CEMVN shall ensure that any necessary adaptive construction modifications that significantly deviate from the proposed District plan shall be approved by EPA Region 6 prior to implementation.
- 7) The CEMVN shall be responsible for ensuring compliance with the terms of this approval, including the conditions and BMPs. The District shall be responsible for ensuring that all employees and contractors working within the Bayou aux Carpes CWA Section 404(c) site understand the terms and extent of this approval.
- 8) Any violation of the terms of this approval shall be reported by the CEMVN to EPA Region 6 by telephone immediately upon discovery, followed by a written report by the CEMVN describing the circumstances and ecological impacts. In this event, all related work activities shall cease until resolution is reached with EPA.

8.3 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." In accordance with Section 307, a Consistency Determination will be prepared for the proposed project and submitted to Louisiana Department of Natural Resources (LDNR) for the Proposed Action. The FONSI will not be signed until this coordination is completed.

8.4 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. On November 12, 2020, MVN evaluated the effects for the Proposed Action using the Louisiana DKey within the Information for Planning and Consultation system. One T&E species, the West Indian manatee, was identified as being known to occur or believed to occur within the vicinity of the Proposed Action. The effects determination made by the CEMVN was "may affect, but not likely to adversely affect" for this species. The USFWS stated in its concurrence with this determination via a verification letter dated November 12, 2020 (Appendix 14). Therefore, CEMVN had met its consultation requirement regarding ESA trust species.

8.5 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. The USFWS provided a letter stating “no objection” under the authority of the Fish and Wildlife Coordination Act (FWCA, 48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) on November 3, 2020 (Appendix 14).

8.6 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.

An ASTM E 1527-05 Phase 1 Environmental Site Assessment (ESA), HTRW 18-05 dated October 2020 is being maintained on file at CEMVN. The probability of encountering HTRW for the Proposed Action is low based on the initial site assessment. If a recognized environmental condition is identified in relation to the Project Area, the 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.

8.7 Magnuson-Stevens Fisheries Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), as amended, Public Law 104-208, addresses the authorized responsibilities for the protection of EFH by NMFS in association with regional fishery management councils. The NMFS has a “findings” with the CEMVN on the fulfillment of coordination requirements under provisions of the MSFCMA. In those findings, the CEMVN and NMFS have agreed to complete EFH coordination requirements for federal civil works projects through the review and comment on NEPA documents prepared for those projects. The Draft SEA 581 would be provided to the NMFS for review and comment during the public review period. EFH coordination is ongoing.

8.8 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 MBTA. Colonial nesting wading bird, neotropical migratory birds, and other birds are protected under the MBTA (50 CFR 10.13). There are no known wading bird nesting colonies nor any bald eagles’ nests within the vicinity of the Proposed Action. The MVN would survey the Project Area and vicinity for MBTA and BGEPA trust species prior to construction. Coordination with the USFWS would continue for MBTA and BGEPA trust species.

8.9 National Historic Preservation Act and Tribal Consultation

This combined document is being used as an assessment of effect pursuant to the National Historic Preservation Act of 1966 as amended and continues Section 106 consultation with respect to the changes proposed for the Proposed Action and the potential effect on historic resources

In compliance with Section 106 of the National Historic Preservation Act and its implementing regulation found at 36 CFR Part 800, Federal agencies must take into account the effects of their actions on historic properties. 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. The CEMVN has determined that no significant historic properties are present within the Area of Potential Effect for the Proposed Action. Letters with a determination of no historic properties affected were sent to the Louisiana SHPO and Federally-recognized Tribes on January 19, 2021 for a 30-day review period (Appendix 14).

8.10 Organic Act of 1916 and NPS Management Policies 2006, Section 1.4: The Prohibition on Impairment of Park Resources and Values

Restoration of the BAC Site will involve work within JELA and therefore must conform to the requirements of the NPS Organic Act of 1916 (Organic Act). By enacting the Organic Act, Congress directed the U.S. Department of Interior and the NPS to manage units “to conserve the scenery and the natural and historic objects and wildlife therein and to provide for the enjoyment of the same in such a manner and by such a means as will leave them unimpaired for the enjoyment of future generations” (16 USC § 1). Congress reiterated this mandate in the Redwood National Park Expansion Act of 1978 by stating that NPS must conduct its actions in a manner that will ensure no “derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress” (16 USC 1a-1).

NPS Management Policies 2006, Section 1.4.4, explains the prohibition on impairment of park resources and values:

While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them.

The NPS has discretion to allow impacts on Park resources and values when necessary and appropriate to fulfill the purposes of a Park (NPS, 2006; Section 1.4.3). However, the NPS cannot allow an adverse impact that would constitute impairment of the affected resources and values (NPS, 2006; Section 1.4.3). An action constitutes an impairment when its impacts “harm the integrity of Park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values” (NPS, 2006; Section 1.4.5).

In making a determination of whether there would be an impairment, an NPS decision-maker must use his or her professional judgment (NPS, 2006; Section 1.4.7). This means that the decision-maker must consider any EAs or environmental impact statements (EISs) required by NEPA; consultations required under Section 106 of the NHPA; relevant scientific and scholarly studies; advice or insights offered by subject matter experts and others who have relevant knowledge or experience; and the results of civic engagement and public involvement activities relating to the decision (NPS, 2006; Section 1.4.7). At the time that a decision is made, a non-

impairment determination will be prepared for the selected action and appended to the NPS decision document.

8.11 Wetland Protection Director's Order #77-1, and Floodplains Protection Directors' Order #77-2

DO 77-1 and DO77-2 are agency-specific guidance documents produced by the NPS describing how the agency would comply with EO-11990 and 11988.

EO 11990—Protection of Wetlands, directs all federal agencies to avoid, to the extent possible, the 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. In the absence of such alternatives, NPS parks must modify actions to preserve and enhance wetland values and minimize degradation. Consistent with EO 11990 and NPS Director's Order #77-1: Wetland Protection, NPS has adopted a goal of “no net loss of wetlands.” Director's Order #77-1 states that for new actions where impacts to wetlands cannot be avoided, proposals must include plans for compensatory mitigation that restores wetlands on NPS lands, where possible, at a minimum acreage ratio of 1:1.

For the purpose of implementing EO 11990, an area in an NPS unit that is classified as a wetland according to the USFWS “Classification of Wetlands and Deepwater Habitats of the United States” is subject to Director's Order #77-1 (with the exception of deepwater habitats, which are not subject to Director's Order #77-1) (Cowardin et al., 1979). The Cowardin wetland definition encompasses more aquatic habitat types than the definition and delineation manual used by the USACE for identifying wetlands subject to Section 404 of the CWA. The 1987 “USACE Wetlands Delineation Manual” requires that three parameters (hydrophytic vegetation, hydric soil, wetland hydrology) must all be present in order for an area to be considered a wetland. The Cowardin wetland definition includes such wetlands, but also adds some areas that, though lacking vegetation and/or soils due to natural physical or chemical factors such as wave action or high salinity, are still saturated or shallow inundated environments that support aquatic life (e.g., unvegetated stream shallows, mudflats, and rocky shores). Under the Cowardin definition, a wetland must have one or more of the following three attributes:

1. At least periodically, the land supports predominantly hydrophytes (wetland vegetation).
2. The substrate is predominantly undrained hydric soil.
3. The substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year.

The Cowardin wetland definition includes wetlands with one of the three criteria discussed above, but also adds some areas that, though lacking vegetation and/or soils due to natural physical or chemical factors such as wave action or high salinity, are still saturated or shallow inundated environments that support aquatic life (e.g., unvegetated stream shallows, mudflats, rocky shores). As stated above, deepwater habitats are not subject to Director's Order #77-1. The wetland/ deepwater habitat boundary is described in Cowardin et al. (1979) as a depth of 2 meters (6.6 feet) at low water, or at the limits of emergent or woody vegetation extending beyond this depth. The National Wetlands Inventory (NWI) of the USFWS produces information on the characteristics, extent, and status of the nation's wetlands and deepwater habitats. The USFWS definition of wetlands is similar to the NPS definition of wetlands in that only one of three parameters (hydric soils, hydrophytic vegetation, and hydrology) is required to characterize an area as a wetland, based upon the Cowardin Classification of Wetlands

(Cowardin et al., 1979). NWI maps are prepared by the USFWS from the analysis of high altitude imagery and wetlands are identified based on vegetation, visible hydrology and geography. The wetlands depicted on NWI maps are based upon the Cowardin wetland definition and classification system (Cowardin et al., 1979), so (subject to ground-truthing) they are considered wetlands by the NPS. Director's Order #77-1 (Wetland Protection) establishes NPS procedures for implementing EO 11990. This includes preparation of a Wetland Statement of Findings (WSOF) with sufficient information for assessing the potential wetland impacts of the Proposed Actions of NPS managed property.

A Wetland Statement of Findings (WSOF) for the project at JELA will be considered excepted under the guidance of PM 77-1 Wetlands Protection. Because there are less than 0.25 acres of new long term adverse impacts to wetlands, then no Wetlands Statement of Findings (WSOF) would be required under the "restoration" exception (DO 77-1 section 4.2.1.9 page 15).

The NPS reviewed Executive Order 11988, "Floodplain Management," which directs federal agencies to avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative, as well as NPS Director's Order 77-2, and NPS Procedural Manual 77-2, which are agency-specific guidance documents produced by the NPS describing how the agency would comply with EO-11988. This project will be constructed to produce a net benefit to floodplain functions and values and will not pose a threat to human health or safety. Therefore, it is excluded from the requirement to produce a Floodplain Statement of Findings per DO 77-2.

9 Conclusion

The Proposed Action would partially restore hydrologic connectivity between Bayou aux Carpes and the GIWW, providing an extra measure of environmental benefits that would offset any unanticipated indirect impacts associated with the WBV 404(c) floodwall. Construction of this sinuous connection would increase flow exchange and thus the wetland functions and values of approximately 86 acres of the BAC Site. The material disposal plan would improve and/or create wetlands in up to approximately 1.95 acres of the BAC Site. The Proposed Action would provide net hydrologic benefits to 86 acres of wetlands and could create up to approximately 1.6 net wetland acres within the BAC Site.

This office has assessed the environmental impacts of the Proposed Action and has determined that the Proposed Action would have no significant adverse impact on the human and natural environment.

10 Prepared By

SEA 581 and the associated FONSI were prepared by Patrick Smith, PhD, Biologist. Table 8 lists the preparers of relevant sections of this report and the project managers. Dr. Smith can be reached at U.S. Army Corps of Engineers, New Orleans District; Regional Planning and Environment Division South, PDS-C; 7400 Leake Avenue; New Orleans, Louisiana 70118.

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