DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF

Regional Planning and
Environment Division South
Environmental Planning Branch

Decision Record

PROGRAMMATIC INDIVIDUAL ENVIRONMENTAL REPORT #37 WEST BANK AND VICINITY (WBV) HURRICANE AND STORM DAMAGE RISK REDUCTION SYSTEM (HSDRRS) MITIGATION

JEFFERSON, LAFOURCHE, PLAQUEMINES, AND ST. CHARLES PARISHES, LOUISIANA

Description of Proposed Action. The New Orleans District, US Army Corps of Engineers (CEMVN) described and evaluated its proposed mitigation plan to compensate for unavoidable habitat losses caused by the construction of the WBV HSDRRS in Programmatic Individual Environmental Report (PIER) #37. The mitigation plan set forth in the PIER is comprised of both constructible and programmatic features. In this Decision Record, the constructible feature of the selected plan is recommended for implementation while the programmatic features are recommended for further evaluation and design. Future, tiered Individual Environmental Reports (TIERs) will describe the designs for the programmatic features in further detail and will contain further evaluation of the anticipated effects for those features. PIER #37 is attached hereto and is incorporated herein by reference.

The proposed WBV mitigation plan provides compensatory mitigation for impacts (expressed in average annualized habitat units (AAHU's)) to the following habitat types:

Habitat Type	AAHUs Impacted
General Protected-Side (PS) BottomLand Hardwood (BLH)-Wet/Dry	261.96 AAHUs
General Flood-Side (FS) BLH-Wet	121.78 AAHUs
General FS Swamp	134.52 AAHUs
General FS Fresh Marsh	65.92 AAHUs
Park/404(c) FS BLH-Wet	3.08 AAHUs
Park/404(c) FS Swamp	7.19 AAHUs
Park/404(c) FS Fresh Marsh	3.20 AAHUs

The WBV mitigation plan is summarized as follows:

	WBV Mitigation Plan	Design
Constructible Feature	**Mitigation Bank (Protected Side BLH-Wet/Dry)**	Mitigation bank credits from one or more banks to satisfy 261.96 AAHUs for BLH-wet/dry
Programmatic Features	**Lake Boeuf Restoration (general FS BLH-Wet)**	221.9 acres BLH-Wet; borrow - 0 cy
	Lake Boeuf Restoration (general FS Swamp)	319.9 acres swamp; borrow - 0 cy
	Jean Lafitte Restoration (general FS Fresh Marsh)	146.7 acres Fresh Marsh; borrow - 600,000 cy
	Jean Lafitte Restoration (Park/404c FS BLH-Wet)	12.2 acres of BLH-wet; borrow – 480,000 cy
	Jean Lafitte Restoration (Park/404c FS Swamp)	20.5 acres of swamp; borrow – 176,600 cy
	Jean Lafitte Restoration (Park/404c Fresh Marsh)	20.4 acres of fresh marsh; borrow – 150,000 cy

A. Constructible Feature

1. Mitigation Banks

Under the proposed plan, CEMVN would purchase BLH-Wet mitigation bank credits in the WBV basin sufficient to mitigate 261.96 AAHUs (average annual habitat units) of protected side BLH-Wet/Dry impacts. No particular bank(s) is(are) proposed for use at this time. The bank(s) from which credits would be purchased would be selected through a solicitation process; any mitigation bank meeting the eligibility requirements and having the appropriate resource type of credits could submit a proposal to sell credits. If appropriate and cost-effective, CEMVN may choose to purchase mitigation bank credits from more than one bank to fulfill the compensatory mitigation requirements for a particular habitat type.

The purchase of credits is dependent on receipt of acceptable, cost-effective proposals from eligible banks. To be eligible to sell credits to compensate for HSDRRS construction impacts, a bank must be approved by CEMVN and must be in full compliance with its mitigation banking instrument (including its mitigation work plan and all performance criteria), its other legal instruments (such as its conservation servitude and financial assurances) and the standards set forth in 33 CFR Part 332. The recorded conservation servitude and all financial assurances must likewise comply with current standards.

2. Alternative Project to Mitigation Banks:

If, in response to the solicitation, CEMVN does not receive acceptable proposals that would allow it to purchase sufficient mitigation bank credits to meet 100 percent of the mitigation requirement by habitat type, then CEMVN would complete the evaluation of Mitigation Plan Alternative 2 containing the Lake Boeuf project for PS BLH impacts and would issue a supplemental National Environmental Policy Act (NEPA) document for 30-day public review.

a. Lake Boeuf BLH-Dry/Wet Restoration Project: If implemented, this mitigation project would involve restoring BLH-Dry forests and BLH-Wet forests within existing agricultural fields as shown in appendix A, figure A-6 of the PIER. Three BLH-Dry restoration features are proposed; BDP1 (approximately 96.0 acres), BDP2 (approximately 270.3 acres), and BDP3 (approximately 207.3 acres). One BLH-Wet restoration feature is proposed, which is identified as feature BWP1 (approximately 18.1 acres). These proposed restoration features would encompass a total of approximately 591.6 acres, and would be located in Lafourche Parish, just north of Bayou Lafourche and roughly 2 miles west of Raceland. The specific project details are as described in PIER #37.

B. Programmatic Features

1. Lake Boeuf FS BLH-Wet Restoration Project: This project would involve restoring BLH-Wet forests within existing agricultural fields as shown in appendix A. The project would be located in Lafourche Parish, just north of Bayou Lafourche and roughly 2 miles west of Raceland. Five BLH-Wet restoration features are proposed; BWF1 (approximately 42.8 acres), BWF2 (approximately 21.9 acres), BWF3 (approximately 55.6 acres), BWF4 (approximately 57.5 acres), and BWF5 (approximately 44.1 acres). These proposed restoration features would encompass a total of 221.9 acres. The target grade elevation for the proposed BLH-Wet features is between +2.0 feet to +2.5 feet, with a preference for elevations closer to +2.0 feet. Based on a review of the existing LiDAR data, current on site elevations range from 2.2 ft to 4.5 ft. As such, the majority of the project footprint would need to be degraded to obtain the desired target grade elevation. Further description of this proposed project is contained in PIER #37. A future NEPA document will provide additional design details and evaluation of this project.

2. Lake Boeuf FS Swamp Restoration Project: This project would involve restoring agricultural fields, pastures, rangelands, and agricultural ponds (detention areas) to native swamp habitats. Ten swamp restoration features are proposed; S1 (approximately 13.1 acres), S2 (approximately 26.3 acres), S3 (approximately 19.5 acres), S4 (approximately 33.5 acres), S5 (approximately 60.5 acres), S6 (approximately 5.4 acres), S7 (approximately 7.1 acres), S8 (approximately 47.1 acres), S9 (approximately 35.5 acres), and S10 (approximately 71.8 acres). These proposed restoration features would encompass a total of approximately 319.9 acres, and would be located in Lafourche Parish, just north of Bayou Lafourche and roughly 2 miles west of Raceland (appendix A). The target grade elevation for the proposed swamp features is between +1.1 feet to +1.8 feet. Based on a review of the existing LiDAR data, current on site elevations range from 1.5 ft to 3.5 ft. As such, the majority of the project footprint would need to be degraded to obtain the desired target grade elevation. Further description of this proposed project is contained in PIER #37. A future NEPA document will provide additional design details and evaluation of this project.

3. Jean Lafitte FS Fresh Marsh Restoration Project: This mitigation project would involve restoration of FS fresh marsh habitats. Two restoration features are proposed (appendix A). Feature JL1B5 would be built in an open water portion of Yankee pond, would occupy approximately 91.2 acres, and would be located within the Jean Lafitte National Historical Park and Preserve ("Park"). Feature JL15 would be situated in an area along the shoreline of Lake Salvador where prior work has already largely established a marsh platform that was previously an open water portion of the lake. Feature JL15 would encompass a total of approximately 55.5 acres. Portions of this feature would overlap Park property, while the remaining portions would overlap lands not currently owned by NPS. Both of the marsh restoration features would be located in Jefferson Parish. Further description of this proposed project is contained in PIER

#37. A future NEPA document will provide additional design details and evaluation of this project.

4. Jean Lafitte FS BLH-Wet Restoration Project: This project would involve restoring native BLH-Wet habitats in an existing open water area (an existing borrow pit). The project would be located in Jefferson Parish. The proposed restoration features would include JL14A (approximately 6.28 acres), and JL14B (approximately 5.88 acres), as shown in appendix A. Both features would be located within the Park, adjacent to the West Bank HSDRRS Levee. Further description of this proposed project is contained in PIER #37. A future NEPA document will provide additional design details and evaluation of this project.

5. Jean Lafitte FS Swamp Restoration Project: This project would involve restoring native swamp habitats in primarily existing open water areas. The project would be located in Jefferson Parish. The proposed restoration features would include JL7 (approximately 11.31 acres), JL8 (approximately 5.00 acres), and JL9 (approximately 4.13 acres), as shown in appendix A. All three features would be located in the Park, while features JL8 and JL9 would also be located within the 404c area. Further description of this proposed project is contained in PIER #37. A future NEPA document will provide additional design details and evaluation of this project.

Factors Considered in Determination. CEMVN has assessed the impacts of the no action alternative and the proposed mitigation plan on significant resources in the project area, including air quality, water quality, terrestrial habitat, aquatic habitat, fish and wildlife, wetlands, threatened and endangered species, recreation resources, aesthetic resources, cultural resources, farmland, and socioeconomic resources. Since the proposed action recommended for implementation at this time consists of purchasing mitigation bank credits, CEMVN has concluded that there would be no new direct, indirect or cumulative impacts to any significant resources from that action. Future NEPA documents will further evaluate the impacts for the other features contained in the proposed mitigation plan.

Environmental Design Commitments: US Fish and Wildlife Service (USFWS) comments and recommendations from the May 27, 2014 Coordination Act Report are addressed in the Final PIER #37 in Section 8.2.

The CEMVN elected to fulfill its obligations under Section 106 of the National Historic Preservation Act of 1966, as amended, through the development and implementation of a Programmatic Agreement, which was executed 18 June 2013. CEMVN will comply with stipulations contained in the Programmatic Agreement through coordination with the Louisiana State Historic Preservation Officer, the Advisory Council on Historic Preservation, and Federally recognized Indian tribes. National Historic Preservation Act (NHPA) Section 106 consultations are complete for the proposed purchase of mitigation bank credits.

If, following evaluation of the mitigation bank proposals, it becomes apparent that purchasing bank credits is not cost effective or feasible (including lack of satisfactory bids), CEMVN will complete its evaluation of Mitigation Plan Alternative 2 containing the Lake Boeuf project for PS BLH- Dry/Wet impacts. In that event, environmental compliance would be achieved through the following evaluation, coordination, and analysis:

a. ESA section 7 consultation with the USFWS;
b. Coordination under the Louisiana Coastal Resources Program with Louisiana Department of National Resources;
c. Receipt of a Water Quality Certification from the State of Louisiana;
d. Public review of the Section 404(b)(1) Public Notice and signature of the Section 404(b)(1) Evaluation;
e. Coordination with Louisiana Department of Environmental Quality (LDEQ) on the air quality impact analysis;
f. Coordination with National Marine Fisheries Service on EFH recommendations;
g. Completion of NHPA Section 106 consultation pursuant to the Programmatic Agreement; and
h. Issuance of a supplemental NEPA document to the PIER for 30-day public review and comment.

Based on CEMVN's evaluation of the final array of projects as set forth in the PIER to compensate for impacts to each respective habitat type, CEMVN determined that the above-described constructible and programmatic features are the environmentally preferable projects to compensate for WBV HSDRRS habitat losses. However, evaluation of the programmatic features is ongoing. In the event that economic, technical or other considerations renders any of these programmatic features infeasible, CEMVN would evaluate other options to satisfy its mitigation obligations, including potentially evaluating new sites or projects and/or previously-identified mitigation projects. Any changes to the proposed mitigation plan would be fully evaluated in a future NEPA document.

Agency & Public Involvement. Draft PIER #37, which evaluated the impacts of the proposed actions, was released for 30 day public review on 4 April 2014. The comment period ended on 5 May 2014. During this public comment period, comments were only received from the Federal and state governmental agencies. However, during this comment period, a request for a public meeting was received from U.S. Senator David Vitter's office. A public meeting was held in Mathews, Louisiana on 21 May 2014 and comments from the public were received at that meeting and during the week following the meeting. Those comments have been included in the administrative record.

Various governmental agencies, NGOs, and citizens were engaged throughout the preparation of PIER #37. Agency staff from USFWS, National Marine Fisheries Service (NMFS), US Environmental Protection Agency (EPA), US Geologic Survey (USGS), National Park Service (NPS), Louisiana Department of Natural Resources (LDNR), Louisiana Department of Wildlife and Fisheries (LDWF), and Louisiana Department of Environmental Quality (DEQ) were part of an interagency team that has and will continue to have input throughout the HSDRRS planning process (Appendix O).

There have been over 200 public meetings since March 2007 about proposed HSDRRS work. Issues relating to draft PIER #37 have been discussed at some of these public meetings. If requested during TIER public comment periods, public meetings will continue throughout the mitigation planning process.

Draft PIER #37 Public Review Period

1. Agency Comments (Appendix Q) and Responses (Appendix R)

    a. USNPS - Comment letter dated 2 May 2014

1 general comment and 1 specific comment

b. USFWS- Comment letter dated 8 May 2014
   2 general comments and 4 specific comments
c. NMFS - Comment letter dated 5 May 2014
   6 general comment and 7 specific comments
d. CPRAB – Comment letter dated 5 May 2014
   12 specific comments

Three separate comment letters were transmitted by the resource agencies and one from the NFS. Responses to these comments are included in Appendix R of the Final PIER #37. CEMVN will continue to closely coordinate with the resource agencies and the NFS in the development of feasibility level of design for the programmatic features. CEMVN will release additional NEPA documents (Tiered Individual Environmental Reports) evaluating the design details, impact analysis and environmental compliance for the programmatic features.

2. Public Comments and Responses (Appendix R)

   a. Individual comments received – 64
   b. Non-Government Organization letters received - 0
   c. Letters from U.S. Senators from Louisiana - 1
   d. Letters from local governments - 1

There were 74 separate comments made by 45 members of the general public; 1 comment letter was received from U.S. Senator Mary Landrieu; 1 comment letter was received from the Lafourche Parish Council. A majority of the commenters opposed condemnation and the use of private lands for mitigation and asked that the Corps look elsewhere for suitable land (23 comments). Another group of commenters expressed concern over what the project would do to their local community and its economy (22 comments). Concern was also expressed over the potential for the project to induce flooding on adjacent lands and to create mosquito/wild animal problems (11 comments). Senator Landrieu's letter echoed many of the concerns of her constituents. The Lafourche Parish Council's letter advised that the Council had passed a resolution asking that CEMVN not pursue construction of mitigation projects in the Raceland area. CEMVN responses to these comments are included in Appendix R of the Final PIER #37. None of the comments were considered substantive requiring an addendum to the PIER.

Decision. The CEMVN Environmental Planning Branch has assessed the potential environmental impacts of the proposed action described in the Final PIER #37 and the "no action" alternative and has reviewed the comments received during the public review period for Draft PIER #37.

In accordance with the environmental considerations discussed above, the public interest will be best served by implementing the constructible portions of the WBV HSDRRS Mitigation TSMPA: the purchase of mitigation bank credits to fulfill the PS BLH-Dry/Wet impact mitigation requirements. Additionally, CEMVN will conduct further evaluation and agency coordination for the programmatic features of the TSMPA.

CEMVN will prepare future tiered IERs to further evaluate the programmatic features of the proposed mitigation plan. CEMVN will also prepare a Comprehensive Environmental Document (CED) that will contain additional information related to the Final LPV HSDRRS Mitigation Plan as well as a cumulative impacts analysis, and any additional information that addresses outstanding data gaps in any of the IERs.

I have reviewed the WBV HSDRRS PIER #37 and have considered agency recommendations and comments received from the public. I find the proposed mitigation plan will allow CEMVN to fully offset the habitat losses caused by the construction of the WBV HSDRRS as directed by the Water Resources Development Acts of 1986 and 2007 (Public Law 99-662 §906 and Public Law 110-114 §2036) and other laws.

The plan is justified and in accordance with environmental statutes. It is in the public interest to purchase BLH mitigation bank credits to compensate for losses to those habitats and to perform the additional evaluations of the remaining features of the proposed mitigation plan as described in this document and in PIER #37.

13 June 2014
Date

Richard L. Hansen
Colonel, U.S. Army
District Commander

PROGRAMMATIC INDIVIDUAL ENVIRONMENTAL REPORT #37

WEST BANK AND VICINITY HURRICANE AND STORM DAMAGE RISK REDUCTION SYSTEM MITIGATION

JEFFERSON, LAFOURCHE, PLAQUEMINES, AND ST. CHARLES PARISHES, LOUISIANA

PIER #37

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1. INTRODUCTION

The U.S. Army Corps of Engineers (USACE), Mississippi Valley Division, New Orleans District (CEMVN), has prepared this Programmatic Individual Environmental Report # 37 (PIER # 37) to evaluate alternatives for mitigating the impacts associated with the construction of the West Bank and Vicinity (WBV) 100-year Hurricane and Storm Damage Risk Reduction System (HSDRRS). The term "100-year level of risk reduction," as it is used throughout this document, refers to a level of risk reduction that reduces the risk of hurricane surge and wave driven flooding that the New Orleans Metropolitan Area has a 1 percent chance of experiencing each year. The HSDRRS work consists of upgrading the existing system of levees, floodwalls and gates around the New Orleans Metropolitan Area to provide the 100-year level of risk reduction. The WBV portion of the HSDRRS is the work that is occurring on the West bank of the Mississippi River. A list of the abbreviations used in the PIER is provided in appendix P.

PIER # 37 is being prepared in accordance with the National Environmental Policy Act (NEPA) and the Council on Environmental Quality's (CEQ) NEPA implementing regulations (40 Code of Federal Regulations [CFR] §1500-1508), as reflected in the USACE ER 200-2-2 (33 CFR §230). This PIER is being prepared in lieu of a traditional environmental assessment (EA) or Environmental Impact Statement (EIS) pursuant to the CEQ approved NEPA Emergency Alternative Arrangements (40 CFR §1506.11). The Alternative Arrangements can be found at www.nolaenvironmental.gov, and are herein incorporated by reference.

The CEMVN published the Alternative Arrangements in the Federal Register on March 13, 2007. This process was implemented to expeditiously complete environmental analysis for the 100-year level of the HSDRRS, formerly known as the Hurricane Protection System (HPS). The proposed actions are located in southeastern Louisiana (LA) and are part of the Federal effort to construct the HSDRRS in the New Orleans Metropolitan area after the destruction caused by Hurricanes Katrina and Rita.

This PIER provides an assessment of the compensatory mitigation plan for the WBV HSDRRS impacts known to date and identifies the tentatively selected mitigation plan alternative (TSMPA). Sufficient detail and analysis is presented such that one feature (project) of the WBV HSDRRS mitigation plan is recommended for implementation at this time. This feature, referred to as the 'constructible' project, consists of the purchase of mitigation bank credits for general protected side bottomland hardwoods impacts. Additional NEPA document(s) providing site specific impact assessment on the other projects (referred to as 'programmatic' projects) of the TSMPA would tier off this document once the detailed plans and specifications for those programmatic projects are complete. The future tiered Individual Environmental Reports (IERs) are referred to as "TIERs" throughout this document.

Construction impacts of the WBV HSDRRS are described in IERs 12-17, and their associated Supplemental IERs (IERS). The IERs are available on www.nolaenvironmental.gov. The CEMVN continues to make a concerted effort to avoid and minimize environmental impacts to the maximum extent practicable while designing and constructing the HSDRRS. However, unavoidable impacts have occurred and continue to occur to fresh, intermediate, and brackish marsh, bottomland hardwoods dry (BLH-Dry) and wet (BLH-Wet), and swamp.

Compensatory mitigation is an integral feature of the HSDRRS work. The CEMVN is required by the Water Resources Development Acts (WRDAs) of 1986 and 2007 to offset unavoidable habitat impacts through compensatory mitigation by replacing the lost habitat's functions and services in-kind to the extent possible. WRDA 1986, Section 906(d)(1), as amended by WRDA 2007, Section 2036(a), provides: "IN GENERAL. - After November 17, 1986, the Secretary shall not submit any proposal for

the authorization of any water resources project to Congress in any report, and shall not select a project alternative in any report, unless such a report contains (A) a recommendation with a specific mitigation plan to mitigate fish and wildlife losses created by such project, or (B) a determination by the Secretary that such project will have negligible adverse impact on fish and wildlife. Specific mitigation plans shall ensure that impacts to bottomland hardwood forests are mitigated in-kind and other habitat types are mitigated to not less than in kind conditions to the extent possible." Pursuant the Corps' Implementation Guidance for Section 2036(a) of the Water Resources Development Act (WRDA) of 2007, compensatory mitigation should be located within the same hydrologic basin (watershed) as where the impacts occurred. The Clean Water Act (CWA) Section 404(b)(1) Guidelines also require compensatory mitigation for unavoidable habitat losses.

This draft PIER will be distributed for a 30-day public review and comment period. A public meeting specific to the proposed action would be held if requested during the review period. Any comments received during that review period and public meeting would be considered part of the official record. After the 30-day comment period, and public meeting if requested, the CEMVN Commander would review all comments received and make a determination on whether they rise to the level of being substantive. If no substantive comments are received the CEMVN Commander would make a decision on the proposed action. This decision would be documented in a Decision Record (DR). If a comment(s) is determined to be substantive, an Addendum to the PIER responding to the comment(s) would be prepared and published for an additional 30-day public review and comment period. After the expiration of the public comment period the CEMVN Commander would then make a decision on the proposed action that would be documented in a DR.

Unless otherwise indicated, all figures cited can be found in appendix A and all tables in appendix B.

1.1 PURPOSE AND NEED

The purpose of the proposed action is to compensate for habitat losses incurred during construction of the WBV HSDRRS to four specific types of habitat: fresh marsh, swamp, BLH-Dry and BLH-Wet. These habitat types are described in section 2.1. Some of these impacts occurred on the Jean Lafitte National Historic Park and Preserve (JLNHPP) as well as the Bayou aux Carpes 404c area. The proposed compensatory mitigation would replace the lost functions and services of the impacted habitat through restoration or enhancement activities designed to create/increase/improve the habitat functions and services at specific mitigation sites. Impacts to JLNHPP would be mitigated in kind on JLNHPP as per National Park Service (NPS) Director's Order 77-1 requiring impacts occurring on a National Park to be mitigated "on lands managed by the NPS, with the following recommended priority order: 1) within the same wetland system as the impacted wetland; 2) within the same watershed; or 3) in another watershed within the same NPS unit." Additionally, all unavoidable adverse impacts to the Bayou aux Carpes CWA Section 404(c) area would be mitigated within that area and/or JLNHPP as committed to by the CEMVN District Commander in his November 4, 2008 letter to the Regional Administrator for Environmental Protection Agency (EPA) Region 6. This commitment was also cited in EPA's May 27, 2009 Final Determination for the modification of the Section 404(c) determination for Bayou aux Carpes.

1.2 AUTHORITY

The authority for the proposed action was provided as part of a number of HSDRR projects spanning southeastern LA, including the Lake Pontchartrain and Vicinity (LPV) project and the WBV project. Congress passed a series of supplemental appropriations acts following Hurricanes Katrina and Rita to repair and upgrade the projects damaged by these storms.

The authority for the proposed action was provided as part of a number of HSDRRS projects spanning southeastern LA, including the WBV project. Congress passed a series of supplemental appropriations acts following Hurricanes Katrina and Rita to repair and upgrade projects damaged by these storms.

The WBV project was authorized by the WRDA of 1986 (P.L. [Public Law] 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, 101(b)(11) & P.L. 104-303, Section 101(a)(17)). The WRDA 1999 (P.L. 106-53, Section 328) combined the three projects into one project as the West Bank and Vicinity Hurricane Protection Project.

The Department of Defense, Emergency Supplemental Appropriations to Address Hurricanes in the Gulf of Mexico, and Pandemic Influenza Act of 2006 (3rd Supplemental - PL 109-148, Chapter 3, Construction, and Flood Control and Coastal Emergencies) authorized accelerated completion of the WBV project and restoration of project features to design elevations at full Federal expense. The Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery of 2006 (4th Supplemental - PL 109-234, Title II, Chapter 3, Construction, and Flood Control and Coastal Emergencies) and 6th Supplemental - PL 110-252, Title III, Chapter 3, authorizes modification to WBV to provide the level of protection necessary to achieve the certification required for participation in the National Flood Insurance Program; the replacement or reinforcement of floodwalls; and the construction of levee armoring at critical locations. Pursuant to PL 110-329 (7th Construction Supplemental) funds were appropriated, subject to deferred payment by CPRA over a period of 30 years.

1.3 PUBLIC CONCERNS

Throughout the WBV basin, the public has expressed concern that sufficient funding be allocated for the HSDRRS mitigation efforts, that the HSDRRS mitigation is completed in a timely manner, and that those impacts to JLNHPP are sufficiently mitigated on JLNHPP. Concern has also been expressed that mitigation banks are given the opportunity to sell credits to satisfy the HSDRRS mitigation requirement.

1.4 PRIOR REPORTS

1.4.1 INTRODUCTION

A number of studies and reports on water resources development in the project area have been prepared by CEMVN, other Federal, state, and local agencies, research institutes, and individuals. Pertinent studies, reports, and projects are discussed in the following sections.

1.4.2 NEPA DOCUMENTS

- On November 21, 2011, the CEMVN Commander signed a FONSI on SEA# 498, entitled “West Bank and Vicinity, New Orleans, Louisiana Hurricane Protection Project, Implementation of Previously Authorized Mitigation Plans, St Charles and Jefferson Parishes, Louisiana. The document was prepared to address unfulfilled mitigation requirements and to propose mitigation project design changes related to the West Bank and Vicinity Project as authorized prior to Hurricane Katrina.

- On June 19, 2007, the CEMVN Commander signed a FONSI on EA# 439, entitled “West Bank and Vicinity, New Orleans, Louisiana Hurricane Protection Project: Westwego to Harvey Canal

Highway 45 Borrow Pits, Jefferson Parish, Louisiana." The document was prepared to retroactively identify the environmental impacts and propose mitigation for six borrow pits excavated on the flood side (FS) of the levee along Highway 45 for levee enlargement. EA# 439 is a modification to a prior authorized project entitled, "West Bank of the Mississippi River in the Vicinity of New Orleans, La., Feasibility Report and EIS," dated December 1986.

- On Nov 3, 2006, the CEMVN Commander signed a FONSI on EA# 437, entitled "West Bank and Vicinity, New Orleans, Louisiana Hurricane Protection Project, Lake Cataouatche Levee Enlargement Highway 90 to Cataouatche Pump Stations. The document was prepared to evaluate the potential impacts associated with the proposed enlargement to the Lake Cataouatche Area levee, relocation of the drainage canal, excavation of a new borrow pit, and construction of a new haul road and fence.

- On February 22, 2005, CEMVN Commander signed a FONSI on Supplemental EA #306A, entitled, "West Bank of the Mississippi River in the Vicinity of New Orleans, East of Harvey Canal, Floodwall Realignment and Change in Method of Sector Gate." The document was prepared to disclose an additional section of floodwall to be constructed and a change in the construction method for the Harvey Canal gate.

- In 2004, CEMVN Commander signed a FONSI on EA 395 NPS, Lake Salvador Shoreline Protection Project Jean Lafitte National Historical Park and Preserve. The document was prepared to evaluate the impacts associated with building erosion protection for the marshy shoreline of the Preserve (eastern shore of Lake Salvador, now known as the "Geocrib").

- On June 19, 2003, CEMVN Commander signed a FONSI on EA# 373, entitled, "West Bank and Vicinity, New Orleans, Louisiana, Hurricane Protection Project, Lake Cataouatche Area Levee Improvement, Jefferson Parish, Louisiana." The document was prepared to disclose an expansion of the borrow area from the Lake Cataouatche Pump Station to the Bayou Segnette State Park.

- On May 5, 2003, CEMVN Commander signed a FONSI on EA# 337, entitled, "West Bank and Vicinity, New Orleans, Louisiana, Hurricane Protection Project, Algiers Canal Levee, Plaquemines Parish, Louisiana." The document was prepared to obtain suitable levee construction material for the West Bank and Vicinity, New Orleans, Louisiana, project.

- In 2002, CEMVN Commander Signed a FONSI on EA 231-A, USACE LAKE SALVADOR SHORELINE PROTECTION PROJECT Jean Lafitte National Historical Park and Preserve, Barataria Preserve Unit Jefferson Parish, Louisiana. The document was prepared to evaluate the impacts of a minor change to the design evaluated in EA 231. The modification included the construction of a wavebreak at what is now known as the "Geocrib".

- On May 16, 2002, CEMVN Commander signed a FONSI on EA #306 entitled, "West Bank and Vicinity, New Orleans, Louisiana, Hurricane Protection Project, Harvey Canal Sector Gate Site Relocation and Construction Method Change." The document was prepared to disclose a change in the Harvey Canal Sector Gate Relocation and Construction Methodology.

- On August 30, 2000, CEMVN Commander signed a FONSI on EA# 320, entitled, "Harvey Canal Hurricane Protection Features, Jefferson Parish, Louisiana." The document was prepared to disclose a change of erosion prevention modifications along the Harvey Canal and a change of disposal location regarding some of the Cousins Pump Station area features.

- On January 12, 1994, CEMVN Commander signed a FONSI on EA #198, entitled, "West Bank of the Mississippi River in the Vicinity of New Orleans, Louisiana, Hurricane Protection Project, Westwego to Harvey Canal, Jefferson Parish, Louisiana, Proposed Alternative Borrow Sources and Construction Options." The document was prepared to disclose a change of continuous "adjacent cast" FS borrow in several segments of the hurricane protection system to a more centralized FS borrow location near a levee segment adjacent to Highway (Hwy) 45.

- On March 20, 1992, CEMVN Commander signed a FONSI on EA #165, entitled, "West Bank Hurricane Protection Levee, Jefferson Parish, Louisiana, Westwego to Harvey Canal, Hurricane Protection Project Disposal Site." The document was prepared to disclose additional borrow impacts resulting from stockpiling unsuitable excavated materiel adjacent to the V-levee near the Estelle Pump Station.

- On June 3, 1991, CEMVN Commander signed a FONSI on EA #136, entitled, "West Bank of the Mississippi River in the Vicinity of New Orleans, Louisiana (Westwego to Harvey Canal) Hurricane Protection Project." The document was prepared to disclose additional borrow impacts adjacent to the V- levee from the "vertex" to the Estelle Pump Station.

- On March 15, 1990, CEMVN Commander signed a FONSI on EA# 121, entitled "West Bank of the Mississippi River in the Vicinity of New Orleans, Louisiana, Westwego to Harvey Canal (WWHC) Hurricane Protection Project." The document was prepared to disclose a Westwego area levee tie-in, some levee and borrow changes, and a change in the marsh mitigation component.

- In February 1990, General Design Memorandum, Supplement #2 (WWHC) included, among other things, a flip-flop of "adjacent cast" borrow from the protected side of the levee to the FS. This engineering document and subsequent revisions described the changes as minimal from an environmental standpoint and having little change in acres impacted.

- On December 5, 1996, CEMVN published an EIS entitled, "Westwego to Harvey Canal, Louisiana Hurricane Protection Project, Lake Cataouatche Area: Feasibility Report and Environmental Impact Statement. New Orleans, LA. Volumes 1 and 2." The purpose of this report is to present the results of studies to determine the feasibility of modifying the Westwego to Harvey Canal Hurricane Protection Project to provide additional hurricane surge protection to that portion of the west bank of the Mississippi River between Bayou Segnette and the St. Charles Parish line.

- In 1995, CEMVN Commander signed a FONSI on EA 231, USACE LAKE SALVADOR SHORELINE PROTECTION PROJECT Jean Lafitte National Historical Park and Preserve, Barataria Preserve Unit Jefferson Parish, Louisiana. The document was prepared to evaluate the impacts of restoring and protecting the shoreline/marsh area in Jean Lafitte National Historical Park and Preserve, at the northeast corner of Lake Salvador (area now known as the "Geocrib").

- On September 23, 1994 CEMVN published an EIS entitled, "West Bank of the Mississippi River in the Vicinity of New Orleans, LA (East of the Harvey Canal): Feasibility Report and Environmental Impact Statement. New Orleans, LA. Volumes 1 and 2." The purpose of this report is to present the results of studies to determine the feasibility of providing additional

hurricane surge protection to that portion of the west bank of metropolitan New Orleans from Harvey Canal eastward to the Mississippi River

- On October 23, 1986, CEMVN published an EIS entitled, "West Bank of the Mississippi River in the Vicinity of New Orleans, LA. Feasibility Report and Environmental Impact Statement. New Orleans, LA. Volumes 1 and 2." The document was prepared to present the results of studies to determine the feasibility of proving hurricane surge protection to that portion of the west bank of the Mississippi River Jefferson Parish between the Harvey Canal and Westwego.

- On December 18, 1927 a report was submitted entitled "Flood Control, Mississippi River and Tributaries," published as House Document No. 90, 70th Congress, 1st Session that resulted in authorization of a project by the Flood Control Act of 1928. The project provided comprehensive flood control for the lower Mississippi Valley below Cairo, Illinois. The Flood Control Act of 1944 authorized the USACE to construct, operate, and maintain water resources development projects. The Flood Control Acts have had an important impact on water and land resources in the proposed project area.

1.4.3 WBV NEPA DOCUMENTS COMPLETED UNDER ALTERNATIVE ARRANGEMENTS

1.4.3.1 WBV HSDRRS IERs and Impacts

Impacts to the human and natural environment caused by construction of the WBV HSDRRS work were analyzed in numerous IERs. Impacts to wetlands and non-jurisdictional bottomland hardwoods or BLH-Dry require compensatory mitigation by the USACE to reduce the level of impacts and ensure no net loss of these habitat's functions and services. Jurisdictional wetlands and non-jurisdictional bottomland hardwoods forest impacts were assessed in cooperation with an interagency mitigation team in accordance with the NEPA, the Fish and Wildlife Coordination Act, and Section 906(b) WRDA 1986 requirements. Because some discrepancies were found in the impacts documented in the IERs verses the Coordination Act Reports (CARs) and/or in the DRs for the IERs, verification/reconciliation of the correct impact numbers was necessary. In coordination with USFWS and National Marine Fisheries Service (NMFS), the project delivery team (PDT) documented these discrepancies and their final resolution in a 18 December 2013 memorandum (appendix C-2). A summary discussion of impacts by IER can be found in appendix C-1.

A "habitat-based methodology" in the form of the wetland value assessment (WVA) model was used to assess impacts from construction of the HSDRRS work and future benefits to be obtained through the compensatory mitigation projects. The WVA model computes the difference in the habitat value over the period of analysis between the future without and future with project conditions. The difference is expressed as net average annual habitat units (AAHUs). For example, if the net change between the future without project condition (FWOP) and future with project (FWP) over the 50-year period of evaluation is a +0.2 over 100 acres, then that project would produce 20 AAHUs of ecological benefit. The same version of the model was used to calculate both the impacts from construction the HSDRRS work and future benefits to be obtained through the implementation of the mitigation. For further information regarding WVA models please see section 2.6.

1.4.3.2 Government Furnished Borrow IERs and Impacts

In order to raise the level of risk reduction for the HSDRRS system, large quantities of earthen material (borrow) were required. In 2007, CEMVN began an unprecedented search for suitable material to rebuild and reinforce the HSDRRS in the Greater New Orleans Metropolitan Area. Approximately 93

million cubic yards (cy) of material was estimated to be required for the HSDRRS construction borrow program. To date, no wetlands have been impacted in the acquisition of borrow for the HSDRRS. Thus far, the only impacted habitat type requiring mitigation for the HSDRRS borrow is BLH-Dry.

The first stages of borrow procurement for the HSDRRS work utilized identification of sites with appropriate material for acquisition by the Federal Government (Government). Once the sites were either acquired or an easement over them obtained, they were then provided to the HSDRRS construction contractors as potential sources of borrow material. Because the government is providing these sites for borrow excavation in connection with a Federal action, mitigation for habitat impacts if these sites are utilized is the responsibility of the Government. A summary discussion of potential habitat impacts assessed for the borrow sites located in the WBV can be found in appendix C-1.

Mitigation for Government Furnished Borrow Sites
Of the government furnished borrow sites approved for use in the HSDRRS construction, the only site with environmental impacts requiring mitigation utilized to date is the Churchhill Farms Site assessed in IER18. The total impact for the site is 29.9 acres (10.62 AAHUs) of PS BLH-Dry, which would be mitigated with the other WBV HSDRRS impacts.

1.4.3.3 Contractor Furnished Borrow IERs and Impacts

To meet the extremely large need for borrow for the HSDRRS improvements, utilization of Contractor Furnished (CF) borrow was also employed by the CEMVN. Under the CF borrow program, contractors obtain borrow from private landowners whose borrow sites have been previously evaluated in an IER. Before borrow from a CF borrow site may be used in HSDRRS construction, the contractor is required to submit proof that impacts to any habitat type that the Government is required to mitigate under WRDAs of 1986 and 2007 has been mitigated.

To date, no wetlands have been impacted by the excavation of borrow for the HSDRRS program. Mitigation for BLH-Dry impacts under the CF program must be completed by either the land owner or the contractor(s) utilizing the site. Mitigation for BLH-Dry habitats impacted under the CF borrow program is not addressed in this PIER since mitigation for those impacts is performed by either the land owner or the contractor utilizing the site. The CF borrow IERs that addressed utilization of borrow pits found in the WBV basin are IERs 19, 23, 26, 29, 30, 31, 32, and 35. Of the CF borrow sites approved for use in the HSDRRS construction, only the following sites in the WBV basin have been utilized to date (table 1-2):

Table 1-2: CF Borrow Sites

IER	CF Borrow Site
19	River Birch Phases 1 & 2*
23	3C Riverside Phases 1& 2
26	South Kenner Road, Willow Bend Phase I, and Willswood
29	Willow Bend Phase II*
31	Idlewild Stage 2* and River Birch Landfill Expansion
32	Idlewild Stage 1, Plaquemines Dirt & Clay

* use required mitigation

Detailed information on all HSDRRS CF borrow impacts can be found in the CF borrow IERs at http://www.nolaenvironmental.gov/.

1.4.3.4 Revised Impacts

Because the IERs evaluating the HSDRRS risk reduction features were completed at the 35 percent level of design, the footprints stated in those IERs were, in many cases, a worst-case scenario footprint. Through advanced engineering and design, the CEMVN has made a concerted effort to avoid and minimize impacts to the environment to the maximum extent practicable. As such, in many cases, the predicted impacts anticipated in the HSDRRS IERs were significantly reduced as the projects proceeded to 100 percent design. Consequently, to accurately capture the impacts caused by construction of the HSDRRS, the mitigation PDT, in cooperation with the resource agencies, revised the original impact estimates utilizing the 95-100 percent design plans. Additionally, following identification of TSMPA, the revised impacts estimates were again revisited and verified by the United States Fish and Wildlife Service (USFWS) and some correction of NPS impacts based on the Omnibus Act (see section 2.5) occurred, which resulted in further adjustment to the estimated impacts. The results are presented in table 1-3.

Table 1-3: WBV Impacts Based on 95 percent - 100 percent Design Plans

	Protected Side										**Flood Side**												
IER*	Fresh/ Intermediate Marsh		Brackish Marsh		Swamp		BLH wet		BLH dry		Fresh/ Intermediate Marsh		Brackish Marsh		Swamp		BLH wet		BLH dry		Open Water	**TOTAL****	
	Acres	AAHUs	Acres	AAHUs	Acres	AAHUs	Acres	AAHUs	Acres	AAHUs	Acres	AAHUs	Acres	AAHUs	Acres	AAHUs	Acres	AAHUs	Acres	AAHUs	Acres	Acres	AAHUs
12	0	0	0	0	0	0	0	0	181.31	121.47	0	0	0	0	32.93	15.39	2.38	1.98	0	0	0	216.62	138.84
13	0	0	0	0	0	0	0.76	0.18	16.96	10.37	0	0	0	0	31.59	10.00	8.85	3.66	0	0	0	58.16	24.21
14	0	0	0	0	0	0	3.64	2.41	0	0	0	0	0	0	85.30	49.54	11.40	9.08	0	0	0	100.34	61.03
15	0	0	0	0	0	0	5.98	4.06	8.56	2.21	14.50	3.20	0	0	0	0	3.95	2.64	0	0	0	32.99	12.11
16*	0	0	0	0	0	0	0	0	0	0	132.92	65.92	0	0	0	0	86.78	42.27	0	0	0	219.70	108.19
17	0	0	0	0	0	0	5.77	2.76	0	0	0	0	0	0	17.77	16.07	0	0	0	0	0	23.54	18.83
33+	0	0	0	0	0	0	0	0	80.00	48.93	0	0	0	0	0	0	82.00	50.13	0	0	0	162.00	99.06
18 (Churchhill Farms)	0	0	0	0	0	0			29.90	10.62	0	0	0	0	0	0	0	0	0	0	0	29.90	10.62
TOTAL	*0*	*0*	*0*	*0*	*0*	*0*	*16.15*	*9.41*	*316.73*	*193.60*	*147.42*	*69.12*	*0*	*0*	*167.59*	*91.00*	*195.36*	*109.76*	*0*	*0*	*0*	*843.25*	*472.89*

*Includes IERs and supplements except for IER16 which does not include impacts from IERS16.a

+IER33 design has not been updated so the current impacts are the same as those described in the IER.

**Total does not include impacts to open water as stated in this table.

Mitigation for open water impacts will be quantified from the as-built drawings and mitigated for at a later date.

Final Accounting
Once As-Builts (final plans documenting the structures actually built) for all HSDRRS contracts are complete, the mitigation PDT, along with the resource agencies, will revisit the impacts to all habitat types from the HSDRRS construction (including open water). This effort will result in a final computation of impacts and could result in a reduction in the number of or the identification of additional impacts requiring mitigation.

At this time, impacts to open water from construction of bottomland hardwoods and swamp mitigation projects have not been quantified. If there are open water impacts requiring mitigation (appendix D), those impacts would be mitigated as the marsh type closest to the impacts and would be disclosed in the TIER in which mitigation for that marsh type is a constructible feature. See appendix D for the draft guidelines for when impacts to open water would require mitigation. These guidelines would be finalized before the release of the first TIER.

1.4.4 WBV ORIGINAL CONSTRUCTION

Changes to the previously authorized WBV Hurricane Protection Project as assessed in EA 437 entitled "West Bank and Vicinity, New Orleans, Louisiana Hurricane Protection Project, Lake Cataouatche Levee Enlargement Highway 90 to Cataouatche Pump Stations" and EA 439 entitled "West Bank and Vicinity, New Orleans, Louisiana Hurricane Protection Project: Westwego to Harvey Canal Highway 45 Borrow Pits, Jefferson Parish, Louisiana" incurred impacts requiring mitigation. Because the impacts assessed in EAs 437 and 439 used a 100-year period of analysis and because the mitigation plan for those impacts was not fully developed in those EAs, a decision was made to re-assess those impacts using a 50 year period of analysis and to mitigate them along with the WBV HSDRRS impacts (which were also assessed using a 50 year period of analysis). Table 1-4 lists the impacts by habitat type for these two NEPA documents. A summary discussion of these EAs can be found in section 1.4.2 and in appendix C-1.

Table 1-4: Additional WBV Original Construction Impacts

	PS BLH-Dry		FS BLH-Wet		FS Swamp	
EA	Acres	AAHUs	Acres	AAHUs	Acres	AAHUs
439			21.50	15.10	88.5	50.71
437	162.10	58.95				
PS Total	162.10	58.95				
FS Total			21.50	15.10	88.50	50.71

1.5 INTEGRATION WITH OTHER INDIVIDUAL ENVIRONMENTAL REPORTS

The CEMVN prepared the first phase of the Comprehensive Environmental Document (CED) that evaluates the cumulative effects of the HSDRRS work on a system-wide scale. The CED Phase 1 incorporated information from IERs completed by November 15, 2010. The next phase of the CED will include the mitigation plan, long-term monitoring and adaptive management commitments as well as IERs completed after November 15, 2010.

Public review of the CED phase 1 closed June 28, 2013. The next phase of the CED is under development. A decision record will be executed following public review of the final phase of the CED.

2. ALTERNATIVE FORMULATION

The following sections walk the reader through the planning process for the WBV HSDRRS Mitigation from identification of impacted habitats requiring compensatory mitigation to identification of the mitigation plan.

2.1 MITIGATION MEASURE DEVELOPMENT AND SCREENING CRITERIA

The CEMVN is required by law and regulation to compensate for habitat losses through in-kind mitigation. For WBV HSDRRS, this means that CEMVN is required to compensate for impacts to four habitat types: fresh marsh, BLH-Dry, BLH-Wet and swamp.

Freshwater marsh is found in low-lying frequently flooded areas, with the water level remaining on or near the surface for extended periods of time during growing season. It contains emergent herbaceous (non-woody) vegetation adapted to predominantly non-tidal freshwater conditions (salinity less than 5 parts per thousand (ppt) during the growing season March-November).

Bottomland hardwoods are broadleaf deciduous forested wetlands. They are generally found along the edges of lakes and rivers and in sinkholes. Bottomland forests represent a transition between drier upland hardwood forest and swamp. While trees and plants in this ecosystem cannot tolerate long periods of flooding (as in a swamp), they are flooded periodically when water levels rise. Species common to bottomland hardwoods include oaks, hickories, American elm, cedar elm, green ash, sweetgum, sugarberry, boxelder, common persimmon, honey locust, red mulberry, eastern cottonwood, black willow, American sycamore, etc. The designation of 'wet or dry' (e.g. BLH-Wet or BLH-Dry) refers to the amount of flooding experienced by the stand in question. Dry bottomland hardwoods seldom or never experience inundation by flood waters and are not jurisdictional wetlands.

Swamps are broadleaf and needleleaf deciduous forested wetlands that experience inundation either permanently or seasonally throughout the year. They are generally found along the edges of lakes and rivers. A swamp is defined as an area supporting or capable of supporting a canopy of woody vegetation that covers at least 33 percent of the area's surface and with at least 60 percent of that canopy consisting of any combination of bald cypress, tupelo gum, red maple, buttonbush, and/or planer tree.

The proposed compensatory mitigation would replace the lost functions and values of the impacted areas through restoration or enhancement activities that increase/improve the habitat functions and services within a particular mitigation site. Enhancement would involve implementing actions to improve already existing low quality habitat. Restoration would involve creating a habitat type from open water or agricultural fields where none currently exists but which historically occurred in the vicinity of the project area.

Mitigation Formulation Requirements:

In accordance with the USACE Implementation Guidance for Section 2036 of the WRDA 2007, Mitigation for Fish and Wildlife and Wetlands Losses, as well as the standards and policies set forth in 33 CFR Part 332, compensatory mitigation was formulated to occur within the same watershed or hydrologic basin as the impacts and to replace the functions and services of each habitat type with functions and services of the same habitat type. The WBV HSDRRS Mitigation Basin boundaries coincide with the watershed boundaries except for the southern boundary. The southern boundary for planning purposes was limited to the intermediate/brackish marsh interface because the WBV

HSDRRS work only impacted fresh marsh and the functions and services of fresh marsh could not be replaced in areas with salinities greater than those found in intermediate marsh systems.

Mitigation measures were required to either restore or enhance the same habitat types that were impacted (e.g. "habitat type for habitat type") from the HSDRRS construction. The phrase "mitigation measures" refers to potential actions at a given site that could mitigate HSDRRS impacts.

Design of the mitigation measures was completed in cooperation with the PDT which included CEMVN staff, the Non-Federal Sponsor, and the resource agencies. In the case of impacts to BLH-Dry habitats, the PDT determined that the potential mitigation measures could involve restoring or enhancing BLH-Wet habitat instead of BLH-Dry habitat. This is possible because BLH-Wet habitat has an added hydrologic component that allows a greater diversity of species to thrive while still supporting the species that utilize BLH-Dry habitat. The result is an increase in habitat functions and services for BLH-Wet over and above what BLH-Dry would provide. The reverse would not be possible because using BLH-Dry to mitigate BLH-Wet would result in the loss of wetland related functions and services essential to that system. Similarly, impacts to fresh marsh habitats could involve restoring or enhancing intermediate marsh as intermediate marsh provides similar functions and services for many of the same species utilizing fresh marsh.

NEPA Scoping

As part of the NEPA scoping process, public meetings were held at multiple locations within the WBV basin in an effort to obtain potential compensatory mitigation measures from the general public. Suggestions for mitigation measures were received from the general public; non-governmental organizations (NGOs); the non-Federal sponsor, Coastal Protection and Restoration Authority Board (CPRAB); and state and Federal resource agencies. In addition, the PDT also examined (within the basin) existing watershed plans, searched for measures beyond what was already submitted, and developed implementation methods during the value engineering study that could produce sufficient credits to meet the mitigation requirement.

In total, the scoping process resulted in the identification of approximately 636 possible mitigation measures. A figure showing the location of all mitigation measures suggested or developed by the PDT is included in appendix A-3.

USACE approved mitigation banks with perpetual conservation servitudes within the WBV basin currently in compliance with their mitigation banking instrument (MBI) and able to service the habitat types impacted by the HSDRRS work were also considered as potential mitigation measures.

Initial Screening

Screening criteria were developed in accordance with video teleconference factsheets approved by HQUSACE and the CEMVN Commander's Intent to pare down the 636 proposed mitigation measures to a manageable list for further analysis (USACE, 2010). For detailed information on the screening criteria, see appendix F.

The screening criteria were developed to achieve large contiguous tracts of land for the purposes of obtaining greater ecological output within the watershed and to produce cost efficiencies that would be experienced during construction and operation, maintenance, repair, replacement and rehabilitation (OMRR&R) phases. The screening criteria encouraged the grouping of measures of one habitat type with measures of a different habitat type or with other resource managed areas in the same geographical area to form large contiguous tracts of resource managed land.

Proposed measures that did not meet all of the criteria below were eliminated from further consideration:

- Could not convert existing wetlands to uplands;
- Compliant with all applicable laws and policies;
- Located completely within WBV Mitigation Basin;
- Free of known Hazardous, Toxic, or Radioactive Waste (HTRW);
- Provide for in-kind replacement of impacted AAHUs by habitat type (exception: BLH-Dry can be mitigated as BLH-Wet);
- Technically viable (e.g. salinity suitable for target habitat type);
- Could not already be in the Future Without Project Condition;
- Must have independent utility (not dependent on implementation of or modification to other projects);
- Must be easily scaled to meet changing mitigation acreage requirements;
- Could not be a stand-alone BLH-Dry habitat type (requirements allowed for BLH-Dry to be mitigated contiguous with mitigation for other habitat types, and mitigated on flood side (FS) or protected side (PS) of levee);
- Could not be stand alone un-confined marsh nourishment measures;
- Could not be preservation of an existing habitat type;
- Measures that address mitigation requirements for impacts to JLNHPP and 404(c) area must be located wholly within the boundary or acquisition boundary of the JLNHPP;
- Protected side BLH-Wet measures must be contiguous with or within an existing resource-managed area (BLH-Wet protected side impacts may be mitigated protected side or flood side);
- Flood side BLH-Wet measures must be contiguous with or within an existing resource-managed area or with the project area of another proposed mitigation measure;
- Swamp measures must be contiguous with (or within) an existing resource-managed area or with another proposed mitigation measure;
- Flood side mitigation measures must be part of proposed mitigation projects that consist of multiple habitat types unless contiguous with or within another resource-managed area and;
- Meet 100% of the mitigation requirement by habitat type according to the following groupings (FS=flood side; PS=protected side):
    - 100% General BLH-Wet PS (mitigate PS or FS)
    - 100% General BLH-Wet FS (mitigate FS)
    - 100% General Swamp FS (mitigate FS)
    - 100% General Fresh Marsh FS (mitigate FS)
    - 100% park/404(c) BLH-Wet FS (mitigate FS)
    - 100% park/404(c) Swamp FS (mitigate FS)
    - 100% park/404(c) Fresh Marsh FS (mitigate FS)

Table 2-1 lists the impacts based on the first review of the 95-100 percent HSDRRS design plans identified at the time of screening in September 2010. Totals also include impacts identified in EAs 437 and 439 (see section 1.4.4).

Table 2-1. Impacts from WBV HSDRRS Projects Based on 95-100% Design Plans and EA 437 and 439

Habitat Type	AAHUs Impacted
General PS BLH-Wet/Dry	227.75 AAHUs
General FS BLH-Wet	105.30 AAHUs
General FS Swamp	69.57 AAHUs
General FS Fresh Marsh	83.49 AAHUs
Park/404(c) FS BLH-Wet	32.74 AAHUs
Park/404(c) FS Swamp	32.82 AAHUs
Park/404(c) FS Fresh Marsh	3.20 AAHUs

Initial screening reduced the number of potential mitigation measures from approximately 636 (appendix A-4) to 38.

2.2 MITIGATION PROJECT DEVELOPMENT BY HABITAT TYPE

The remaining 38 measures were refined by either combining them with other measures or reshaping (re-configuring) them by habitat type to form mitigation projects. Reshaping of measures occurred when multiple measures existed in a common geographical area. In such cases, these measures were reshaped into a single project by habitat type that maximized the potential returns for that site while meeting the mitigation requirement only. As such, the original measure may not have been eliminated outright, but rather carried forward in an altered state.

Refining of measures resulted in 22 potential mitigation projects. See appendix A-4 for these projects grouped by location.

At the time of screening, mitigation banks existed that had both PS and FS BLH-Wet and swamp credits available for purchase in the WBV basin. Those mitigation banks in the basin that met the initial screening criteria were only able to mitigate the PS BLH-Wet/Dry general impacts (FS banks with BLH-Wet and swamp credits had few credits available; HSDRRS work did not incur impacts to PS swamp).

As a result, the final array of potential mitigation projects for WBV includes the option to purchase mitigation bank credits to satisfy the general PS BLH mitigation requirements only. It is not known which banks would be available when the decision whether to purchase bank credits is made: some banks may not have enough credits remaining, some may be closed, and additional mitigation banks may be approved. As such, a general mitigation bank project for this habitat type (BLH-Wet PS) was created for the next step of the analysis using information obtained from existing banks in the basin and no specific banks were identified. The Regulatory In lieu fee and Bank Information Tracking System (RIBITS) (http://geo.usace.army.mil/ribits/index.html) has information on all currently approved banks in the basin including their credit availability.

2.3 FINAL ARRAY OF MITIGATION PROJECTS BY HABITAT TYPE

Refining of the 38 mitigation measures produced the following final array of 22 potential mitigation projects by habitat type.

General BLH-Dry/BLH-Wet Protected Side Impacts

- Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement
- Dufrene Ponds PS BLH-Wet Restoration
- Lake Boeuf PS BLH-Dry & BLH-Wet Restoration

- Plaquemines, Alt. 2 PS BLH-Wet Restoration
- General Mitigation Bank

General BLH-Wet Flood Side Impacts

- Dufrene Ponds FS BLH-Wet Restoration
- Lake Boeuf FS BLH-Wet Restoration
- Plaquemines, Alt. 2 FS BLH-Wet Restoration

General Swamp Flood Side Impacts

- Dufrene Ponds FS Swamp Restoration
- Lake Boeuf FS Swamp Restoration
- Plaquemines, Alt. 1 FS Swamp Restoration
- Plaquemines, Alt. 2 FS Swamp Restoration
- Salvador-Timken FS Swamp Restoration
- Simoneaux Ponds FS Swamp Restoration

General Fresh Marsh Flood Side Impacts

- Dufrene Ponds FS Marsh Restoration
- Jean Lafitte FS Marsh Restoration
- Plaquemines, Alt. 1 FS Marsh Restoration
- Salvador-Timken FS Marsh Restoration
- Simoneaux Ponds FS Marsh Restoration

Park/404(c) BLH-Wet Flood Side Impacts

- Jean Lafitte FS BLH-Wet Restoration

Park/404(c) Swamp Flood Side Impacts

- Jean Lafitte FS Swamp Restoration

Park/404(c) Marsh Flood Side Impacts

- Jean Lafitte FS Marsh Restoration

See appendix E for the project descriptions and appendix A for the maps of these projects as they looked going into the next level of screening.

All mitigation projects were designed using site specific land loss rates and the intermediate sea level rise (SLR) scenario (see section 2.7 for details). Sea level rise is measured by a tide gauge with respect to the land upon which it is situated. There are three classifications of SLR; low (historic), intermediate, and high. The intermediate and high SLR scenarios are predictions of possible future sea level change. Utilizing the intermediate SLR scenario for project design may result in a larger mitigation project than required, as the intermediate SLR rate is higher than the historic. However, remobilizing to construct additional marsh habitat if the mitigation requirement is not met under the historic SLR scenario would not produce additional savings (due to mobilization costs for dredge equipment). In addition, if an increase in elevation became necessary for forested habitats, borrow placement would be extremely problematic and likely result in an unacceptable increase in mortality of already established forest species, which could necessitate complete rebuild of the project. Since the USACE is required to mitigate the lost habitat's functions and services due to construction of the HSDRRS improvements and since future funding for additional construction is uncertain, overbuilding of the mitigation projects (in size, not elevation) was determined to be the least risk design.

2.4 TENTATIVELY SELECTED MITIGATION PROJECTS

2.4.1 ALTERNATIVE EVALUATION PROCESS

The Alternative Evaluation Process (AEP) was utilized to compare projects mitigating for the same habitat type in the final array to determine the best project for that habitat type. Throughout the AEP process and during screening of projects in the final array, the projects were referred to as 'alternatives' for mitigating an impact to a specific habitat type. These projects were not in and of themselves able to mitigate all impacts incurred from construction of the WBV HSDRRS, but were "project alternatives" for a certain habitat type. Each project is a feature of an overall 'alternative plan' to mitigate all the WBV HSDRRS impacts. It is only the combination of projects by habitat type that can together fully mitigate WBV HSDRRS impacts. During the AEP, mitigation projects within the same habitat type were compared to one another using the following selection criteria:

- Risk and Reliability – This criterion considers issues such as a proposed projects' susceptibility and resiliency to stressors, long-term sustainability, uncertainty relative to CEMVNs ability to implement the project, and uncertainty relative to project success.
- Environmental – This criterion evaluates a proposed project's adverse and beneficial impacts to human and natural resources.
- Time - Time evaluates the duration to contract award and to initial ecological success or Notice of Construction Complete (NCC).
- Cost Effectiveness –This criterion evaluates the average annual cost per average annual habitat unit.
- Other Cost Considerations – This criterion evaluates total proposed project costs including construction, real estate, operations and maintenance, total project and average annual costs over the 50 year period of analysis.
- Watershed and Ecological Site Considerations – This criterion evaluates the proposed project site characteristics such as the role that a potential project would play in terms of creating habitat linkages or wildlife corridors, whether the project is consistent with watershed plans such as Coast 2050, and its proximity to the HSDRRS impacts.

The relative scoring of each project for each criterion under each habitat type produced an overall score. A ranking was then established for the projects under each habitat type based on each project's overall score. The highest ranked project for that habitat type was selected as the TSMP for that habitat type in the TSMPA. Chapter 4 provides an impact assessment on the final array of mitigation projects by habitat type that could be utilized in developing alternative plans. Chapter 5 looks at the environmental impacts of the alternative plans identified for mitigating the WBV HSDRRS impacts as required by NEPA. Selection criteria matrices used during the AEP are located in appendix B, tables 2 through 8. Details on the AEP Plan Selection Criteria are located in appendix G. The TSMPs are found in table 2-2 below and a summary of the selection rationale for each habitat type is explained in section 2.4.2.

Table 2-2. TSMPs

Habitat Type Impacted	TSMP
General PS BLH-Wet/Dry	General Mitigation Bank
General FS BLH-Wet	Lake Boeuf FS BLH-Wet Restoration
General FS Swamp	Lake Boeuf FS Swamp Restoration
General FS Fresh Marsh	Jean Lafitte FS Marsh Restoration
Park/404(c) FS BLH-Wet	Jean Lafitte FS BLH-Wet Restoration
Park/404(c) FS Swamp	Jean Lafitte FS Swamp Restoration
Park/404(c) FS Fresh Marsh	Jean Lafitte FS Marsh Restoration

2.4.2 SELECTION RATIONALE

General Protected Side BLH-W/BLH-D Impacts

Mitigation Banks performed better than all other projects in terms of Risk and Reliability, Environmental, Time, and Other Cost Considerations. Mitigation banks have minimal uncertainty relative to achieving ecological success and implementability because they are already in place and do not require any real estate transactions. Mitigation banking instruments are binding agreements in which the mitigation bank is obligated to monitor ecological success, adaptively manage the site to ensure ecological success, and provide financial assurances for such actions. Because the mitigation banks are already in place and have credits available for the HSDRRS mitigation program, they have no negative environmental impacts compared to existing conditions. Purchase of bank credits can proceed considerably faster than the design, contract award and construction of the other projects. Because multiple mitigation banks may be eligible to sell credits, the CEMVN anticipates that competition would keep the price of credit purchases reasonable. However, there is some uncertainty regarding the price per credit available at the time of purchase. If the bid price per credit would result in a significant cost increase over the estimated cost for the mitigation bank project then the PDT may re-examine the AEP results and may consider moving to the next ranked (or “fall back”) project.

Lake Boeuf, the second highest ranked project, performed well in the AEP and could be implemented if the Mitigation Bank project was ultimately not implementable. In addition, there are potential cost savings that could be realized by building the Lake Boeuf FS BLH, PS BLH, and Swamp projects as a single project if the Mitigation Bank project becomes un-implementable.

General Flood Side BLH-W Impacts

Lake Boeuf performed significantly better than Dufrene Ponds and Plaquemines Alternative 2 in terms of Risk and Reliability, Environmental, Watershed, Cost Effectiveness, and Other Cost Considerations. Lake Boeuf was ranked slightly above the other two projects in terms of Time. Lake Boeuf performed well in evaluation of the Risk and Reliability criteria because there is less uncertainty associated with fill placement at the site (quality, settlement, and location) and other factors related to achieving ecological success and a higher level of adaptability.

General Flood Side Swamp Impacts

Lake Boeuf performed much better than the other five projects in terms of Risk and Reliability, Environmental, Cost Effectiveness, and Other Cost Considerations. Lake Boeuf performed well in evaluation of the Risk and Reliability criteria because the project had minimal uncertainty relative to achieving ecological success and implementability. In consideration of the potential environmental impacts, Lake Boeuf would cause little impact to aquatic resources, improve aesthetics, and also improve recreational opportunities.

General Flood Side Fresh Marsh Impacts

Jean Lafitte performed the same or slightly better than the other four projects in terms of Watershed and Ecological Considerations and Time. For the criteria of Risk and Reliability, the relative probability of exposure to stressors caused Jean Lafitte to be ranked just below Plaquemines Alternative 1. In terms of Environmental impacts, Cost Effectiveness and Other Cost Considerations, Jean Lafitte received considerably better scores.

Park/404c Flood Side BLH-Wet, Swamp, and Fresh Marsh Impacts

These proposed mitigation measures would serve as compensation for WBV HSDRRS impacts to FS BLH-Wet, swamp, and fresh marsh habitats within the boundaries of JLNHPP and within the Bayou aux Carpes 404(c) area. Two BLH-Wet restoration projects were initially developed within the Park. In coordination with the Park and the resource agencies, the features of each project were examined and a single project generated based on technical viability of the features, ease of dredge material delivery, ease of scalability, and most consistent with JLNHPP priorities. Only one swamp project and one marsh project were formulated based on the improvement opportunities available in the Park/404(c) area. No AEP was conducted for any of the habitat types being mitigating for the Park/404(c) impacts due to the limited opportunities in the area to complete the mitigation successfully.

2.4.3 REFORMULATION TO ADDRESS NON FEDERAL SPONSOR CONCERNS

Subsequent to the selection of the original TSMP projects, the Non-Federal Sponsor (NFS) provided consensus on those TSMP projects identified for mitigating Park/404c impacts to swamp habitats (restoration of swamp habitats within existing open water areas), to fresh marsh habitats (restoration of marsh habitat within an existing open water area), and to BLH-Wet flood side habitats (restoration of BLH-Wet habitat within existing open water areas).

The NFS objected to all of the original TSMP projects identified for mitigating general impacts. The basis of this objection was that none of the original TSMP projects coincided with projects identified in the Louisiana Coastal Master Plan (the Master Plan). At the time the NFS lodged this objection, the 2007 Master Plan was being revised and a list of candidate projects was under consideration for the 2012 Master Plan. Although none of the original TSMP projects for mitigating Park/404c impacts coincided with the Master Plan candidate projects, the NFS did not object to these since it was recognized that these TSMP projects must be conducted within the boundaries of the Park due to National Park Service policies and conditions set forth in the modification to the 1985 404c designation that allowed WBV HSDRRS impacts in the EPA-designated 404c area.

The CEMVN WBV Mitigation PDT worked closely with NFS's team from November 2011 through May 2012, to identify potential projects in the 2012 Louisiana Coastal Master Plan that could mitigate for the HSDRRS general impacts with some modifications. All projects identified were more costly than the current TSMPs and the NFS was unwilling to incur the additional expense over and above the costs for the current TSMPs for a locally preferred plan. As such, CEMVN decided to move forward with the identified WBV HSDRRS Mitigation TSMPs. This decision is documented in an August 3, 2012 memorandum to the Assistant Secretary to the Army (appendix H). Further details on the reformulation process and projects considered are located in appendix H.

2.5 CHANGES TO FINAL ARRAY FOLLOWING AEP AND REVISED PROJECT DESCRIPTIONS

Following the AEP and identification of the TSMPs, the impacts revised based on the 95-100 percent plans found in table 2-1 were again revisited and verified by the United States Fish and Wildlife Service (USFWS), which resulted in further adjustment to the estimated impacts.

Prior to 2009, the USACE controlled a roughly 815 acre tract known as the CIT Tract, which is located in the northern portion of JLNHPP, Barataria Preserve Unit (the Park) near the town of Estelle. Congress transferred the CIT Tract from USACE control to NPS control and incorporated it into the Park in 2009, pursuant to the Omnibus Public Land Management Act of 2009 ("Omnibus Act"). Boundaries of the CIT Tract encompass segments of the WBV HSDRRS and extend beyond the protected side of the levee. The Omnibus Act contemplated that lands in the CIT Tract needed for the hurricane protection project would be subject to levee easements. The legislative history of that Act repeatedly evidences similar intent.

NPS policies specify that impacts to wetlands located in property owned or managed by the NPS must be mitigated on lands owned or managed by the NPS. IER 14 and IERS 14.a addressed anticipated HSDRRS construction impacts to habitats in the CIT Tract. IERS 14.a was approved after control of the CIT Tract had been transferred to NPS and, based on the language of the Omnibus Act, did not consider CIT tract impacts to be impacts that should be mitigated within the Park. However, during reassessment of impacts based on the 95-100 percent plans impacts to BLH-Wet and swamp habitats in the CIT Tract were incorrectly included in the impacts to habitats in the Park. As such, during initial project design, the features mitigating impacts to Park/404(c) for BLH and swamp were sized to include mitigation for impacts from the HSDRRS construction to those habitats in the CIT Tract. Once CEMVN discovered the error, the mitigation requirement for both Park/404(c) and General BLH and swamp were adjusted accordingly.

This correction added mitigation to the General FS BLH-Wet and Swamp projects and subtracted mitigation from the Park/404(c) BLH-Wet and Swamp projects. This necessitated changes in the mitigation project designs. Some projects were dropped from further consideration because the sites were not large enough to contain the proposed mitigation projects due to the increased requirement. The adjusted mitigation requirements, f including the mitigation requirements from EA 437 and 439 (table 1-4), are shown in table 2-3.

Table 2-3. Revised WBV Mitigation Requirement

Habitat Type	AAHUs Impacted
General PS BLH-Wet/Dry	261.96 AAHUs
General FS BLH-Wet	121.78 AAHUs
General FS Swamp	134.52 AAHUs
General FS Fresh Marsh	65.92 AAHUs
Park/404(c) FS BLH-Wet	3.08 AAHUs
Park/404(c) FS Swamp	7.19 AAHUs
Park/404(c) FS Fresh Marsh	3.20 AAHUs

The revised project descriptions based on the above adjusted mitigation requirement are described in the following sections. Full project descriptions can be found in appendix E.

Initially, the general mitigation bank project option was only formulated for the habitat types where there existed at least one bank that could to meet 100% of the mitigation need for a given habitat type within the mitigation basin. Since AEP, the CEMVN has decided that the requirement to meet 100% of the

mitigation need for a given habitat type could be met at multiple banks within the mitigation basin having the appropriate resource type of credits. However, this did not change the habitat types for which mitigation may be accomplished through the purchase of mitigation bank credits. Even with the change, approved banks in the basin only have sufficient available credits to compensate for impacts to PS BLH.

2.5.1 COMMON ELEMENTS IN THE PROJECT DESCRIPTIONS

Elements common to all BLH and swamp mitigation projects are:

- It is anticipated that not all plants installed at the time of the initial planting would survive through the first year; thus, it was estimated that about 20 percent of the total number of plants initially installed in each feature would need to be re-planted one year after the completion of the initial plantings. Additional activities that would occur during the project construction phase would include periodic eradication of invasive/nuisance plant species within the mitigation feature as well as mitigation monitoring and reporting conducted in accordance with the applicable guidelines contained in Appendix L (i.e. monitoring and reporting necessary prior to transfer of the project to the NFS).

- Various activities would be necessary during the OMRR&R phase of the project. At a minimum, these would include periodic eradication of invasive/nuisance plants in the mitigation feature and mitigation monitoring and reporting as prescribed in appendix L. Additional activities may need to be performed to ensure compliance with applicable mitigation success criteria (see appendix L).

Elements common to all mitigation projects constructed within open water unless otherwise stated within the specific description are:

- Earthen retention dikes would be mechanically constructed along the perimeter of the proposed mitigation feature.
- The retention dike borrow would be obtained from within the mitigation project footprint.
- A freeboard of one foot is required on all retention dikes.
- Adjustable spill boxes would be placed in the retention dikes to drain excess water from the mitigation site during the hydraulic fill operation.
- Borrow for the mitigation feature would be obtained using a hydraulic cutter-head dredge.
- The fill material would be piped from the borrow site to the mitigation feature in slurry.
- The pipeline corridor would be 100-feet wide except when crossing some land and roadways where it would be reduced as necessary.
- Floating pipeline would be marked on 150-foot centers to prevent navigation hazards. Markers would include lighted and reflective buoys.
- Lake borrow sites would be situated a minimum 2,000 feet from the lake shoreline.
- Marsh tracked vehicles would move the discharge pipeline within the restoration sites when pumping, and maintain the retention dikes as needed for the duration of the dredge fill operation.
- Existing lake bottom elevations vary (Lakes Salvador and Cataouatche); however, in designing the projects, an existing average lake bottom elevation within the footprint of the borrow site of -8.0 feet was assumed.
- Once the dredge and fill operation required to establish the land platforms for the restoration features is complete, an idle period of approximately one year would allow hydraulically placed fill time to settle and dewater to the desired final target elevation.

- At the end of the idle period the perimeter dikes would be degraded to equal the final target elevation.
- After degrading the retention dikes, each mitigation feature (except marsh) would be planted in accordance with the applicable planting guidelines contained in Appendix L. It is anticipated that native herbaceous marsh plants would rapidly colonize the degraded dikes.

2.5.2 MITIGATION FOR GENERAL PS BLH-DRY AND BLH-WET IMPACTS

2.5.2.1 General Mitigation Bank Project (TSMP)

This project assumes that all of the 252.55 protected side BLH-Dry AAHUs and 9.41 protected side BLH-Wet AAHUs could be satisfied through the purchase of mitigation bank BLH-Wet credits and that purchase of mitigation bank credits from a bank with perpetual conservation servitude would yield a result similar to a mitigation project constructed by the Corps (Corps constructed).

If, at the time of solicitation, eligible banks cannot meet 100 percent of the mitigation requirement by habitat type or if the Corps does not receive satisfactory bids (based on cost and/or other factors), then the second-ranked mitigation project would become the TSMP for this habitat type in the TSMPA. In addition, if the actual costs for purchasing the mitigation bank credits turn out to be more than what was estimated for the general mitigation bank project during AEP, a re-analysis comparing the mitigation bank project to the other mitigation projects would be conducted to re-evaluate the ranking of the projects and re-consider the selection of the mitigation bank project as the TSMP. If the costs for implementing the mitigation bank project based on the proposals received exceed those for the second ranked project, then the second ranked project would likely become the new TSMP for this habitat type in the TSMPA.

If purchase of mitigation bank credits were included in the WBV Mitigation TSMPA, all protected side BLH-Dry and BLH-Wet impacts would be mitigated with the purchase of BLH-Wet credits equaling 261.96 AAHUs. Mitigation banks would be required to run the same version of the WVA model as was used to assess the impacts from constructing the HSDRRS to ensure that the assessment of the functions and services provided by the mitigation bank match the assessment of the lost functions and services at the impacted site.

2.5.2.2 Bayou Segnette PS BLH-Dry and BLH-Wet Enhancement Project

This project would involve enhancing an existing degraded bottomland hardwood habitat as mitigation for BLH-Wet and BLH-Dry protected side general impacts. The project would be located adjacent to the Bayou Segnette State Park, on the protected side of the hurricane protection levee in Jefferson Parish. The proposed site is bounded to the south by the existing Westbank Hurricane Protection Levee (HPL) and to the north by Nicolle Boulevard and the NOLA Motorsports Park. The proposed BLH restoration features are identified as BS2 (approximately 1,141.2 acres), BS3A (approximately 37.6 acres), BS4 (approximately 63.4 acres), and BS6 (approximately 21.6 acres), and would encompass approximately 1,263.8 acres combined (appendix A).

The enhancement activities would include the eradication of invasive and nuisance plant species and subsequent planting of native BLH canopy and midstory species in all the enhancement features. Enhancement of feature BS3A would include restoring wetland hydrology by the construction of the hydrologic barrier in the nearby WBV Previously Authorized Mitigation Project. The WBV Previously Authorized Mitigation Project has been approved and funded and as is part of the FWOP conditions. A similar hydrologic barrier would be carried as a construction feature for the proposed project in case the

WBV Previously Authorized Mitigation Project is not constructed. Following completion of the preceding activities, the three BLH-Dry features would be planted.

A preliminary estimate of the potential borrow that might be needed is 10,000 cubic yards. It is emphasized, however, that this is a preliminary estimate. It is possible that that some of the borrow (fill) needed could be obtained by degrading existing spoil berms located within the proposed mitigation features.

It is estimated that this phase would require approximately two to three years to complete. The construction access routes are illustrated in appendix A.

2.5.2.3 Dufrene Ponds PS BLH-Wet Restoration Project

This project would involve restoring BLH-Wet habitat as mitigation for BLH-Dry and BLH-Wet protected side general impacts. The sites would be located along the right descending bank (RDB) of Bayou des Allemands and immediately south of US Highway 90 in Lafourche Parish. The sites are currently open water sites. The two proposed BLH-Wet restoration features are identified as DP1A (approximately 251.1 acres) and DP4A (approximately 321.5 acres), and would encompass approximately 572.6 acres combined (see appendix A).

The length of the retention dikes would be approximately 36,000 linear feet. Total dike volume would be 1,200,000 cubic yards. The two restoration features would be filled to an initial target elevation of +3.0 feet. The total fill quantity required for the BLH-Wet land platforms would be approximately 7,400,000 cubic yards. Target elevation of this feature would be +2.0 feet. The plantings would be in accordance with the BLH-Wet planting guidelines contained in appendix L.

Borrow for earthen fill would be obtained from a 927-acre borrow site in Lake Salvador. The borrow site would be dredged to an elevation of -20 feet or shallower. The borrow pipeline would be roughly 84,000 feet long (see appendix A). The corridor would be placed near the banks of Bayou des Allemands in an effort to minimally impact navigation in the bayou. The estimated construction duration for constructing the retention system and dredge filling the restoration features would be 29 to 32 months.

The duration for the subsequent construction project for degrading the retention dikes and planting the features would be 6 to 9 months.

2.5.2.4 Lake Boeuf PS BLH-Dry and BLH-Wet Restoration Project (Second-ranked project)

This project would involve restoring BLH-Dry forests and BLH-Wet forests within existing agricultural fields as shown in appendix B. Three BLH-Dry restoration features are proposed; BDP1 (approximately 96.0 acres), BDP2 (approximately 270.3 acres), and BDP3 (approximately 207.3 acres). One BLH-Wet restoration feature is proposed, which is identified as feature BWP1 (approximately 18.1 acres). These proposed restoration features would encompass a total of approximately 591.6 acres, and would be located in Lafourche Parish, just north of Bayou Lafourche and roughly 2 miles west of Raceland. Another component of the project would involve the establishment of “mitigation roadways” (see appendix A).

Activities necessary prior to planting the BLH-Dry features would include: clearing and grubbing; grading and tilling necessary to level the surface and prepare the area for planting. If necessary, limited application of herbicides to eradicate invasive and nuisance plant species. Since BLH-Wet forests require a wetland hydrologic regime, it is estimated that approximately 100 percent of the area

within feature BWP1 would need to be degraded (excavated) to reach the desired target grade elevation. The restoration features would be planted in accordance with the BLH-Dry and BLH-Wet planting guidelines contained in appendix L.

The proposed project would require three "mitigation roadways" totaling approximately 2.7 miles and encompassing a total of roughly 9.7 acres based on an assumed right-of-way width of 30 feet as depicted in appendix A. All of the proposed mitigation roadways would be necessary for construction and O&M activities as well as to maintain access for adjacent land owners; the mitigation roadways would likely coincide with existing roadways; however various improvements to these roads would likely be required.

Construction work would occur 6 days per week (Monday through Saturday) during daylight hours. An appropriate traffic control plan would be implemented during construction to help minimize traffic congestion on Highway 308 near the project mitigation roadways and to help minimize traffic safety hazards. It is estimated that the initial project construction phase would last approximately 9 to 12 months.

2.5.2.5 Plaquemines, Option 2 PS BLH-Wet Restoration Project

This project would involve restoring BLH-Wet habitat in an existing open water area and would consist of a single mitigation feature, P3D, which would occupy approximately 417.5 acres. The project would be located in Plaquemines Parish near Jesuit Bend. The proposed restoration feature would be created by placing fill to establish a land platform and then planting the feature with native BLH-Wet species. See appendix A.

The retention dike would be approximately 20,000 linear feet in length. The borrow needed for the project would be obtained from the Mississippi River near Jesuit Bend. Two borrow sites, each occupying approximately 115 acres, would be used. The borrow quantity that would be needed to construct the proposed BLH-Wet feature is approximately 4,600,000 cubic yards. Each borrow site would be excavated to elevation -85.0 feet. The pipeline segment extending from the borrow site to the right descending bank of the river would be submerged along the river bottom and coordinated with the US Coast Guard so as to not adversely impact river navigation.

The remainder of the pipeline from the river bank to the mitigation feature would primarily be above ground. This pipeline segment would be routed beneath Highways 11 and 23 and beneath an existing railroad. Thirty-six inch diameter culverts would be jack-and-bored at each of these crossings and the pipeline routed through the culverts. The estimated construction duration for constructing the retention system and dredge filling the site is approximately 12 to 14 months.

This project has a target grade of elevation +2.0 to +2.5 feet. Plantings would be in accordance with the BLH-Wet planting guidelines contained in appendix L. The duration for the construction phase that involves degrading the retention dike and installing plants would be approximately 3 to 4 months

2.5.3 MITIGATION FOR GENERAL FS BLH-WET IMPACTS

2.5.3.1 Dufrene Ponds FS BLH-Wet Restoration Project

This project would involve restoring BLH-Wet habitat as mitigation for BLH-Wet FS general impacts. The project would be located along the RDB of Bayou des Allemands and immediately south of US Highway 90 in Lafourche Parish. The proposed BLH-Wet restoration feature is identified as DP1B and would encompass approximately 276.2 acres (appendix A). The site is currently an open water site.

The retention dikes would be built to a length of approximately 14,600 linear feet using barge mounted equipment. The total dike volume would be roughly 462,000 cy. The assumed average existing elevation of the DP1B footprint is -4.0 feet. The total fill quantity required to establish the BLH-Wet platform would be approximately 4,100,000 cubic yards. The desired final target elevation is +2.0 feet. Plantings would be in accordance with the BLH-Wet planting guidelines contained in appendix L.

Borrow for earthen fill of the restoration feature would be obtained from Lake Salvador from a site occupying approximately 415 acres. The borrow site would be excavated (dredged) to an elevation of -20.0 feet, or shallower. The borrow pipeline would be roughly 82,000 feet long. Floating pipeline would be primarily be used where the pipeline would need to cross the bayou, a small segment of submerged pipeline would be installed and appropriate signage would be installed to ensure safe passage of vessels over the line. The estimated construction duration for constructing the retention system and dredge filling the site is 14 to 17 months.

The duration for the subsequent construction project for degrading the retention dikes and planting feature DP1B would be approximately 3 to 5 months.

2.5.3.2 Lake Boeuf FS BLH-Wet Restoration Project (TSMP)

This project would involve restoring BLH-Wet forests within existing agricultural fields as shown in appendix A. The project would be located in Lafourche Parish, just north of Bayou Lafourche and roughly 2 miles west of Raceland. Five BLH-Wet restoration features are proposed. These proposed restoration features would encompass a total of 221.9 acres. The proposed project would require five "mitigation roadways" totaling approximately 6.1 miles and encompassing roughly 22.2 acres based on an assumed right-of-way width of 30 feet.

The desired target grade elevation for the proposed BLH-Wet features was set to be in the range of +2.0 feet to +2.5 feet, with a preference for elevations closer to +2.0 feet. Based on a review of the existing LiDAR data, it was determined that the majority of the proposed restoration features would need to be degraded to obtain the desired target grade elevation.

It is estimated that a total of approximately 519,000 cubic yards of soil would need to be excavated (degraded) to establish the desired grades within the restoration features. The final plan for use and disposal of the excavated soil would be determined during the preconstruction engineering and design (PED) phase of the project, as would be the final degrading elevations and contours.

The restoration features would be planted in accordance with the BLH-Wet planting guidelines contained in appendix L to restore a BLH-Wet forest. Construction work would occur 6 days per week (Monday through Saturday) during daylight hours. Construction access to the features would be via the 5 mitigation roadways and Highway 308. An appropriate traffic control plan would be implemented during construction to help minimize traffic congestion on Highway 308 near the project mitigation roadways and to help minimize traffic safety hazards. It is estimated that the initial project construction phase would last approximately 10 to 15 months.

2.5.3.3 Plaquemines, Option 2 FS BLH-Wet Restoration Project

This proposed project would involve restoring BLH-Wet habitat in an existing open water area and consist of a single mitigation (restoration) feature, P3C, which would occupy approximately 206.2 acres. The project would be located off the right descending bank of the Mississippi River at River Mile 68, in Plaquemines Parish, near Jesuit Bend. See appendix A for a depiction of this project. The proposed

restoration feature would be created by placing fill to establish a land platform and then planting the feature with native BLH-Wet species. The retention dike would be approximately 11,000 linear feet in length.

The borrow needed for the mitigation platform would be obtained from the Mississippi River near Jesuit Bend. Two borrow sites, each occupying approximately 115 acres, would be used. The borrow quantity necessary to construct the proposed BLH-Wet feature is approximately 2,300,000 cubic yards. Each borrow site would be excavated to elevation -70.0 feet. The pipeline segment extending from the borrow site to the right descending bank of the river would be submerged along the river bottom and coordinated with the US Coast Guard so as to not adversely impact river navigation. The remainder of the pipeline from the river bank to the mitigation feature would primarily be above ground. This pipeline segment would be routed beneath Highways 11 and 23 and beneath an existing railroad. Thirty-six inch diameter culverts would be jack-and-bored at each of these crossings and the pipeline routed through the culverts. The fill would be placed to an initial slurry elevation of +4.0 feet expected to settle to a final target grade of approximately +2.0 to +2.5 feet.

The estimated construction duration for constructing the retention system and dredge filling the site is 9 to 10 months. Plantings would be in accordance with the BLH-Wet planting guidelines contained in appendix L. The duration for the subsequent construction phase for degrading the retention dike and initial planting would require approximately 3 to 4 months.

2.5.4 MITIGATION FOR GENERAL FLOOD SIDE SWAMP IMPACTS

2.5.4.1 Lake Boeuf FS Swamp Restoration Project (TSMP)

This project would involve restoring agricultural fields, pastures, rangelands, and agricultural ponds (detention areas) to native swamp habitats. Ten swamp restoration features are proposed; S1 (approximately 13.1 acres), S2 (approximately 26.3 acres), S3 (approximately 19.5 acres), S4 (approximately 33.5 acres), S5 (approximately 60.5 acres), S6 (approximately 5.4 acres), S7 (approximately 7.1 acres), S8 (approximately 47.1 acres), S9 (approximately 35.5 acres), and S10 (approximately 71.8 acres). These proposed restoration features would encompass a total of approximately 319.9 acres, and would be located in Lafourche Parish, just north of Bayou Lafourche and roughly 2 miles west of Raceland (appendix A).

Target grade elevation ranging from +1.1 feet to a maximum of +1.8 feet was established for the design of the restoration features. It was determined that the majority of the proposed restoration features would need to be degraded to obtain the desired target grade elevation. In addition to the degrading work, other construction activities necessary prior to planting the restoration features would likely include: clearing and grubbing; grading and tilling necessary to level the surface and prepare the area for planting and if necessary, limited application of herbicides to eradicate invasive and nuisance plant species. Hydrologic improvements may be required to achieve an optimal hydroperiod within the features and improve surface water flow and interchange. The need for such improvements would also be examined further during the project's PED phase. After all the initial clearing/grubbing, grading, and related earthwork activities are completed within the mitigation features themselves, each feature would be planted in accordance with the swamp planting guidelines contained in appendix L.

The proposed project would require a network of "mitigation roadways". The mitigation roadways involved would total approximately 6.7 miles and would encompass a total of roughly 24.3 acres based on an assumed right-of-way width of 30 feet.

Construction work would occur 6 days per week (Monday through Saturday) during daylight hours. An appropriate traffic control plan would be implanted during construction to help minimize traffic congestion on Highway 308 near the project mitigation roadways and to help minimize traffic safety hazards. It is estimated that the initial project construction phase would last approximately 9 to 14 months.

2.5.4.2 Plaquemines, Option 1 FS Swamp Restoration

The proposed project would be located off the right descending bank of the Mississippi River at River Mile 68, in Plaquemines Parish near Jesuit Bend. The project would involve restoring swamp habitat in an existing open water area to mitigate for FS general impacts to swamp habitats. A single restoration feature, feature P1, occupying approximately 310.8 acres would be created by placing fill to establish a land platform and then planting the feature with native swamp species. The retention dike would be approximately 18,500 linear feet in length.

The borrow necessary to fill feature P1 would be obtained from the Mississippi River near Jesuit Bend. There would be two borrow sites with each site occupying approximately 115 acres. The borrow quantity required to construct the proposed swamp feature is approximately 3,100,000 cubic yards. Each borrow site would be excavated to elevation -75.0 feet using a hydraulic cutter-head dredge. The borrow pipeline segment extending from the borrow site to the right descending bank of the river would be submerged along the river bottom and coordinated with the US Coast Guard so as to not adversely impact river navigation.

Once the fill material has settled to the desired final target grade and the retention dikes are degraded, the mitigation feature would be planted in accordance with the swamp planting guidelines contained in Appendix L. The duration for the subsequent construction phase for degrading the retention dike and initial planting is approximately 3 to 4 months.

2.5.4.3 Salvador-Timken FS Swamp Restoration Project

This project would involve restoring swamp habitat as mitigation for swamp FS general impacts. The site established for restoration would be located along the western shore of Lake Cataouatche and south of the Louisiana Cypress Lumber Canal in Saint Charles Parish. The project would be located in an existing open water portion of the Salvador-Timken Wildlife Management Area (WMA). The proposed swamp restoration feature is identified in the plan as ST1 (appendix A) and would encompass approximately 314.8 acres.

The length of the retention dike would be 18,500 linear feet. The total dike volume would be roughly 329,000 cubic yards. Feature ST1 would be filled to an initial target elevation (slurry elevation) of +3.0 feet with a final target elevation of +2.0 feet. The total fill quantity required to create the swamp platform would be approximately 3,100,000 cubic yards.

Borrow for earthen fill for the restoration site would be obtained from an approximately 365-acre borrow site situated in Lake Cataouatche. The borrow site would be dredged to elevation -20 feet or shallower. The borrow floating pipeline would be about 9,300 long. The estimated construction duration for constructing the retention system and dredge filling the site is 11 to 14 months.

Plantings would be in accordance with the swamp planting guidelines contained in appendix L. The duration for the construction phase that includes degrading the retention dikes and the initial planting of feature ST1 is 6 to 9 months.

2.5.4.4 Simoneaux Ponds FS Swamp Restoration Project

This project would involve restoring swamp habitat as mitigation for swamp FS general impacts. The site established is an open water area located along the northern shore of Bayou Gauche, a small outlet of Bayou des Allemands at Black Prince Island in St. Charles Parish. The proposed swamp restoration feature is identified as feature SP3 and would occupy approximately 314.8 acres (appendix A).

Retention dikes would be built to a length of 19,900 linear feet. Total dike volume would be 431,200 cubic yards. The swamp restoration feature would be filled to an initial target elevation of +3.0 feet. The total fill quantity required to establish the marsh platform would be approximately 3,733,200 cubic yards.

The borrow site would be located in Lake Salvador. This site would be dredged (excavated) to an elevation of -20.0 feet or shallower. This borrow site would occupy approximately 442 acres to yield the 7,466,400 cubic yards of borrow required. The total length of the borrow pipeline would be approximately 57,000 feet. The corridor would be placed near the banks of Bayou des Allemands in an effort to minimally impact boat navigation in the bayou.

A necessary land crossing would be approximately 1,600 linear feet long and the pipeline corridor here would be reduced to a 50-foot width. The land crossing includes jacking a steel casing pipe under Bayou Gauche Road and running the dredge pipeline through the casing (jack and bore). In this case a permanent culvert would be installed beneath the highway and the slurry pipeline would be routed through this culvert.

The estimated construction duration for constructing the retention system and dredge filling the site is 11 to 14 months. Plantings would be in accordance with the swamp planting guidelines contained in appendix L. The duration for the subsequent construction project for degrading the retention dike and planting the feature would be from 6 to 9 months.

2.5.5 MITIGATION FOR GENERAL FLOOD SIDE FRESH MARSH IMPACTS

2.5.5.1 Dufrene Ponds FS Fresh Marsh Restoration Project

The proposed project would involve restoration of fresh marsh habitats as mitigation for FS fresh marsh general impacts. The sites established for restoration would be located along the right descending bank of Bayou des Allemands and immediately south of US Highway 90 in Lafourche Parish. The proposed marsh restoration features are identified as DP3 (approximately 94.7 acres) and DP5 (approximately 43.9 acres), as shown in appendix A, and together would total approximately 138.6 acres. The features are currently open water sites.

Retention dikes would be built to a combined length of 15,900 linear feet. Total dike volume would be 413,000 cubic yards. The two restoration features would be filled to an initial target elevation of +2.5 feet. The total fill quantity required would be approximately 1,678,000 cubic yards.

Borrow for earthen fill for the restoration features would be obtained from a 220-acre borrow site in Lake Salvador. The total volume of borrow needed would be approximately 4,182,000 cubic yards. The borrow site would be dredged to an elevation of -20 feet or shallower. The borrow pipeline would be roughly 78,000 feet long. The floating pipeline corridor would be placed near the banks of Bayou des Allemands in an effort to minimally impact navigation in the bayou. The estimated construction

duration for constructing the retention system and dredge filling the restoration features would be 9 to 12 months.

Feature DP3 would be located adjacent to an existing spoil berm running along the eastern side of DP3. Gaps would be excavated in this spoil berm to allow aquatic organisms to access marsh DP3 from marsh and open water habitats situated east of the berm. In addition, this phase of project construction would include excavating trenasses or similar shallow water depressions within the two marsh restoration features to create areas of shallow water interspersion. The duration of this construction phase (degrading and armoring dikes, excavating gaps, installation of armoring) would last roughly 2 to 3 months.

2.5.5.2 Jean Lafitte FS Fresh Marsh Restoration Project (TSMP)

This mitigation project would involve restoration of FS fresh marsh habitats. Two restoration features are proposed (appendix A). Feature JL1B5 would be built in an open water portion of Yankee pond, would occupy approximately 91.2 acres, and would be located within the Park. Feature JL15 would be situated in an area along the shoreline of Lake Salvador where prior work has already largely established a marsh platform that was previously an open water portion of the lake. Feature JL15 would encompass a total of approximately 55.5 acres. Portions of this feature would overlap Park property, while the remaining portions would overlap lands not currently owned by NPS. Both of the marsh restoration features would be located in Jefferson Parish.

Approximately 8,400 linear feet of retention dike would be required. Of the total 8,400 linear feet of dikes, approximately 3,100 linear feet would be armored/capped with stone. This armored dike segment would be located along the eastern boundary of feature of JL1B5 adjacent to Bayou Segnette.

Marsh restoration would require approximately 600,000 cubic yards of material hydraulically dredged from Lake Cataouatche. The borrow site would be approximately 1,200 feet x 1,500 feet (roughly 42.0 acres) with a maximum cut of 10 feet. The pipeline would be approximately 18,000 linear feet and routed adjacent to the western bank of Bayou Segnette. As the pipeline would need to cross a portion of Lake Cataouatche, a small segment of submerged pipeline would be installed at the crossing with appropriate signage to ensure safe passage of vessels over the line. Throughout the initial construction phase, project construction would be coordinated with the US Coast Guard.

The initial target marsh elevation in JJL1B5 would be +3.5 feet with a final target elevation of approximately +1.0 to +1.5 feet. It is estimated that the initial project construction activities discussed above would require approximately 5 to 6 months. The final construction phase would begin following settlement and dewatering of the created marsh platform.

Fish dips (essentially armored gaps) would be constructed in the armored dike segment. The fish dips would allow water exchange and provide aquatic organism access to the marsh feature. It is anticipated that the final phase of construction activities (degrading dikes, constructing trenasses and fish dips, installation of dike armoring) would require approximately 3 to 4 months.

As part of the proposed project, the JL15 footprint would be degraded to design grade elevation of +1.0 to +1.5 feet. Fish dips would be constructed in this dike. The fish dips would allow water exchange and provide aquatic organism access to the marsh feature. It is anticipated that the final phase of JL15 construction activities (re-grading the marsh platform, refurbishment of rock dike, constructing fish dips) would require approximately 4 to 5 months.

2.5.5.3 Plaquemines, Option 1 FS Fresh Marsh Restoration Project

The proposed project would involve restoration of FS fresh marsh habitat in an existing open water area, through creating an earthen platform for the new marsh. The proposed mitigation feature would be located off the right descending bank of the Mississippi River at River Mile 68, in Plaquemines Parish near Jesuit Bend (appendix A). The proposed marsh, feature P2, would encompass approximately 171.2 acres and would serve as mitigation for general fresh marsh impacts.

A retention dike (roughly 15,000 linear feet) would be built along the eastern and southern boundaries of feature P2. The required borrow needed for this feature would be obtained from two 115-acre borrow sites within the Mississippi River near Jesuit Bend. The borrow quantity is approximately 1,800,000 cubic yards. The borrow areas would be excavated to elevation -68.0 feet using a hydraulic cutter-head dredge. The borrow pipeline segment extending from the borrow site to the right descending bank of the river would be submerged along the river bottom and coordinated with the US Coast Guard so as to not adversely impact river navigation. The rest of the pipeline would be primarily above ground. Overall, the total length of pipeline required would be between 10,000 and 12,000 linear feet.

The fill would be placed to an initial slurry elevation of +3.75 feet with a final target grade elevation of +1.5 feet. The estimated construction duration for constructing the retention system and dredge filling the site is approximately 8 to 9 months.

The dikes along the east and south sides of feature P2 would be completely degraded to match the final target elevation of the marsh platform. “Gaps” would be excavated through the perimeter dikes along the west and north sides of P2. In conjunction with this dike degrading effort, trenasses would be constructed as necessary to serve as tidal creeks to facilitate water exchange and create shallow water interspersion features.

The duration for the subsequent construction project for degrading the retention dike, spoil berm gapping, and construction of trenasses would be approximately 2 to 3 months.

2.5.5.4 Salvador-Timken FS Fresh Marsh Restoration Project

This project would involve restoring fresh marsh habitat as mitigation for fresh marsh FS general impacts. The project would be located in an existing open water portion of the Salvador-Timken WMA. The feature is identified in plan as ST2 (appendix A) and would encompass approximately 163.3 acres. The site established for restoration is located along the western shore of Lake Cataouatche and south of the Louisiana Cypress Lumber Canal in St Charles Parish.

The length of the retention dike would be approximately 13,100 linear feet. The total dike volume would be roughly 284,000 cubic yards. Feature ST2 would be filled to an initial target elevation (slurry elevation) of +2.5 feet. The final target elevation of +1.5 feet yields a required earthen lift of 5.5 feet. The total fill quantity required to create the marsh platform would be approximately 1,750,000 cubic yards. A trenasse would be constructed during this construction phase. The trenasse would be excavated to an approximate elevation of 0.0 feet. The bottom width would be approximately 6 feet. The duration for the construction phase for degrading the retention dikes and constructing the trenasse would be 3 to 6 months.

Borrow for earthen fill would be obtained from Lake Cataouatche in an approximately 211-acre borrow site. The total borrow quantity needed would be approximately 4,068,000 cubic yards. The borrow site would be dredged to elevation -20 feet or shallower. The borrow pipeline would be floating about 7,600

long. The estimated construction duration for constructing the retention system and dredge filling the site is 6 to 9 months.

2.5.5.5 Simoneaux Ponds FS Fresh Marsh Restoration Project

This project would involve restoring fresh marsh habitat as mitigation for fresh marsh flood side general impacts. The site established for restoration would be located along the northern shore of Bayou Gauche, a small outlet of Bayou des Allemands at Black Prince Island, in St. Charles Parish. The proposed fresh marsh restoration feature is identified as feature SP2 and would occupy approximately 163.3 acres (appendix A). The site is currently open water.

The length of the perimeter dike would be 13,000 linear feet. Total dike volume would be 231,000 cubic yards. The fresh marsh restoration feature would be filled to an initial target elevation of +2.5 feet with a target elevation of +1.5 feet. The total fill quantity required to establish the marsh platform would be approximately 1,581,000 cubic yards. A trenasse would be excavated to an elevation 0.0 feet with a 6-foot bottom width. The duration for the subsequent construction project for degrading the retention dike and construction the trenasse would be from 4 to 6 months.

Borrow for earthen fill for the restoration features would be obtained from a 184-acre borrow site in Lake Salvador. The borrow site would be dredged to an elevation of -20 feet or shallower. The borrow pipeline corridor would be placed near the banks of Bayou des Allemands in an effort to minimally impact boat navigation in the bayou. The pipeline corridor would include a short land crossing at the entrance from Bayou Gauche to Simoneaux Ponds. The land crossing would be approximately 1,600 linear feet long and the pipeline corridor here would be to a 50 foot width. The land crossing includes a jack-and-bore beneath Bayou Gauche Road. A permanent culvert would be installed beneath the highway and the slurry pipeline would be routed through this culvert. The estimated construction duration for constructing the retention system and dredge filling the site is 6 to 9 months.

2.5.6 MITIGATION FOR PARK/404(c) FS BLH-WET IMPACTS

2.5.6.1 Jean Lafitte FS BLH-Wet Restoration Project

This project would involve restoring native BLH-Wet habitats in an existing open water area (an existing borrow pit). The project would be located in Jefferson Parish. The proposed restoration features would include JL14A (approximately 6.28 acres), and JL14B (approximately 5.88 acres), as shown in appendix A. Both features would be located within the Park, adjacent to the West Bank HSDRRS Levee.

Features JL14A and JL14B would be constructed by placing fill material in the borrow pit to establish earthen platforms for the restored habitats. The mitigation features would be filled with an estimated 18 feet of sand to elevation -0.0 feet. A 4-foot clay cap to elevation +3.5 feet would then be placed on top of the sand fill. It is anticipated that it would take approximately 1 year for the fill materials to settle to the desired final target grade of elevation +2.0 feet.

Approximately 400,000 cubic yards of sand fill and 80,000 cubic yards of the clay cap would be required to fill the 12.2 acres being restored to BLH-Wet habitats. These borrow materials would be obtained from off-site government furnished and/or contractor furnished borrow pits.

Project access would be via two roadways extending west from Barataria Boulevard (see appendix A).

An appropriate traffic control plan would be implemented during the initial construction phase to minimize traffic congestion and safety hazards. Establishment of the construction access routes would require clearing a corridor, roughly 20-feet wide, through existing wetland habitats.

The initial construction phase would last roughly 9 to 10 months. Plantings would be in accordance with the BLH-Wet planting guidelines contained in appendix L. This secondary construction phase, would likely last approximately 3 to 4 months.

2.5.7 MITIGATION FOR PARK/404 (c) FS SWAMP IMPACTS

2.5.7.1 Jean Lafitte FS Swamp Restoration Project

This project would involve restoring native swamp habitats in primarily existing open water areas. The project would be located in Jefferson Parish. The proposed restoration features would include JL7 (approximately 11.31 acres), JL8 (approximately 5.00 acres), and JL9 (approximately 4.13 acres), as shown in appendix A. All three features would be located in the Park, while features JL8 and JL9 would also be located within the 404c area.

Proposed feature JL7 would encompass a segment of an existing man-made canal, although the far eastern end of this feature would encompass a previously filled and disturbed upland area. A portion of an existing spoil berm running along the north side of JL7 would be cleared and degraded (excavated) to use as a source of fill to establish feature JL7. The existing upland area within the eastern end of the JL7 footprint would also be cleared and degraded.

Another component of the JL7 swamp restoration would involve excavating “gaps” in the existing spoil berms adjacent to both sides of Millaudon Canal. Each gap would be degraded to approximately elevation 1.0 feet to match the existing grades typically found in nearby swamp habitats.

The quantity of fill that would be obtained from the degrading of the spoil berm adjacent to JL7 and from degrading the existing upland portion of JL7 is approximately 35,000 cubic yards. Combining this with the material obtained from degrading the Millaudon Canal gaps would yield a total of roughly 36,600 cubic yards that would be placed in the existing canal portion of JL7 to establish the platform for the proposed JL7 swamp. However, it is estimated that an additional 140,000 cubic yards of fill (borrow) would be required to bring the canal portion of JL7 to the initial target grade elevation.

Project access would be via two roadways extending west from Barataria Boulevard.
Due to the anticipated volume of dump truck traffic, an appropriate traffic control plan would be implemented during the initial construction phase to minimize traffic congestion and safety hazards.

The initial construction phase to establish feature JL7 would require an estimated 8.5 to 9.5 months. Once settled, the restoration feature would be planted native swamp canopy and midstory species in accordance with the swamp planting guidelines contained in appendix L.

The proposed restoration features JL8 and JL9 would encompass existing canals that would be filled and planted to restore native swamp habitat. Two construction access corridors would be required to build features JL8 and JL9. There are existing spoil berms on the north and south sides of both restoration features which would be “gapped” to improve surface flow and exchange. Each gap would be degraded to approximately elevation 1.0 feet to match the existing grades typically found in nearby swamp habitats.

It is estimated that approximately 3,600 cubic yards of fill would be obtained through construction of the spoil berm gaps. However, it is estimated that an additional 135,000 cubic yards of fill would be required to establish the earthen platforms for the restored swamp features. This borrow material would be bucket dredged from the Gulf Intracoastal Waterway (GIWW). The proposed borrow area would be approximately 70 feet wide and 5,000 feet long (17.2 acres) and would be dug to 4 feet below existing grade with an allowable 1 foot of overdepth. All activities within the GIWW would be coordinated with the US Coast Guard as to not impede navigation.

The initial construction of JL8 and JL9 would require about 3 to 4 months. Plantings would be in accordance with the swamp planting guidelines contained in appendix L. The final construction phase (e.g. initial planting of features JL8 and JL9) would require roughly 2 to 3 weeks.

2.5.8 MITIGATION FOR PARK/404 (c) FS FRESH MARSH IMPACTS

2.5.8.1 Jean Lafitte FS Fresh Marsh Restoration

This mitigation project would involve restoring fresh marsh habitat from open water. The single proposed marsh restoration feature, JL1B4, would encompass approximately 20.4 acres, located in Jefferson Parish within the Park (appendix A). Restoration work would involve establishing a land platform for the new marsh habitat proposed.

Approximately 3,780 linear feet of retention dike would be required. Of the total 3,780 linear feet of dikes, approximately 1,780 linear feet would be armored/capped with stone during the second project construction phase. Fish dips would be constructed in the armored dike segment.

Marsh restoration would require approximately 150,000 cubic yards of material from Lake Cataouatche. The borrow site would be approximately 1,500 feet by 300 feet (roughly 10.3 acres) with a maximum cut of 10 feet. The pipeline would be routed adjacent to the western bank of Bayou Segnette. Throughout the initial construction phase, project construction would be coordinated with the US Coast Guard.

The initial target marsh elevation (elevation of slurry fill) would be +3.5 feet. It is estimated that the initial project construction activities discussed above would require approximately 3 to 4 months. The final target elevation of this feature is approximately +1.0 to +1.5 feet. The final construction phase would begin following settlement and dewatering of the created marsh platform.

In conjunction with this dike degrading effort, trenasses would be constructed as necessary to serve as tidal creeks to facilitate water exchange and create shallow water interspersion features within JL1B4. It is anticipated that the final phase of construction activities (degrading dikes, constructing trenasses and fish dips, installation of dike armoring) would require approximately 3 to 4 months.

2.6 TENTATIVELY SELECTED MITIGATION PLAN ALTERNATIVE

The following tentatively selected mitigation projects (TSMPs) by habitat type were combined like building blocks to form the tentatively selected mitigation plan alternative (TSMPA) for the WBV HSDRRS Mitigation Plan.

Table 2-4. WBV HSDRRS TSMPA

Habitat Type	TSMP Project	AAHUs Impacted	Mitigation Project Acres
General PS BLH-Wet/Dry	Mitigation Bank	261.96 AAHUs	TBD
General FS BLH-Wet	Lake Boeuf	121.78 AAHUs	221.90
General FS Swamp	Lake Boeuf	134.52 AAHUs	319.80
General FS Fresh Marsh	Jean Lafitte	65.92 AAHUs	138.00
Park/404(c) FS BLH-Wet	Jean Lafitte	3.08 AAHUs	12.16
Park/404(c) FS Swamp	Jean Lafitte	7.19 AAHUs	20.44
Park/404(c)FS Fresh Marsh	Jean Lafitte	3.20 AAHUs	20.40

2.7 WVA MODEL AND SEA LEVEL RISE ANALYSES

WVA Model Certification

The WVA Bottomland Hardwood and Swamp Community Models used for the HSDRRS Mitigation completed model certification in accordance with EC 1105-2-412 and were approved by USACE Headquarters for regional use November 8, 2011.

Version 1.0 of the Coastal Marsh Community WVA model was also approved for use for the HSDRRS Mitigation project (appendix I). This approval for use was based on the decision of the Headquarters USACE Model Certification Panel which considered the National Ecosystem Restoration Planning Center of Expertise's (ECO-PCX) assessment of the model. Adequate technical reviews have been accomplished and the model meets the certification criteria contained in EC 1105-2-412. However, as indicated by the ECO-PCX, there are a number of unresolved issues related to the form of suitability graphs for model Variables 1, 2, and 3 and the aggregation methods used to combine the marsh habitat units and open water habitat units for each sub-model.

To increase the understanding of the sensitivity of the Coastal Marsh Community WVA model to the unresolved issues and to assess the impact the model differences may have had on decision-making, the ECO-PCX worked with the PDT to conduct sensitivity analyses for the application of the marsh model to the HDRRS Mitigation project (appendix J). These sensitivity analyses were performed on the final array of potential mitigation projects involving mitigation of impacts to marsh habitats (e.g. the five General Marsh mitigation projects and the one Park/404(c) Marsh mitigation project discussed in section 2.4.1). The primary objective of the analyses was to determine whether the ECO-PCX's suggested revisions to the marsh WVA models would have changed the rankings of the cited marsh mitigation projects compared to the rankings of these projects that were based on the Version 1.0 Coastal Marsh Community WVA models (refer to section 2.4.3, which discusses the selection rationale; the ranking of potential marsh mitigation projects was partially based on outputs from the Version 1.0 marsh WVA models). The sensitivity analyses indicated that use of the ECO-PCX's suggested changes to the marsh WVA models would have had relatively little effect on the rankings.

WVAs

The WVA methodology operates under the assumption that optimal conditions for general fish and wildlife habitat within a given coastal wetland type can be characterized, and that existing or predicted conditions can be compared to that optimum level to provide an index of habitat quality. Habitat quality is estimated or expressed through the use of a mathematical model developed specifically for each wetland type. Each model consists of: 1) a list of variables that are considered important in characterizing fish and wildlife habitat; 2) a Suitability Index graph for each variable, which defines the

assumed relationship between habitat quality (Suitability Index) and different variable values; and 3) a mathematical formula that combines the Suitability Index for each variable into a single value for wetland habitat quality. That single value is referred to as the Habitat Suitability Index, or HSI.

The following WVA models (version 1.0) were used for the HSDRRS mitigation effort: 1) CWPPRA, WVA Methodology, Bottomland Hardwood Community Model; 2) CWPPRA, WVA Methodology, Swamp Community Model; 3) CWPPRA, WVA Methodology, Coastal Marsh Community Model for Fresh/Intermediate Marsh; and 4) CWPPRA, WVA Methodology, Coastal Marsh Community Model for Brackish Marsh.

The WVA models assess the suitability of each habitat type for providing resting, foraging, breeding, and nursery habitat to a diverse assemblage of fish and wildlife species. This standardized, multi-species, habitat-based methodology facilitates the assessment of project-induced impacts on fish and wildlife resources. The coastal marsh WVA models consists of six variables: 1) percent of wetland area covered by emergent vegetation; 2) percent of open water area covered by aquatic vegetation; 3) marsh edge and interspersion; 4) percent of open water area $\leq$ 1.5 feet deep in relation to marsh surface; 5) salinity; and 6) aquatic organism access. The swamp WVA model consists of four variables: 1) stand structure; 2) stand maturity; 3) water regime; and 4) salinity. The Bottomland Hardwood Community Model, which was used for BLH-Wet and BLH-Dry features, consists of seven variables: 1) stand structure; 2) stand maturity; 3) understory/midstory; 4) hydrology; 5) size of contiguous forests areas; 6) suitability and traversability of surrounding land uses; and 7) disturbance.

Values for variables used in the models are derived for existing conditions and are estimated for conditions projected into the future if no mitigation efforts are applied (i.e., FWOP), and for conditions projected into the future if the proposed mitigation project is implemented (i.e., FWP), providing an index of habitat quality, or habitat suitability, for the period of analysis. The HSI is combined with the acres of habitat to generate a number that is referred to as "habitat units." Expected project impacts/benefits are estimated as the difference in habitat units between the FWP scenario and the FWOP scenario. To allow comparison of WVA benefits to costs for overall project evaluation, total benefits are averaged over a 50-year period, with the result reported as AAHUs. Assumptions used for the WBV HSDRRS mitigation WVAs are found in appendix K.

Sea Level Rise Analysis

Wetland Acreage Predictions Under Increased Sea Level Rise (SLR) Rates

In compliance with USACE policy (EC1165-2-212), the performance of all projects under all three SLR scenarios was analyzed to verify selection of the TSMPs. Potential increases in SLR could affect the performance and therefore ability of a mitigation project to achieve replacement of the services and functions of the impacted habitat types. Because all of the mitigation projects were designed based on the intermediate SLR scenario to account for potential uncertainties in future SLR impacts, the risk of the proposed projects not successfully meeting the mitigation requirement due to SLR has been minimized.

The intent of compensatory mitigation is to offset unavoidable habitat losses by replacing those impacted habitats by restoring (re-establishment or rehabilitation), establishing (creation), or enhancing a naturally functioning system. Once the project meets its long term success criteria, it will experience natural successional phases common to that habitat type. Once the functions and services of the affected habitat have been replaced and the mitigation project becomes a naturally functioning, self-sustaining system whose habitat is protected in perpetuity, the compensatory mitigation obligation is satisfied.

Using USACE-predicted future water levels under the SLR scenarios, those water levels were converted into relative sea level rise (RSLR) rates, incorporating sea level rise effects measured at the gauges and land loss experienced in the extended project area for each project. No operations and maintenance activities were planned for any of the projects in relation to future elevation changes. The WVA then utilized the RSLR rates and project design to predict FWP acres left at the end of the 50-year period of analysis. Long term sustainability (percent land left at the end of the period of analysis) was used to analyze the impact the different SLR scenarios had on the project areas. Comparison between the long term sustainability numbers experienced under the intermediate and high SLR scenarios for all of the projects in the final array supported the choice of the TSMPs, namely all the TSMPs for all habitat types performed the best under the influence of both the intermediate and high SLR scenarios (all projects selected had the highest long term sustainability numbers). This comparison also supported the second place ranking for the projects mitigating general BLH and swamp requirements (where a mitigation bank is the current TSMP). See appendix B, table 9 for details of the 3 SLR analyses.

2.8 DATA GAPS AND UNCERTAINTIES

Impact Assessment

The WBV mitigation requirement has been assessed through review of the 95-100 percent design plans for all the HSDRRS work. Once as-builts for the whole HSDRRS are complete, a final reassessment would be completed to ensure all impacts from construction of the HSDRRS are fully mitigated. If additional impacts are identified beyond what has been mitigated at that time, then an additional NEPA document would be prepared analyzing options to complete the outstanding mitigation. This document would be available for public review and comment.

Tropical Storms

Tropical storm events can directly and indirectly contribute to coastal land loss through erosion from increased wave energies, removal and/or scouring of vegetation from storm surge and saltwater intrusion into estuaries and interior wetlands. Wetland loss and degradation of large areas can occur over a short period of time as a result of storms.

Approximately 52,480 acres of marsh were permanently or temporarily converted to open water in the Pontchartrain Basin following Hurricane Katrina, (Barras, 2009). There is a risk that a single storm event, or multiple storms over a short period of time, could significantly reduce or eliminate anticipated benefits of mitigation plans in areas susceptible to storm surge and shearing. All of the features of the TSMPA (and the associated costs and benefits) are at some risk from storm damage. The extent of potential damage is dependent upon several unknown variables, including: the track and intensity of the storm, the development stage of the project, changes in future conditions in the study area, and variability of project performance from forecast conditions due to other factors of risk and uncertainty.

The benefits of shoreline protection features could also be reduced by a storm through the displacement of rocks and damage to the structures. Repair of storm damage to these features could necessitate maintenance of the shoreline protection features in order to secure anticipated erosion reduction benefits, reducing the cost-effectiveness of these features.

Increased Sea Level Rise

Increased sea level rise could convert emergent wetlands to shallow open water, and shallow open water to deeper water habitat, reducing or eliminating the effectiveness of mitigation plans.

Climate Change

Extreme changes in climate (temperature, rain, evaporation, wind) could result in conditions that cannot support the types of habitat restored, reducing the effectiveness of the mitigation plan. Extreme climate change could essentially eliminate the benefits of vegetative plantings, if the change resulted in plant mortality. The monitoring plan for all USACE constructed projects would monitor the success of any vegetative plantings and includes provisions for replanting if mortalities become such that meeting the required success criteria is in jeopardy.

Errors in Analysis

Future conditions are inherently uncertain. The forecast of future conditions is limited by existing science and technology. Future conditions described in this study are based on an analysis of historic trends and the best available information. Some variation between forecast conditions and reality is certain. Mitigation features were developed in a risk-aware framework to minimize the degree to which these variations would affect planning decisions. However, errors in analysis or discrepancies between forecast and actual conditions could affect plan effectiveness.

All of the models used in this study are mathematical representations of existing and predicted future conditions. Models simulate complex systems by simplifying real processes into expressions of their most basic variables. These tools assist with finding optimal solutions to problems, testing hypothetical situations, and forecasting future conditions based on observed data. No model can account for all relevant variables in a system. The interpretation of model outputs must consider the limitations, strengths, weaknesses, and assumptions inherent in model inputs and framework. Inaccurate assumptions or input errors could change benefits predicted by models used in this study. The potential for significant changes due to errors has been reduced through technical review, sensitivity analyses, and quality assurance procedures. However, there is inherent risk in reducing complex natural systems to mathematic expressions driven by the simplified interaction of key variables.

WVA Model Uncertainties

WVAs models were run on the entire final array of mitigation projects using site-specific data collected at all project sites except for some portions of the Lake Boeuf projects and for the Simoneaux Ponds project. Right of entry (ROE) was not available for all portions of the Lake Boeuf projects nor the Simoneaux Ponds project at the time the WVAs were run. Where ROE was unavailable, assumptions were made based on aerial photography and field data was used from other similar projects for the WVAs at Lake Boeuf. Aerial inspections of the Simoneaux Ponds project area were completed and data input into the WVAs from projects with similar existing conditions. We have reasonable confidence that these data are representative of actual site conditions, and that the WVAs have produced results representative of what would be found if ROE to the sites had been available. Once ROE is obtained, site-specific WVAs would be run for Lake Boeuf and Simoneaux Ponds and a final resizing of these projects completed.

Additionally, the design of the Jean Lafitte FS Swamp Project (JL7) and the designs of the Jean Lafitte FS BLH-Wet Project (JL8 and JL9) mitigating for impacts on JLNHPP originally including only hauling in borrow material. Current designs include degradation of an existing spoil berm for fill for the JL7

feature and gapping of existing spoil berms for the JL8 and JL9 features. Degradation/gapping of the spoil berms were added to the design after all field work and WVAs were completed for the Jean Lafitte projects. Impact analyses for the degraded/gapped berms assumed that 80% of the area is BLH-Wet and 20% is swamp.Previously obtained field data in the vicinity of these berms was used to assess habitat impacts from the degradation. The designs for the mitigation projects were then adjusted accordingly. The resulting project footprints should be adequate to address the additional impacts from the degradation/gapping, but site-specific WVAs would be run for these features and a final resizing of the projects completed during advanced design.

As design proceeds, final WVAs would be completed for each TSMP to determine their final size. Currently, final WVAs have not been run for any of the mitigation projects.

Implementation

The timing for implementation is an uncertainty that must be considered. If the plan is not implemented in the near future, the conditions in the study area could continue to degrade due to subsidence and/or other natural processes. The impact of the uncertainties associated with the future condition of the study area could increase mitigation costs, decrease mitigation benefits, or both.

If a proposed project becomes infeasible due to difficulties in implementation or changed conditions, the CEMVN will take appropriate action to ensure satisfaction of its mitigation requirement.

If any of the TSMP projects could not be implemented, the CEMVN would either fall back to one of the other projects evaluated in the AEP in order of ranking for that habitat type or would in coordination with the resource agencies and the NFS to explore other options to mitigate these impacts. The results of which may ultimately be on public land. Potential mitigation options could include identification of other opportunities on or within the acquisition boundary of the Lake Salvador WMA.

If additional options are identified to mitigate from open water on the Lake Salvador WMA for FS BLH-Wet, and/or PS BLH-Wet/Dry impacts outside the currently proposed projects for the other habitat types, impacts from constructing such a project(s) would be anticipated to be similar to those identified for the Dufrene Ponds and Plaquemines projects for the same habitat types. Existing resource conditions for building a new option from open water on the Lake Salvador WMA would likely be the same as those identified for the current Lake Salvador projects for marsh and swamp in sections 3.2.4.1 and 3.2.3.1. Any new option would likely be constructed at the same time as other proposed projects and would likely utilize the same construction methods. Further detail and analysis would be presented in a TIER(s).

Mitigation for Coastal Zone Impacts

LDNR administers the Federal Coastal Zone Management Act in Louisiana through its Louisiana Coastal Resources Program (LCRP). Depending on the projects implemented, LDNR may determine that, in its view, such projects do not mitigate for coastal zone impacts. If deemed necessary, additional mitigation for coastal zone impacts may be required and would be assessed and coordinated in the subsequent TIERs.

2.9 PROPOSED ACTION

Although this is a programmatic NEPA document, one of the TSMPs that make up the overall WBV TSMPA is fully assessed and is recommended for implementation. This TSMP, termed the

"Constructible Feature" (or "constructible portion"), mitigates general PS BLH-Wet and BLH-Dry impacts and would consist of the purchase of BLH-Wet mitigation bank credits in the WBV basin.

The TSMPs that comprise the remainder of the WBV HSDRRS TSMPA are termed "Programmatic Features". These programmatic features require further design at a feasibility level for which the details and impacts would be released in subsequent NEPA documents that would tier off of this programmatic NEPA document (TIER). These features are not considered constructible until the TIER is completed and approved.

For the constructible features, the CEMVN would purchase BLH-Wet mitigation bank credits in the WBV basin to mitigate 261.96 AAHUs of BLH-Wet/Dry impacts. Purchase of credits would be dependent on receipt of an acceptable proposal and total purchase cost. No particular bank(s) is(are) proposed for use at this time. The bank(s) from which credits would be purchased would be selected through a solicitation process, through which any mitigation bank meeting eligibility requirements and having the appropriate resource type of credits could submit a proposal to sell credits. If appropriate and cost-effective, the Corps may choose to purchase mitigation bank credits from more than one bank to fulfill the compensatory mitigation requirements for a particular habitat type.

Those mitigation banks within the WBV basin that may be capable of supplying the credits needed to meet the general PS BLH mitigation requirements at the time of solicitation is uncertain. Banks currently able to meet the mitigation requirements may not be able to do so at the time of solicitation. In addition, new banks able to meet the mitigation requirement may become approved by the time the solicitation is released. Accordingly, identification of particular banks that could be used to meet the mitigation requirement cannot occur with any degree of certainty and has not been done for this PIER. If, at the time of solicitation, the Corps does not receive acceptable proposals that would allow the Corps to purchase sufficient credits to meet 100 percent of the mitigation requirement by habitat type, then Mitigation Plan Alternative 2 containing the Lake Boeuf project for general PS BLH-Wet/Dry impacts as the constructible feature for that habitat type (see section 2.10.2) would likely be implemented. Since the bank(s) that may ultimately be selected to provide the necessary mitigation credits is unknown, the existing conditions present at the bank site(s) are similarly unknown. Existing bank habitat quality varies depending on the success criteria met, as specified in the bank's MBI. Typically, as mitigation success criteria are met and the quality of the habitat increases within the bank, more credits are released for purchase.

2.10 ALTERNATIVES TO THE PROPOSED ACTION

NEPA requires that in analyzing alternatives to a proposed action, a Federal agency consider an alternative of "No Action." The No Action alternative evaluates conditions if no alternative is implemented; it represents the FWOP condition against which alternatives considered in detail are compared. It provides a baseline essential for impact assessment and alternative analysis. However, because compensatory mitigation for unavoidable habitat losses due to the construction of the HSDRRS is required by law (e.g. Clean Water Act, WRDAs of 1986 and 2007), the CEMVN does not consider the No Action Alternative to be a reasonable or legally viable alternative.

2.10.1 NO ACTION ALTERNATIVE

Under the no action alternative, the Barataria basin would continue a trend of land loss caused by both natural factors such as subsidence, erosion, tropical storms and sea level rise, and human factors such as flood risk reduction, canal dredging, development, interruption of accretion processes and oil and gas exploration. The No Action alternative would not provide compensatory mitigation for the unavoidable impacts incurred during the construction of the HSDRRS.

The analysis for the No Action alternative considers previous, current, and reasonably foreseeable future projects, which could impact the resources evaluated in the PIER. The location of these projects is shown in appendix A. For the purpose of this analysis, a project is considered "reasonably foreseeable" if it meets one of the following criteria:

- USACE authorized ecosystem restoration , flood risk reduction, and/or navigation project with a Tentatively Selected Plan;
- CWPPRA project authorized at a Phase 2 – construction status;
- Coastal Impact Assistance Program (CIAP) ecosystem restoration or flood risk reduction project which is funded for construction;
- State of Louisiana Surplus-funded ecosystem restoration or flood risk reduction project funded for construction; or
- Louisiana Levee District permitted flood risk reduction project.

Appendix B includes a of list projects involving wetland or ecosystem restoration activities considered part of the no action alternative that could counter, to a degree, the current land loss trends throughout the basin and progression of wetlands to open water. In addition to the name, general location, and a general description of each project, the tables note whether a project directly overlaps with one of the mitigation projects evaluated in this PIER or whether the extended boundary of the project's wetland value assessment overlaps with one of the mitigation projects evaluated in this PIER.

In addition to these ecosystem restoration projects, a number of flood risk reduction and navigation projects are listed that have been built or would be built within the Barataria basin that would continue to influence the hydrodynamics within the basin. Previously constructed flood risk reduction and navigation projects include:

- Algiers Lock: The lock, constructed in 1956, provides a navigation passage between the Mississippi River and the Gulf Intracoastal Waterway via the Algiers Canal. The lock is operated and maintained by the USACE (American Canal Society, 2012).
- Algiers Non-federal Levee (Donner Canal Levee): This segment of the non-federal levee was built prior to the construction of the Algiers Canal in 1956 near the southern boundary between the Orleans and Jefferson Parish line to provide flood protection to the communities in the vicinity of Algiers and Cutoff in Orleans Parish, Louisiana. The levee is owned and under the authority of the Algiers Levee District (SLFPAW, 2012).
- Bayou Gauche Ring Levee (Sunset Levee): The construction of levees and pumping stations in the 1970s to prevent tidal surges from flooding developed areas in near the community of Paradis in northern St. Charles Parish (Schiltz, 2011).
- Coastal Protection and Restoration Authority (CPRA) and North Lafourche Conservation, Levee and Drainage District, Valentine to Larose Levee, TE-111: Construction to provide flood protection improvements to the current flood protection system along approximately 2,000 linear feet of levee along Bayou Lafourche, from the town of Valentine to the town of Larose. The project is part of the Lockport-to-Larose Levee Project. Project construction was complete February 2014 (CPRA, 2013b, Miller, 2014).
- Empire Lock: The lock is located on the west bank of the Mississippi River at Mississippi River mile 29.5 and was originally constructed prior to 1936 to provide navigation between the Mississippi River and the Gulf of Mexico through the Empire Canal. It is operated by the Louisiana Department of Transportation and Development (American Canal Society, 2012).
- English Turn Non-Federal Levee (Donner Canal Levee): This segment of the non-federal levee was built prior to the construction of the Algiers Canal in 1956 to provide flood protection to the

communities east of Algiers Canal on the west bank of Orleans Parish, Louisiana. The levee extends westerly along the southern Orleans Parish line from the west bank levee of the Mississippi River near Caernarvon and ties into the West Bank and Vicinity –East of Algiers federal levee near Highway 407. The levee is owned and under the authority of the Algiers Levee District (SLFPAW, 2012).

- Gulf Intracoastal Waterway (GIWW) Navigation System: A continuous waterway located inland and parallel to the Gulf of Mexico coast extending approximately 1,100 miles from Brownsville, Texas to Carrabelle, Florida. The federally authorized navigation project was designed to provide interstate commerce among the Gulf Coast States (Alperin, 1983).
- Harvey Canal Lock: The lock was constructed in the early 1930s by the USACE to provide a navigational passage between the Mississippi River and the GIWW via the Harvey Canal. The lock is operated and maintained by the USACE. (American Canal Society, 2012)
- Mississippi River Levees: Mississippi River & Tributaries (MR&T) Project: The Flood Control Act of 1928 was enacted as a response to the 1927 flood and authorized the MR&T Project as a comprehensive flood control project. The purpose of the MR&T Project is to control riverine flooding in the alluvial valley of the lower Mississippi River below Cape Girardeau, Missouri. The four major elements of the MR&T Project are: (1) levees for containing flood flows; (2) floodways for the passage of excess flows past critical reaches of the Mississippi River; (3) channel improvement and stabilization in order to provide an efficient navigation alignment, increase the flood-carrying capacity of the River, and for protection of the levee system; and (4) tributary basin improvements for major drainage and flood control, such as dams, reservoirs, pumping plants, auxiliary channels. Due to the large spatial area of the Mississippi River, implementing the MRL Program is a joint effort of USACE Vicksburg District (CEMVK), the New Orleans District (CEMVN) and the Memphis District (CEMVM). The MRL system in the CEMVN extends along the Mississippi River west bank from the vicinity of Black Hawk, LA, generally southward to the vicinity of Venice, LA and on the east bank from Baton Rouge, LA to Bohemia, LA, encompassing over 500 miles of levee and associated infrastructure.
- Mississippi River Navigation Operations and Maintenance: Operations and maintenance of the Mississippi River by the USACE for navigational purposes.
- Oakville to La Reussite Non-federal Levee: The non-federal hurricane protection levee located in Plaquemines Parish was built in the late 1960s, early 1970s to reduce flood risk in the vicinity of the communities of Oakville, Jesuit Bend, Ollie, Naomi and La Reussite. The levee system is under the authority of the Plaquemines Parish Government and currently varies in elevation from 2 feet to 7 feet. This is a non-federal project. (USACE, 2011a).
- State of Louisiana-Surplus Fund 2007 project, East of Harvey Canal Interim Hurricane Protection – Phase 1: The project was designed and constructed by the Southeast Flood Protection Authority - West as an interim non-federal flood protection levee, prior to the WBV HSDRRS floodwall construction, along the east side of the Harvey Canal from the sector gate at Lapalco Boulevard to the existing WBV levee at Hero Pump Station. The interim earthen flood protection levee was completed in July 2009. The second phase of the project involves a study to evaluate the feasibility of elevating the interim levee to a permanent flood protection structure. Phase 2 is currently on hold in the planning phase. (McMenis 2012; CPRA 2012a)
- State of Louisiana-Surplus Fund 2007 project, Lafitte Tidal Protection, BA-75-3, 2007: The project is bordered by Bayou Barataria on the west, Goose Bayou to the north, The Pen to the west and Reserve Canal to the south. This project involves the uplift of existing levee segments originally constructed by the West Jefferson Levee District on the western shore of The Pen near the community of Lafitte, Louisiana to provide flood risk reduction to the community of Lafitte, Louisiana. Construction was completed. The portion of the project constructed by West Jefferson Levee District consists of earthen levees reinforced with sheet pile along the

northwestern shore of The Pen from Goose Bayou to Reserve Canal to provide limited flood risk reduction to the community of Lafitte, Louisiana. (Harper, 2012; CPRA 2012a)

- West Plaquemines Non-federal Levee: The non-federal hurricane protection levee was largely constructed in the late 1960s, early 1970s by the Plaquemines Parish government and private entities to reduce flooding risk to the communities between La Reussite and Point Celeste, Louisiana. The levee system is under the authority of the Plaquemines Parish Government and currently varies in elevation from 2 feet to 7 feet. This is a non-federal project. (USACE, 2011a).

Flood risk reduction and navigation projects currently under construction or reasonably foreseeable include:

- HSDRRS, WBV: The federal HSDRRS is currently under construction by the USACE to provide flood protection against a storm which has a 1% chance of occurring in a given year (100-year level of protection). The 91-mile risk reduction system includes the construction, enhancement and/or replacement of levees, floodwalls, floodgates, closure structures, and pumping stations to provide storm damage risk reduction to the New Orleans Metropolitan Area on the west bank of the Mississippi River including portions of Jefferson, Orleans, Plaquemines, and St. Charles parishes. The project was originally authorized and modified by the Water Resources Development Acts of 1986, 1996, 1999 and became known as the West Bank and Vicinity, Louisiana Hurricane Protection Project (WBVHPP). Additional emergency supplemental appropriations aimed at improving the system were authorized by Congress following Hurricane Katrina and include 3rd Supplemental-2006 (PL 109-148, Title 1,Chapter 3, [119 STAT. 2761-2763]), 4th Supplemental-2006 (PL 109-234, Title II, Chapter 3, [120 STAT. 454-455]), 5th Supplemental-2007 (PL 110-28, Title IV, Chapter3, [121 STAT. 153-154]), 6th Supplemental-2008 (PL 110-252, Title III, Chapter 3, [122 STAT. 2349-2350]), and 7th Supplemental-2009 (PL 110-329 Title I, Chapter 3 [122 STAT. 3589-3590]). Construction began in March 2007 and is approximately 95% complete. Anticipated completion date for the entire WBV HSDRRS system (excluding armoring) is December 2016 (USACE, 2012a).
- Larose to Golden Meadow, Louisiana, Hurricane Protection Project (LGM): The project, originally authorized by the Flood Control Act of 1965 (PL-89-298), consists of approximately 48 miles of levees and floodwalls including two floodgates across Bayou Lafourche at the project's northern and southern ends. Eight (8) pumping stations were constructed in place of the authorized gravity drainage structures at the request and additional expense of the South Lafourche Levee District. The project is designed to protect the communities along the east and west banks of Bayou Lafourche, extending from Larose to just south of Golden Meadow in Lafourche Parish, Louisiana from tidal and hurricane surge flooding. The majority of the original 1965 project has been constructed as authorized, however due to subsidence and datum changes the project is not currently at the 1965 authorized elevations. The remaining unconstructed features are expected to be completed no later than 2016. A Post-Authorization Change (PAC) Study was initiated in 2009. The PAC will assess potential modifications to the system given changes in conditions and post-Katrina design criteria. The study is expected to be complete by the end of 2015. (Wilson-Prater, 2013; USACE, 1985).
- New Orleans to Venice (NOV) levee project, St Jude to Venice: The federal hurricane protection levee project, originally authorized by the Flood Control Act of 1962, was designed to reduce the risk of flooding to the communities between St. Jude to Venice, Louisiana located on the west bank of the Mississippi River including the back levee in Plaquemines Parish. The project was approximately 85 percent complete prior to Hurricane Katrina. Following Hurricane Katrina, a levee upgrade was authorized by Congress to restore, armor, and accelerate the completion of the levees through additional emergency supplemental appropriations 3rd

Supplemental-2006 (PL 109-148, Title 1,Chapter 3, [119 STAT. 2761-2763]), 4th Supplemental-2006 (PL 109-234, Title II, Chapter 3, [120 STAT. 454-455]), 6th Supplemental-2008 (PL 110-252, Title III, Chapter 3, [122 STAT. 2349-2350]), and 7th Supplemental-2009 (PL 110-329 Title I, Chapter 3 [122 STAT. 3589-3590]). Anticipated upgrades began in Sep 2012 and construction is expected to be completed by Fall 2019 (USACE, 2011b).

- New Orleans to Venice (NOV), Incorporation of Non-Federal Levees (NFL) into NOV: The NFL reduces the risk of flood inundation and protects evacuation routes for the communities between Oakville and St. Jude, Louisiana located on the west bank of the Mississippi River in upper Plaquemines Parish. The NFL connects to the West Bank and Vicinity HSDRRS levees at the Eastern Tie-In near Oakville, Louisiana. Proposed construction will heighten, strengthen and incorporate the NFL, into the federal NOV levee system. The incorporation of certain levee components into NOV was authorized by Congress following Hurricane Katrina through additional emergency supplemental appropriations 4th Supplemental-2006 (PL 109-234, Title II, Chapter 3, [120 STAT. 454-455]), 5th Supplemental-2007 (PL 110-28, Title IV, Chapter3, [121 STAT. 153-154]), and 6th Supplemental-2008 (PL 110-252, Title III, Chapter 3, [122 STAT. 2349-2350])). Anticipated upgrades began in Sep 2012 and construction is expected to be completed by fall 2019. (USACE, 2011a).
- St. Charles Parish Levee – West Bank Magnolia Ridge Phase 1 (BA-85-1): Uplift of the existing non-federal earthen levee on the west bank of Magnolia Ridge in St. Charles Parish to reduce the risk of flooding to communities near Boutte and Paradis, Louisiana. Other structures to be built include pumping stations and other freshwater interchange features including the closure of Paradis Canal. The project has been partially constructed; however, due to the permit expiration the Parish is resubmitting the permit to USACE to complete the levee uplift. The permit application is currently under review. Construction is anticipated to begin March 2016 and completed by March 2018 (Schiltz, 2012; Fonseca, 2013).
- St. Charles Parish Levee – West Bank Willow Ridge Phase 2 (BA-85-2): Construction of a non-federal levee with estimated crown elevation of seven feet, pumping stations and gates to reduce the risk of flooding in the vicinity of Willow Ridge in St. Charles Parish. The project is divided into five parts. The construction contract for part one has been approved and authorized for the execution on November 18, 2013. Anticipated construction end date for part one is November 2014. The anticipated start and end dates for the remaining parts are August 2014 and November 2016 respectively (Schiltz, 2012; St Charles Parish, 2013; Fonseca, 2013).
- St. Charles Parish Levee – West Bank Ellington Phase 3 (BA-85-3): Construction of a non-federal levee with estimated crown elevation of seven feet to reduce the risk of flooding in the vicinity of Ellington in St. Charles Parish. The project permits and authorization were completed in March 2013. Real estate acquisition and engineering and design are anticipated for completion by mid-2014, with anticipated construction to begin March 2015 and completion by December 2017 (Schiltz, 2012; St Charles Parish, 2013; Fonseca, 2013).
- State of Louisiana-Surplus Fund 2007 project, Jean Lafitte Tidal Protection, BA-75-1, 2007: This project involves the enhancement of existing levees originally constructed by the West Jefferson Levee District on the eastern and southern side of the community of Jean Lafitte, Louisiana. It also includes new levee construction and installation of floodwalls and floodgates along the eastern bank of Bayou Barataria and in gaps in the levee system on the eastern and southern side of Jean Lafitte, Louisiana to provide flood protection to the community within the Fischer School Basin. The project will be implemented by Jefferson Parish and the Lafitte Area Independent Levee District. Construction is anticipated to begin in March 2014. Funding for construction is also provided through Surplus Fund 2009 project, BA-75-4, Lafitte Levee Protection (Harper, 2012; CPRA, 2012a).

2.10.2 MITIGATION PLAN ALTERNATIVE 2

This alternative is made up of the same TSMPs as those found in the TSMPA except for the TSMP mitigating general PS BLH-Wet/Dry impacts. For this habitat type, the project that ranked second in the AEP to the mitigation banks would be utilized. The Lake Boeuf PS BLH-Wet/Dry mitigation project discussed in section 2.5.1.4 would take the place of the TSMP involving purchase of BLH-Wet mitigation bank credits. This alternative would likely be implemented if mitigation bank credit availability or cost did not support the selection of the current TSMPs for general PS BLH-Wet/Dry impacts.

2.10.3 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

Two alternatives were considered, but eliminated from further consideration during the planning process. An alternative comprised of mitigating WBV HSDRRS impacts to all habitat types utilizing mitigation banks only and an alternative comprised of mitigating WBV HSDRRS impacts with Corps constructed projects only.

2.10.3.1 Mitigation Banks Only Alternative

This alternative would have satisfied the mitigation requirements for all habitat types through the purchase of mitigation bank credits of the same habitat type. Because mitigation banks in the WBV basin do not have sufficient available credits to meet the mitigation requirements for several of the impacted habitat types, this alternative was eliminated from further consideration.

2.10.3.2 Corps Constructed Project Only Alternative

This alternative would have satisfied the mitigation requirements for all habitat types through the implementation of Corps constructed alternatives for each of the impacted habitat types. WRDA 2007, §Section 2036(c) requires that where appropriate, mitigation banks should be considered when mitigating habitat impacts if the impacts occur within the service area of an approved bank and the bank contains sufficient credits to offset the impact. Mitigation banks exist in the WBV basin that can meet some of the WBV HSDRRS mitigation requirements. In addition, mitigation banks can represent a cost effective option when compared to the costs and time necessary to construct a mitigation project. For these reasons the Corps Constructed Project Only Alternative was eliminated from further consideration.

3. AFFECTED ENVIRONMENT

3.1 WBV ENVIRONMENTAL SETTING

The WBV HSDRRS Mitigation Basin is bounded to the north by the Mississippi River starting east in Ascension Parish to west in Plaquemines Parish. In Plaquemines Parish, the boundary then proceeds south then north and west bordering the southern portion of Lake Salvador before turning south again to Golden Meadow. It then turns northwest to Assumption Parish (appendix A-2). Major features in the WBV Mitigation basin include: Lakes Cataouatche, Salvador and the adjacent wetlands; Lac des Allemands and its adjacent wetlands and the Mississippi River.

Geomorphic and Physiographic Setting

Most of the present landmass of southeast LA was formed by deltaic processes of the Mississippi River. Over the past 7,000 years, the Mississippi River deposited massive volumes of sediment in five deltaic complexes. The WBV Mitigation Basin lies within the Mississippi Delta Region (appendix A-2) comprised of three geomorphic regions, which are further divided into multiple smaller geomorphic areas.

Climate

The West Bank basin is located within a subtropical latitude. The climate is influenced by the many water surfaces of the nearby wetlands, rivers, lakes, streams, and the Gulf of Mexico. Throughout the year, these water areas modify relative humidity and temperature conditions, decreasing the range between the extremes. Summers are long and hot, with an average daily temperature of 82° Fahrenheit (°F), average daily maximum of 91°F, and high average humidity. Winters are influenced by cold, dry polar air masses moving southward from Canada, with an average daily temperature of 54°F and an average daily minimum of 44°F. Annual precipitation averages 54 inches.

Wetlands and Other Surface Waters

Wet BLH forests in the WBV Basin are dominated by water oak, nuttall oak, green ash, red maple, and pignut hickory. Fresh marsh is dominated by cattail, water lily, iris, duckweed, cutgrass, wild rice, bullwhip and bulltongue. Swamps are dominated by bald cypress and water tupelo, which have regenerated since extensive logging of virgin forest more than 70 years ago. The Louisiana swamps generally lack a mature canopy as was present in the forests before logging occurred and have lower productivity where isolated from riverine influences (Shaffer et al., 2003). The greatest potential to restore and sustain coastal forests is near the Mississippi River where freshwater reintroductions may be implemented. Other local sources of freshwater may be municipal wastewater or storm water. Economically important natural resources associated with these swamps include fisheries of crawfish, blue catfish, and channel catfish, as well as logging. See appendix A-8 for the habitats and their quantity found in the WBV Basin and appendix B-13 for a list of plant species referenced in this document and their scientific names.

Various mitigation banks within the WBV basin may be capable of supplying credits to meet the PS BLH-Dry and BLH-Wet mitigation requirements. Since the bank(s) that may ultimately be selected to provide the necessary mitigation credits is unknown, the existing conditions present at the bank site(s) are similarly unknown. Existing bank habitat quality varies depending on the success criteria met, as specified in the bank's MBI. Typically, as mitigation success criteria are met and the quality of the habitat increases within the bank, more credits are released for purchase.

Wildlife

Louisiana's coastal wetlands support numerous neotropical and other migratory avian species, such as rails, gallinules, shorebirds, wading birds, and numerous songbirds. The rigors of long distance flight require most neotropical migratory birds to rest and refuel several times before they reach their final destination. Louisiana coastal wetlands provide neotropical migratory birds essential stopover habitat on their annual migration routes. The coastal wetlands in the WBV Basin provide important fish and wildlife habitats, especially transitional habitat between estuarine and marine environments, used for shelter, nesting, feeding, roosting, cover, nursery, and other life requirements.

Emergent fresh, intermediate, and brackish wetlands are typically used by many different wildlife species, including: seabirds; wading birds; shorebirds; dabbling and diving ducks; raptors; rails; coots; and gallinules; nutria; muskrat; mink, river otter, and raccoon; rabbit; white-tailed deer; and American alligator. Emergent saline marshes are typically utilized by: seabirds; wading birds; shore birds; dabbling and diving ducks; rails, coots, and gallinules; other saline marsh residents and migrants; nutria; muskrat; mink, river otter, and raccoon; rabbits; deer; and American alligator (LCWCRTF & WCRA, 1999).

Open water habitats such as Lakes Salvador and Cataouatche provide wintering and multiple use functions for brown pelicans, seabirds, and other open water residents and migrants. Open water habitats provide wintering and multiple use functions for brown pelicans, seabirds, dabbling and diving ducks, coots, and gallinules as well as other open water residents and migrants (LCWCRTF & WCRA, 1999).

The bald eagle is protected under the Bald and Golden Eagle Protection Act ((BGEPA), and the Migratory Bird Treaty Act ((MBTA) 40 Stat. 755, as amended; 16 U.S.C. 703 et seq.). In southeastern Louisiana parishes, eagles typically nest in mature trees (e.g., bald cypress, sycamore, willow, etc.) near fresh to intermediate marshes or open water.

Colonial nesting waterbirds are protected under the Migratory Bird Treaty Act ((MBTA) 40 Stat. 755, as amended; 16 U.S.C. 703 et seq.). Colonial nesting waterbirds are generally considered all species of herons, egrets, night herons, ibis, roseate spoonbill, anhinga and cormorants. These birds typically nest and forage in wetlands and open water areas.

A list of common wildlife species found in the WBV basin and their scientific names are located in appendix B-14.

Threatened and Endangered Species

Within the State of Louisiana there are 31 animal and three plant species (some with critical habitat) under the jurisdiction of the USFWS and/or the NMFS, presently classified as endangered or threatened. Of those 31, appendix B-15 identifies those that are known to occur in the parishes where projects in the final array are situated. The USFWS and the NMFS share jurisdictional responsibility for sea turtles and the Gulf sturgeon. Other species that were listed on the Endangered Species List but have since been de-listed because population levels have improved are the bald eagle and the brown pelican. Currently, American alligators and shovelnose sturgeon are listed as threatened under the Similarity of Appearance clause in the Endangered Species Act (ESA) of 1973, as amended but are not subject to ESA Section 7 consultation.

Fisheries, Aquatic Resources, and Water Quality

The NMFS oversees and manages our Nation's domestic fisheries through development and implementation of fishery management plans and actions. The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), first enacted in 1976, amended in 1996, and reauthorized in 2006, is the primary law governing marine fisheries management in United States Federal waters to end overfishing, promote market-based management approaches, improve science, serve a larger role in decision-making, and enhance international cooperation.

Major water bodies within the basin that may be impacted include Lac des Allemands, Lake Boeuf, Bayou Gauche, Lake Salvador, Lake Cataouatche, and the Mississippi River. These water bodies and adjacent wetlands provide nursery and foraging habitats which support varieties of economically, recreationally, and ecologically important marine and freshwater fishery species, including shrimp, bay anchovy, gizzard shad, buffalo, yellow bass, largemouth bass, sunfish, catfish, spotted gar, bowfin, mosquitofish, least killifish, sailfin molly, striped mullet, Atlantic croaker, Gulf menhaden, spotted and sand sea trout, southern flounder, black drum, and blue crab. Some of these species also serve as prey for other fish species managed under the MSFCMA by the Gulf of Mexico Fishery Management Council (e.g., mackerel, snapper, and grouper) and highly migratory species managed by NMFS (e.g., billfish and shark).

The project area encompasses parts of two U.S. Geological Survey (USGS) Cataloging Units: 08090201 – East Central Louisiana Coastal Watershed and 08090100 – Lower Mississippi-New Orleans. Within each of these Cataloging Units, the state has delineated hydrologic units, or sub-segments, within the state.

Section 305(b) of the Clean Water Act requires each state to monitor and report on surface and groundwater quality, which the Environmental Protection Agency (EPA) synthesizes into a report to Congress. The Louisiana Department of Environmental Quality (LDEQ) produces a Section 305(b) Water Quality Report that provides monitoring data and water quality summaries for hydrologic units (sub-segments) throughout the state.

Water quality criteria are elements of state water quality standards that represent the quality of water that will support a particular designated use. These criteria are expressed as constituent concentrations, levels, or narrative statements. There are currently eight designated uses adopted for Louisiana's surface waters: Primary Contact Recreation, Secondary Contact Recreation, Fish and Wildlife Propagation ("subcategory" for Limited Aquatic life and Wildlife), Drinking Water Supply, Oyster Propagation, Agriculture, and Outstanding Natural Resource Waters. Appendix A-9 shows those hydrologic units or sub-segments which include both water bodies which are considered "impaired" according to the 2010 Integrated Report and one of the WBV Mitigation alternative footprints. Appendix A, figure 9 shows the location of the sub-segments within which these impaired water bodies and project footprints are found.

Essential Fish Habitat

The MSFCMA (50 CFR 600) states that EFH is "those waters and substrate necessary for fish for spawning, breeding or growth to maturity" (16 United States Code [USC] 1802(10); 50 CFR 600.10). The 2005 amendments to the MSFCMA set forth a mandate for the NMFS of the National Oceanic and Atmospheric Administration, regional Fishery Management Councils (FMC), and other Federal agencies to identify and protect EFH of economically important marine and estuarine fisheries. A provision of the MSFCMA requires that FMCs identify and protect EFH for every species managed by a Fishery Management Plan (FMP) 16 USC 1853. The public places a high

value on seafood and recreational and commercial opportunities provided by EFH. Specific categories of EFH include all estuarine waters and substrates (mud, sand, shell, rock, and associated biological communities), sub-tidal vegetation (sea grasses and algae), and adjacent intertidal vegetation (marshes and mangroves). The existing emergent wetlands and shallow open water within the project area provide important habitat that may be classified as EFH, including transitional habitat between estuarine and marine environments used by migratory and resident fish, as well as other aquatic organisms for nursery, foraging, spawning, and other life requirements. Historically and currently, the area provides valuable recreational and commercial fishing habitat, oyster culture, and nursery areas for a wide variety of finfish and shellfish

Table 3-1 lists the expected salinity zones in WBV region mitigation sites and the abundance of the managed species expected (NOAA Mapper: http://www.habitat.noaa.gov/protection/efh/efhmapper/index.html or download of datasets at http://www.habitat.noaa.gov/protection/efh/newInv/index.html). Table 3-2 shows the EFH for the managed species expected in those areas.

Table 3-1: Salinity Zones And Abundance for Federally Managed Species In WBV Basin

Salinity Zone	Life Stage	Brown Shrimp	White Shrimp	Red Drum	Coastal Migratory Pelagic	Reef Fish
0 -0.5 ppt.	Adults		R	R		
	Eggs					
	Juveniles	C to HA	R to C	R		
	Larvae					
	Spawners					
0.5 - 5 ppt.	Adults	R	R	R to C		
	Eggs					
	Juveniles	C to HA	C to A	C	R	R
	Larvae					
	Spawners					

Relative Abundance: Blank - Not Present A – Abundant R – Rare HA - Highly Abundant C – Common (Variation in abundance due to seasonality) (NMFS, 1998)

Table 3-2: Essential Fish Habitat For Life Stages

Species	Life Stage	Essential Fish Habitat
Brown Shrimp	Adults	Gulf of Mexico <110 m, Silt sand, muddy sand
	Juvenile	Marsh edge, SAV, tidal creeks, inner marsh
White Shrimp	Adults	Gulf of Mexico <33 m, Silt, soft mud
	Juvenile	Marsh edge, SAV, marsh ponds, inner marsh, oyster reefs
Red Drum	Adults	Gulf of Mexico & estuarine mud bottoms, oyster reef
	Juvenile	SAV, estuarine mud bottoms, marsh/water interface
Coastal Migratory Pelagic	Juvenile	Beaches, estuaries, inlets, Coastal & shelf, Gulf, pelagic
Reef fish	Juvenile	SAV, mangroves, sand, mud, reefs, hard bottom

Cultural Resources

Historic and prehistoric sites in the WBV Basin tend to be located along the natural levees of waterways that were used as transportation routes. The Mississippi River was the main means of transportation and its natural levees were the choice location for settlement. The surrounding coastal lakes and areas were gradually explored for natural resources and utilized as well. As the population along the Mississippi River increased, land along its natural levees became scarce. Settlers began to move further outward following waterways such as Bayou Lafourche, Bayou Segnette, Bayou Verret, Bayou des Allemands, and other bayous and rivers in the coastal area. Borrow sources located in Lakes Salvador and Cataouatche also have the potential to contain submerged cultural resources.

Prehistoric sites include hunting and food processing camps, hamlets, and village sites. Native Americans relied on hunting, fishing, and gathering of plants. Discovered archeological sites in the basin represent the continuous span of human occupation in Louisiana's Mississippi River Delta region, from the Tchefuncte period (600-200 B.C.) to the Plaquemine period (a.d. 1000-1200).

Types of historic sites include domestic buildings, plantation sites, farmsteads, military sites, commercial sites, industrial sites, boat landings, and hunting and fishing camps along the coast. In addition to terrestrial historic sites, the project area has the potential to contain historic shipwrecks. Bayou Lafourche, Bayou Segnette, Bayou des Allemands, as well as the other bayous in the area, have been a major means of transportation in the Louisiana "bayou country" since prehistoric times. The smaller bayous that fill the basin connecting larger bayous and lakes were also used by the local Native Americans as well as by trappers, hunters, and fishermen. Watercraft from all time periods could be present in the area. Most of the vessels used historically in this area were vernacular watercrafts.

In the early 1900s, various subsistence activities that were initially developed prior to the 20th century became more commercial in nature. Moss, first gathered for the making of beds and as filler in the construction of houses, was commercially processed and sold to the upholstery business as stuffing for furniture and car seats. Following World War II, the moss industry declined as the result of the wide availability of foam rubber and the increased cost of gathering moss. The lumber industry that had flourished in the late 1800s continued to grow with the harvesting of cypress throughout south Louisiana. Lumber towns and sawmills dotted the landscape until most of the virgin cypress forests were cut and the lumber companies moved westward.

The trapping of animals in south Louisiana began with Native Americans and continued on into the 1900s. Otter, muskrat, and nutria were trapped in the marshes and provided furs for the garment industry all over the world. Hunting camps and processing stations were located throughout the marsh. The demand for furs has declined over the years. Nutria are trapped today for food and bounties, to keep the population from expanding and destroying the marsh, or from causing problems in municipal canals.

Seafood, one of the most important natural resources in south Louisiana, has continued to become more important to the economy of Louisiana. In the middle of the 19th century, methods of preservation (such as the drying of shrimp and canning of oysters) made it possible to export seafood. The introduction of the gasoline motor and refrigeration allowed fishermen greater access to markets in New Orleans and the larger towns inland from the coast. Seafood processing camps that had been established all over the coast in the 1800s, including Manila Village, Bayou St. Malo, and the Isle de Caminada, were abandoned after being hit by numerous tropical storms and hurricanes. In the 1900s, many of these fishermen established new settlement and seafood

processing businesses along the major waterways leading away from the coast. Fishing remains a major economic activity in south Louisiana.

Rice and sugar remained major cash crops across the coastal parishes. By the eve of World War II, bad weather, plant diseases, and economic policies had almost destroyed sugar production in south Louisiana. Truck farming of vegetables and citrus to towns and cities provided fresh vegetables at local markets. Other industries developed in south Louisiana in the 1900s that have shaped the economy of the state. The oil industry began in the early 1900s and continues to be a major industry. Large oil fields are located in the marshy areas of south Louisiana and offshore. Pockets of sulfur and salt are located across south Louisiana. The extraction of these natural resources became major industrial activities.

All of these economic activities have contributed to the constructed environment of south Louisiana. In addition to the residential homes, public buildings, and commercial buildings, these industries have contributed to the south Louisiana landscape and to the heritage of the area. Historic standing structures, archaeological sites, and landscape features associated with man's activities in the coastal area may be significant cultural resources. The Division of Archaeology maintains information on over 12,000 archaeological sites and thousands of historic standing structures.

Recreational Resources

Recreation areas in the WBV Basin include Salvador Wildlife Management Area (WMA), Timken WMA, JLNHPP, Bayou Segnette State Park, Lake Boeuf Wildlife Management Area. Other recreational features are provided by parishes and historic communities that attract visitors to a variety of heritage and cultural festivals, historical sites, parks offering opportunities for passive and active recreation that include tennis courts, soccer and softball fields, swimming pools, and golf courses. There are 37 boat launches throughout the WBV Basin. Appendix B-19 shows the number of fishing licenses, hunting licenses and boat registrations as well as the percent of state licenses and boat registrations in the WBV Basin.

The Louisiana Statewide Comprehensive Outdoor Recreation Plan (SCORP) provides a statewide inventory of recreation resources and identifies recreational needs. While regions defined in the SCORP do not fit perfectly within the WBV Basin, SCORP Region 1 and 3 and includes the WBV Basin. The state- and Federally-managed areas described previously represent just a portion of the more than 282,000 acres of recreational facilities inventoried for SCORP Region 1. Federal, state, parish, and municipal public recreational facilities within Region 1 provides more than 196,000 acres for hunting, 123 boat ramps, 1,833 picnic tables, 10 beaches, and 320-acres for camping with 263 tent sites and 1,739 trailer sites. Region 3 includes more than 107,000-acres for hunting, 194 boat lanes, at 105 boat ramps; 131-acres with 365 tables for picnicking; 1 beach of 37-acres; and 71-acres for camping, 34 tent-sites and 422 trailer-sites. In a 2008 Residents Survey, most important activities for residents in Region 1 are visiting natural places, fishing, and visiting botanic gardens. Residents in Region 3 are identified fishing, visiting natural places, and public access to state waters as most important. Within the same survey, Region 1 residents had the highest participation rates in the following activities: driving for pleasure, fishing, and camping. Region 3 residents participated most in driving for pleasure, fishing, swimming, and camping.

Funds from the Land and Water Conservation Fund (L&WCF) have supported 65 different recreational projects within the same parishes as the WBV Basin since 1964. L&WCF provides funding for numerous boat ramps, other facilities or lands that enhance opportunities for recreation.

The following is a description of the federal and state recreation areas within the WBV Basin:

Salvador Wildlife Management Area

Salvador WMA is 31,520 acres and is located in St. Charles Parish, along the northwestern shore of Lake Salvador about 12 miles southwest of New Orleans. Access is limited to boat travel via three major routes: Bayou Segnette from Westwego into Lake Cataouatche, then west to area; Sellers Canal to Bayou Verrett into Lake Cataouatche, then west to area; or via Bayou Des Allemands. Accessibility into the interior marshes is excellent via the many canals, bayous, and ditches on the area.

Game species include waterfowl, deer, rabbits, squirrels, rails, gallinules, and snipe. Furbearing animals present are mink, nutria, muskrat, raccoon, opossum, and otter. Salvador supports a large population of alligators and provides nesting habitat for the endangered Bald Eagle.

Excellent freshwater fishing is available on Lake Salvador. Bass, bream, crappie, catfish, drum, and garfish are abundant. Commercial fishing is prohibited. Non-consumptive forms of recreation available are boating, nature study, and picnicking.

Timken Wildlife Management Area

The Timken WMA is a 3,000-acre marsh island that is leased by the City Park Commission of New Orleans. The area is identified as Couba Island on maps; however, it has been named the Timken WMA after the former landowner who donated it to the City Park Commission of New Orleans. The area is located immediately east of the Salvador Wildlife Management Area and can be accessed by Lake Cataouatche. Like the Salvador WMA, Timken WMA consists of fresh to intermediate marsh and provides excellent habitat for waterfowl, furbearers, and alligators. Game species include waterfowl, deer, rabbits, squirrels, rails, gallinules, and snipe. Furbearing animals present are mink, nutria, muskrat raccoon, opossum, and otter.

Jean Lafitte National Historical Park

The JLNHPP consists of six physically separated sites, including Acadian Cultural Center; Prairie Acadian Cultural Center; Wetlands Acadian Cultural Center; Barataria Preserve; Chalmette Battlefield and National Cemetery; and French Quarter Visitor Center. Only one of which (Barataria Preserve Unit) is within the project area. The Barataria Preserve has trails and canoe tours through bottomland hardwood forests, swamps, and marsh. Additionally, there is an Education Center providing curriculum-based programming for school groups and a visitor center providing a film and exhibits.

Bayou Segnette State Park

Bayou Segnette State Park offers recreational opportunities including, boating, fishing, canoeing, picnicking, playgrounds, a one mile nature trail, boat launches and a wave pool. Bass, catfish, bream, perch, redfish and trout are common in the area. Twenty waterfront cabins are available for overnight rental, as well as, 98 locations for RV and tent camping. The park also includes comfort stations with showers and laundry, an RV dump station, and a group camp with kitchen and dormitories for up to 120 people.

Lake Bouef WMA

The Lake Boeuf WMA is located east of Louisiana Highway 308, north of Raceland, Louisiana. The area includes approximately 800 acres of fresh marsh/swamp habitat and is accessible only by boat via Theriot Canal, Foret Canal, or Lake Boeuf. Hunting opportunities include archery, small game, waterfowl, and unmarked hogs.

Aesthetic Resources

The WBV Basin is a large area that includes an abundance of water resources, landscape types, terrain, historical and culturally significant features. In terms of public and institutional significance, the area boasts the Great River Road, which runs adjacent to the Mississippi River Road, the

Louisiana Scenic Bayou Byway, which runs from Donaldsonville south towards Houma, and the Wetlands Cultural Trail, which is made up of a plethora of roadways crisscrossing the area around Houma and southeast towards Larose and Golden Meadow. The byways in the basin range from state designated roads to All American Roads.

Land use varies the spectrum, but the majority of uses include residential, agricultural and some light and highway commercial. There are a great number of urban areas including that of southern New Orleans (including Algiers, Harvey, Gretna, Westwego, Estelle, Timberlane, a.k.a. "the West Bank), and other smaller communities such as Larose, Raceland, and Donaldsonville, just to name a few. The majority of communities throughout the basin are cloistered along the banks of major waterways and roadways where natural levees and ridges can be found.

With the variety of land uses present, user activity is relatively high throughout the region. The region is filled with commuters going to and from the New Orleans Metro Area for work, hunters and fishermen, and shrimping and shipping, just to name a few.

Access throughout is abundant with major U.S. Highways and State Highways crisscrossing the region. This being said, there are still many areas and thousands of acres that are remote; where access can only be attained via watercraft.

Air Quality

The EPA, under the requirements of the Clean Air Act of 1963 (CAA), has established National Ambient Air Quality Standards (NAAQS) for seven contaminants, referred to as criteria pollutants (40 CFR 50). These are carbon monoxide, nitrogen dioxide, ozone, particulate matter (PM) less than 10 microns in diameter (PM_{10}), PM less than 2.5 microns in diameter ($PM_{2.5}$), lead, and sulfur dioxide. The NAAQS standards 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 3-5.

Areas that meet the NAAQS for a criteria pollutant are designated as being "in attainment;" areas where a criteria pollutant level exceeds the NAAQS are designated as being "in nonattainment."

Noise

The Noise Control Act of 1972 both regulates and promotes an environment for all Americans free from noise that jeopardizes their health or welfare. The Occupational Safety and Health Standards (29 CFR, part 1910) set standards regarding protection against the effects of noise exposure. Noise levels exceeding sound pressure levels are technically significant because noise can negatively affect the physiological or psychological well-being of an individual (Kryter, 1994). These effects can range from annoyance to adverse physiological responses, including permanent or temporary loss of hearing, and other types of disturbance to humans and animals, including disruption of colonial nesting birds. Noise is publicly significant because of the public's concern for the potential annoyance and adverse effects of noise on humans and wildlife.

Noise is generally described as unwanted sound, which can be based either on objective effects (hearing loss, damage to structures, etc.) or subjective judgments (such as community annoyance). Sound is usually represented on a logarithmic scale with a unit called the decibel (dB). Sound on the decibel scale is referred to as sound level. The threshold of human hearing is approximately 0 dB, and the threshold of discomfort or pain is around 120 dB.

Noise levels are computed over a 24-hour period and adjusted for nighttime annoyances to produce the day-night average sound level (DNL). DNL is the community noise metric recommended by EPA and has been adopted by most Federal agencies (USEPA 1974). A DNL of 65 weighted decibels (dBA) is the level most commonly used for noise planning purposes and represents a compromise between community impact and the need for activities like construction. (The A-weighted sound level, used extensively in this country for the measurement of community and transportation noise, represents the approximate frequency response characteristic of the average young human ear.) Areas exposed to a DNL above 65 dBA are generally not considered suitable for residential use. A DNL of 55 dBA was identified by EPA as a level below which there is no adverse impact (USEPA 1974).

Most parishes in the WBV Basin have noise ordinances addressing loud machinery. Noise is typically associated with human activities and habitations, such as operation of commercial and recreational boats, water vessels, air boats, and other recreational vehicles; operation of machinery and motors; and human residential-related noise (air conditioner, lawn mower, etc.).
The Corps constructed project areas are generally remote and uninhabited. The noise from distant urban areas surrounding the uninhabited portions of the project area contributes little, if any, to the natural noise levels of the area.

Hazardous, Toxic, and Radioactive Waste

In accordance with ER 1165-2-132 identification and evaluation of all HTRW contamination within the vicinity of the proposed project is required. USACE policy is to avoid the use of project funds for HTRW removal and remediation activities. Costs for necessary special handling or remediation of wastes (e.g., those regulated by the Resource Conservation and Recovery Act), pollutants and other contaminants, which are not regulated under the Comprehensive Environmental Response, Compensation, and Liability Act, would be treated as project costs if the requirement is the result of a validly promulgated Federal, state, or local regulation.

The proposed mitigation sites were surveyed via aerial photographs and database searches in the Zone Improvement Plan (ZIP) code areas where they would be located. Although there were numerous small incidents recorded in the database searches, none of the recorded incidents, either individually or cumulatively, would have any adverse effects on the proposed mitigation areas. Other than petroleum pipelines and oil and gas wells, the proposed sites are all on property that has not been developed within historic times. The probability of encountering HTRW on any of the sites is low. Prior to use of any site a Phase 1 Environmental Site Assessment would be completed for the individual project area.

Socioeconomics/Land Use, Environmental Justice, Transportation, Navigation, and Commercial Fisheries

The WBV HSDDRS construction impacts would be mitigated in the Barataria Basin, between Bayou Lafourche and the Mississippi River. These resources are institutionally significant because of the NEPA of 1969; the Estuary Protection Act; the Clean Water Act; the River and Harbors Acts; the Watershed Protection and Flood Protection Act; and the Water Resources Development Acts. Of particular relevance is the degree to which the proposed action affects public health, safety, and economic well-being and the quality of the human environment. These resources are technically significant because the social and economic welfare of the Nation may be positively or adversely impacted by the proposed action. These resources are publicly significant because of the public's concern for health, welfare, and economic and social well-being from water resources projects.

Prime and Unique Farmland

There are no unique farmlands present within the WBV basin. However, prime farmlands are present and make up approximately 227,241.7 acres, or 27 percent of the soils; breakdown by parish is as shown in appendix B-18:

Natural & Scenic Rivers

In 1970, the Louisiana Legislature created the Louisiana Natural and Scenic Rivers System under the Wild and Scenic Rivers Act of 1968 (16 USC 1271-1287). The System was developed for the purpose of preserving, protecting, developing, reclaiming, and enhancing the wilderness qualities, scenic beauties, and ecological regimes of certain free-flowing Louisiana streams.

Certain activities are prohibited on designated Natural and Scenic Rivers because of their detrimental ecological impacts on the streams. These include, but are not limited to; channelization, clearing and snagging, channel realignment, reservoir construction, the commercial cutting of trees within 100 feet of the ordinary low water mark and the use of motor vehicles or other wheeled or tracked vehicles on a designated system stream. Scenic River Permits are required for all activities on or near System Rivers that may detrimentally impact the ecological integrity, scenic beauty or wilderness qualities of those rivers.

There is only one known state designated scenic river within the area and that is Bayou Des Allemands. The portion of Bayou Des Allemands that is considered "scenic," and state recognized, stretches 15 miles from just northeast of Des Allemands heading southeast to Lake Salvador. Specific project sites that are in the vicinity of this scenic stream include Dufrene Ponds and Simoneaux Ponds. Access to this state designated scenic river is abundant with major U.S. Highways and State Highways crisscrossing the region.

3.2 SIGNIFICANT RESOURCES

This section contains a list of the significant resources located in the vicinity of the proposed mitigation projects, and describes in detail those resources that would be impacted, directly or indirectly, by construction of them.

The resources described in this section are those recognized as significant by laws, executive orders, regulations, and other standards of National, state, or regional agencies and organizations; technical or scientific agencies, groups, or individuals; and the general public. Further detail on the significance of each of these resources can be found by contacting the CEMVN, or on www.nolaenvironmental.gov, which offers information on the ecological and human value of these resources, as well as on the laws and regulations governing each resource. Search for "Significant Resources Background Material" in the website's digital library for additional information. See appendix A-8, for the habitats found in the WBV Basin. See appendices B-13, B-14 and B-16, for scientific names of species identified throughout the document.

3.2.1 MITIGATION FOR GENERAL PS BLH-DRY & BLH-WET IMPACTS

3.2.1.1 Wetlands and Other Surface Waters

3.2.1.1.1 Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project

This area is primarily forested wetlands consisting of scrub/shrub wetland, wet bottomland hardwoods, swamp and minimal marsh.

3.2.1.1.2 Dufrene Ponds PS BLH-Wet Restoration Project

This area is primarily open water. The proposed project site is surrounded by fresh marsh and bare land.

3.2.1.1.3 Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project

This area is primarily bare land consisting mainly of agricultural lands.

3.2.1.1.4 Plaquemines, Option 2 PS BLH-Wet Restoration Project

This area is primarily open water. The proposed project site is surrounded by developed and bare land, swamp, wet BLH and intermediate marsh.

3.2.1.2 Wildlife

3.2.1.2.1 Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project

A great variety of mammals, birds, reptiles, and amphibians are found in the vicinity of the Bayou Segnette project. Species inhabiting the area include white-tailed deer, skunks, rabbits, squirrels, armadillos, and a variety of smaller mammals. Various raptors such as barred owls, red-shouldered hawks, northern harriers (marsh hawks), American kestrel, and red-tailed hawks are present. Passerine birds present include sparrows, vireos, warblers, Northern mockingbirds, grackles, red-winged blackbirds, wrens, blue jays, northern cardinals, and crows. Many of these birds are present primarily during periods of spring and fall migrations. The area provides habitat for salamanders, toads, frogs, turtles, and several species of poisonous and nonpoisonous snakes.

3.2.1.2.2 Dufrene Ponds PS BLH-Wet Restoration Project

Brown pelicans, seabirds, dabbling and diving ducks, coots, and gallinules as well as other open water residents and migrants can be found utilizing the habitat within and around Dufrene Ponds.

3.2.1.2.3 Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project

Possible animals that could be found within this area would be skunks, rabbits, deer, and various species of birds including raptors, red-winged blackbirds and swallows.

3.2.1.2.4 Plaquemines, Option 2 PS BLH-Wet Restoration Project

A great variety of mammals, birds, reptiles, and amphibians are found in the vicinity. Brown pelicans, seabirds, dabbling and diving ducks, coots, and gallinules; nutria, muskrat, mink, river otter, and raccoon; rabbit; white-tailed deer; and American alligator as well as other open water residents and migrants can be found utilizing the habitat within and around the area.

3.2.1.3 Threatened and Endangered Species

3.2.1.3.1 Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project

None of the animals under USFWS and/or NMFS jurisdiction are expected to be found in the project area.

3.2.1.3.2 Dufrene Ponds PS BLH-Wet Restoration Project

Of the animals and plants under USFWS and/or NMFS jurisdiction, only the West Indian manatee is expected to potentially occur within the project area.

West Indian Manatee

The West Indian manatee is Federally and state-listed as endangered and also is protected under the Marine Mammal Protection Act of 1972, under which it is considered depleted (USFWS 2001). Critical habitat for the manatee has not been designated in Louisiana (USFWS 1977). The manatee is not a year-round resident in Louisiana, but it may migrate there during warmer months.

There have been 110 reported sightings of manatees in Louisiana since 1975 (LDWF 2005). Sightings in Louisiana, which have been uncommon and sporadic, have included occurrences in Lake Pontchartrain as well as the Amite, Blind, Tchefuncte, and Tickfaw Rivers. Between 1997 and 2000, there were approximately 16 sightings in the Lake Pontchartrain area and a general increase in the number of manatees per sighting (Abadie et al. 2000). Sightings of the manatee in the Lake Pontchartrain basin have increased in recent years, and in late July 2005, 20 to 30 manatees were observed in the lake from the air (Powell and Taylor 2005).

3.2.1.3.3 Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project

None of the animals under USFWS and/or NMFS jurisdiction are expected to be found in the project area.

3.2.1.3.4 Plaquemines, Option 2 PS BLH-Wet Restoration Project

Of the animals and plants under USFWS and/or NMFS jurisdiction, only the West Indian manatee and Pallid sturgeon are expected to potentially occur within the project area. See section 3.2.1.3.2 for detailed description of the Manatee.

Pallid sturgeon

The Pallid sturgeon was listed as Endangered (55 Federal Register 36641) on September 6, 1990. Pallid sturgeons are scarce but common in the Mississippi and Atchafalaya Rivers. Pallid sturgeons live close to the bottom of large, silty rivers with a natural hydrograph. Their preferred habitat has a diversity of depths and velocities formed by braided channels, sand bars, sand flats and gravel bars (USFWS March 1998, accessed Dec 18, 2013) http://www.fws.gov/midwest/endangered/fishes/palld_fc.html.

3.2.1.4 Fisheries, Aquatic Resources, and Water Quality

3.2.1.4.1 Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project

The project is in an upland area and does not have any aquatic species. The water quality of the hydrologic unit encompassing this project footprint does not fully support two of its designated uses: Fish and Wildlife Propagation and Primary Contact Recreation. The suspected sources of this impairment includes drainage/filling/loss of wetlands, habitat modification other than hydromodification, littoral/shore area modification, forced drainage pumping, municipal point source discharge, sewage discharges in unsewered areas, and natural sources.

3.2.1.4.2 Dufrene Ponds PS BLH-Wet Restoration Project

The project area is primarily open water. Most of the fisheries species listed in section 3.1 could be found during part of the year or part of their life cycle in either the placement or borrow site. The placement site has sufficient fisheries access with approximately 5% SAV coverage. Water hyacinth and water lily can be found growing near the shoreline. The average salinity during the growing season in the placement area is 0.27 parts per thousand (ppt). The water quality of the hydrologic unit encompassing this project footprint does not fully support two of its designated uses: Fish and Wildlife Propagation and Outstanding Natural Resource. The suspected sources of this impairment includes forced drainage pumping, introduction of non-native organisms (accidental or intentional), and sediment re-suspension (clean sediment). Lake Salvador, from which borrow would be excavated for this project, does not fully support one of its designated uses: Fish and

Wildlife Propagation. The suspected sources of this impairment includes introduction of non-native organisms (accidental or intentional), sediment re-suspension (clean sediment), and natural sources.

3.2.1.4.3 Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project

The project is in an upland area and does not have any aquatic species. The water quality of the hydrologic unit encompassing this project footprint does not fully support two of its designated uses: Fish and Wildlife Propagation and Primary Contact Recreation. The suspected sources of this impairment includes industrial point source discharge, non-irrigated crop production, introduction of non-native organisms (accidental or intentional), on-site treatment systems (septic systems and similar decentralized systems), package plant or other permitted small flows discharges, unpermitted discharge (domestic wastes), and natural sources**.**

3.2.1.4.4 Plaquemines, Option 2 PS BLH-Wet Restoration Project

The placement area is primarily shallow open water approximately 2.6 feet deep. Most of the fisheries species listed in section 3.1 could be found during part of the year or part of their life cycle in the placement area, but the area is limited in aquatic access and tidal exchange by an almost continues dike. SAV (90% converge) is prevalent throughout the project area. The dominant species are coon's tail, Eurasian watermilfoil, and sago pondweed. The average salinity during the growing season in the placement area is 0.44 ppt. The borrow area in the Mississippi River could have the following species: grass and silver carp, buffalo, yellow, largemouth, and striped bass, sunfish, catfish, alligator, spotted, longnose and shortnose gar, freshwater drum, bowfin and American eel. The water quality of the hydrologic units encompassing this project footprint and the Mississippi River, from which borrow would be excavated for this project, fully supports its designated uses.

3.2.1.5 Essential Fish Habitat

3.2.1.5.1 Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project

The project is in an upland area and does not have any EFH.

3.2.1.5.2 Dufrene Ponds PS BLH-Wet Restoration Project

Both the placement site and borrow area for this project are located within an area identified as EFH for coastal migratory pelagic, red drum, reef fish, and shrimp. See table 3-2 for the specific EFH per life stage.

3.2.1.5.3 Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project

The project is in an upland area and has no EFH.

3.2.1.5.4 Plaquemines, Option 2 PS BLH-Wet Restoration Project

The borrow area for the project is located within an area identified as EFH for coastal migratory pelagic, red drum, and reef fish. See table 3-2 for the specific EFH per life stage. The placement area is not identified as EFH due to limited connectivity.

3.2.1.6 Cultural Resources

The CEMVN has elected to fulfill its obligations under Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended through the execution and implementation of a Programmatic Agreement that was executed on June 18, 2013. The Programmatic Agreement was developed in consultation with the Advisory Council on Historic Preservation, the Louisiana State Historic Preservation Officer (LA SHPO), and federally recognized Indian Tribes. Any cultural resources surveys determined to be necessary will be completed prior to the construction of any

mitigation features, and the results of the surveys will be coordinated with the LA SHPO and federally recognized Indian Tribes for review in accordance with the stipulations of the Programmatic Agreement.

The following Federally recognized Indian Tribes were invited to participate in the development of the Programmatic Agreement: Alabama-Coushatta Tribe of Texas, Caddo Nation of Oklahoma, Chitimacha Tribe of Louisiana, Choctaw Nation of Oklahoma, Coushatta Tribe of Louisiana, Jena Band of Choctaw Indians, Mississippi Band of Choctaw Indians, Quapaw Tribe of Oklahoma, Seminole Nation of Oklahoma, Seminole Tribe of Florida, and the Tunica-Biloxi Tribe of Louisiana to consult in the development of the Programmatic Agreement. The Choctaw Nation of Oklahoma and the Jena Band of Choctaw Indians signed the Programmatic Agreement as invited signatory parties.

For restoration projects proposed on the JLNHPP, the NPS will conduct an independent assessment of potential impacts to cultural resources that are identified on NPS managed lands. The NPS will conduct consultation in accordance with Section 106 of the NHPA with the LA SHPO and federally recognized Indian Tribes for restoration projects that are located on NPS managed lands. In accordance with the stipulations of the Programmatic Agreement, the CEMVN will assess impacts to cultural resources that may result from proposed restoration projects located on NPS lands and will coordinate findings with the NPS to ensure that consistent information is being provided to the LA SHPO and federally recognized Indian Tribes.

"For Mitigation proposed on National Park Service lands within the Jean Lafitte National Historical Park and Preserve, the USACE will assess those proposals for effects to historic properties in accordance with this Agreement. The NPS will conduct its own consultation with the LA SHPO and Indian Tribes in accordance with Section 106 of the NHPA independently of this Agreement. The USACE will continue to coordinate with the NPS to ensure that information being provided to the LA SHPO and Indian Tribes is consistent between the two agencies" (HSDRRS, LPV and WBV Mitigation Programmatic Agreement, Executed June 18, 2013).

3.2.1.6.1 Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project

Several surveys for cultural resources have been carried out within and adjacent to the proposed project area. In June of 2007, Coastal Environments, Inc. (CEI) undertook a cultural resources assessment for the U.S. Army Corps of Engineers, New Orleans District of a portion of the West Bank and Vicinity Hurricane Protection Levee in Jefferson Parish, Louisiana, in advance of proposed improvements to the levee system (Wells, et al. 2010). It was determined that there was a very low potential for cultural resources and no further work was recommended. There are two previously identified cultural resources located in or within one mile of the proposed project area. Site 16JE26, Reforestation Tract Site, is located within the boundaries of one of the proposed BLH-Dry Enhancement project areas. Site 16JE26 was recorded in 1997 (Jones, et al. 1997), and was determined to be potentially eligible for listing to the National Register of Historic Places (NRHP). Site 16JE133 is located approximately 800 meters from the proposed project area and is identified as a potential prehistoric "extraction locale." When initially recorded, an intact midden deposit was identified consisting of shell. The site was revisited in 1997 and the site record was updated to indicate the presence of prehistoric ceramics and human remains on the surface of the site (Jones et al. 1997).

3.2.1.6.2 Dufrene Ponds PS BLH-Wet Restoration Project

The Dufrene Ponds project area is entirely open water connected to Petit Lac des Allemands, and is primarily used for recreational fishing. The borrow source for the project is located in Lake Salvador, and borrow will be pumped through a slurry pipe that will be floated on the water along

Bayou des Allemands and Petit Lac des Allemands. There have been several surveys for cultural resources carried out in the vicinity of Dufrene Ponds, Petit Lac des Allemands, Bayou des Allemands, and Lake Salvador. Numerous sites have been identified along Bayou des Allemands and the Lake Salvador shoreline.

3.2.1.6.3 Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project

There have been no previous surveys for cultural resources conducted in the proposed Lake Boeuf project area. The areas where restoration activities are to occur have been historically used for agriculture and have been subjected to repeat plowing and other activities associated with agricultural use. The area has been heavily disturbed by plowing and other activities, but there remains a possibility that intact cultural resources could exist below the plow line. Bayou Lafourche lies to the south of the project area and represents an important transportation route prehistorically and historically. Archaeological sites are common along the natural levees of bayous and other waterways. Though the project area has not previously been surveyed for cultural resources, there are numerous standing structures that may be historic identified along Bayou Lafourche, immediately to the south of the project area. The closest identified cultural resource, site 16LF276, is located approximately 3 miles to the east of the project area and is identified as the possible remains of a sugar house. The Bush Grove Plantation site, 16LF294, is located approximately 4 miles to the west of the project area. The Bush Grove Plantation is located on the north side of Bayou Lafourche, and was known to be producing sugar by the 1840's. The proposed restoration projects at Lake Boeuf would include the use of existing roadways, as well as the construction of some additional access roads.

3.2.1.6.4 Plaquemines, Option 2 PS BLH-Wet Restoration Project

The project area is predominately open water. A borrow source is located in the Mississippi River and borrow material needed for the proposed restoration project will be moved through a slurry pipe to the project area. Several surveys for cultural resources have been conducted in the vicinity of the project area for past revetment and levee projects. Sites identified within one mile of the project area include 16PL170 (Sarah Plantation), 16PL187 (Locus 21), and 16PL186 (Locus 20). Site 16PL186 is located approximately 0.7 miles from the northern boundary of the proposed project. The site consists of nine mounds clustered in three groups, and is affiliated with a prehistoric (Marksville through Mississippian) and historic use of the area. Site 16PL186 was recorded in 2009 during cultural resources surveys for the Non-Federal Levees, Plaquemines Parish (Valk et al. 2009) and was determined to be potentially significant and warranting additional testing.

3.2.1.7 Recreational Resources

3.2.1.7.1 Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project

All mitigation sites are located on private land with the exception of BS6 which is located in Bayou Segnette State Park immediately south of the campground. Mitigation BS4 is located adjacent to the park on the eastern side, also near the campground. There are no developed recreation sites located in the project area which is privately owned.

3.2.1.7.2 Dufrene Ponds PS BLH-Wet Restoration Project

The project is located in a private lake which provides opportunity for fishing and boating. Adjacent to the lake are private camps. The lake provides access to adjacent waters including Petite Lac des Allemands, Bayou des Allemands, Lac Des Allemands and Bayou Gauche.

The borrow material would be dredged from Lake Salvador and piped to Dufrene Ponds via Bayou Des Allemands. Recreational uses in Lake Salvador and the Bayou include boating, fishing and water fowl hunting.

3.2.1.7.3 Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project

There are no developed recreation sites within the project area which is privately owned. The project area is located south of Lake Bouef WMA.

3.2.1.7.4 Plaquemines, Option 2 PS BLH-Wet Restoration Project

There are no developed recreation sites within the project area which is privately owned. The borrow material would be dredged from the Mississippi River which would be piped underground under the highway and railroad. There is the potential for boating and fishing in the Mississippi River; as well as bank fishing along the river edge.

3.2.1.8 Aesthetic Resources

3.2.1.8.1 Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project

The area is relatively flat terrain mixed with a variety of water resources. Vegetation in the area is a mixture of invasive species and dense hardwoods. The forestation cover is dense. Overall access to the site is limited, with Nicole Boulevard located well to the north. The primary access comes from Bayou Segnette State Park. User activity is relatively low in this region, and primarily relegated to Bayou Segnette State Park. There are no Federal or State designated Scenic Byways in the area. Bayou Segnette State Park is a state protected land.

3.2.1.8.2 Dufrene Ponds PS BLH-Wet Restoration Project

The area is relatively flat terrain mixed with a variety of water resources including Bayou Des Allemands. The Dufrene Ponds are relatively shallow water bodies that are at the center of the project site. Vegetation in the area is a mixture of native and non-native grasses and marsh plants. Trees and forestation are minimal. Overall access to the site is limited, with U.S. Highway 90 located adjacent to and northwest of the ponds. The primary access comes from U.S. Highway 90 and the residential area situated along the shores of the ponds. User activity is relatively high in this region, and includes automotive and water craft traffic. There are no Federal or State designated Scenic Byways in the area. There are no State or Federally protected lands in the area.

3.2.1.8.3 Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project

The area, located south of the railroad tracks is flat terrain with little water resources. The primary land use is agriculture with vast, open fields giving a full 360 degree panorama from L.A. Highway 308. Low density residential uses hug this roadway, and that of Highway 1. The only significant institutional resource in the area is Lake Boeuf Wildlife Management Area, located to the northeast, and adjacent to the northern most portion of the project area.

North of the railroad tracks, the landscape is much different with swamp and marsh conditions, stands of bottomland hardwood and scrub shrub. Terrain also seems to vary a bit more with small mounds and ridges and there is substantially more water resources with canals crisscrossing the area.

The previously mentioned roadways appear to be the major roadways in the area and most of the user activity is focused here. These roadways are a part of the Louisiana Scenic Bayou Byway and the Wetlands Cultural Trail, both of which crisscross the area on multiple roadways. These scenic byways are state designated roads and do not have federal status or All American road status

3.2.1.8.4 Plaquemines, Option 2 PS BLH-Wet Restoration Project

The area is a vast open water, swamp and marsh area with flat terrain and minimal tree coverage. It is located on the flood side of the existing HSDRRS levee system that runs through the vicinity. Primary land uses in the area are agricultural and low density residential, but are located on the protected side of the existing levee system.

Water resources are abundant in the area with canals and other open water areas dotting the landscape.

The primary thoroughfare in the area is L.A. Highway 23 which runs parallel to the Mississippi River. The majority of user activity is located along this thoroughfare. Highway 23 forms a portion of the Great River Road Scenic Byway. This byway has state, federal and All American Road Status and is institutionally and publically significant to the nation at large.

3.2.1.9 Air Quality

3.2.1.9.1 Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project

This project is in Jefferson Parish which is currently in attainment of NAAQS.

3.2.1.9.2 Dufrene Ponds PS BLH-Wet Restoration Project

This project is in Lafourche Parish which is currently in attainment of NAAQS.

3.2.1.9.3 Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project

This project is in Lafourche Parish which is currently in attainment of NAAQS.

3.2.1.9.4 Plaquemines, Option 2 PS BLH-Wet Restoration Project

This project is in Plaquemines Parish which is currently in attainment of NAAQS.

3.2.1.10 Noise

3.2.1.10.1 Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project

Adjacent communities are extensively developed, primarily as residential and commercial properties. With the onset of construction along the perimeter of the developed area, the adverse effects of noise created by construction activities would be introduced. Noise would be created from high-powered machinery and human activities within the project area and emanate various distances beyond the project site until the noise energy dissipates. Because of the proximity of the construction site to the developed area, and the density of the vegetative buffer, the number of residential and commercial properties exposed to the adverse impacts of noise is minimal.

There are two major thoroughfares, Lapalco Blvd and Highway 18, located north of the project area. Noise is produced by consistent and sporadically heavy traffic on these roads. The Outer Lake Cataouatche Canal is located south of the project area and sporadic boat traffic may produce noise levels that exceed 55 dBA within the area.

3.2.1.10.2 Dufrene Ponds PS BLH-Wet Restoration Project

There are commercial and residential housing units located along Highway 90, which is directly adjacent to the project area. Noise is produced by consistent and sporadically heavy traffic on this road. The nearest major navigable waterway to the Dufrene Ponds Restoration project is the

Intracoastal Waterway. Sporadic boat traffic and construction activities may produce noise levels that exceed 55 dBA within the area.

3.2.1.10.3 Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project

There are commercial and residential housing units located along Highway 308, which is directly south of the project area. Noise is produced by consistent and sporadically heavy traffic on this road. The nearest major navigable waterway is Bayou Lafourche, which is adjacent to the Lake Boeuf project area. Sporadic boat traffic may produce noise levels that exceed 55 dBA within the area.

3.2.1.10.4 Plaquemines, Option 2 PS BLH-Wet Restoration Project

There are commercial and residential housing units located along Highway 23, which is located east of the project area. Noise is produced by consistent and sporadically heavy traffic on this road. The nearest major navigable waterway to the Plaquemines Option 2 Restoration project is the Mississippi River. Sporadic boat traffic along the river may produce noise levels that exceed 55 dBA within the area.

3.2.1.11 Hazardous, Toxic, and Radioactive Waste

3.2.1.11.1 Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project

One Recognized Environmental Condition (REC), an active producing oil well located in BS2, was found within the proposed Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project. A petroleum product pipeline crosses between Features BS2 and BS4 and is adjacent to BS3A and may be considered a potential REC. Three plugged and abandoned dry hole oil wells are also located in BS2. There are no oil wells located in any of the remaining three features.

3.2.1.11.2 Dufrene Ponds PS BLH-Wet Restoration Project

Several RECs were found within the proposed Dufrene Ponds PS BLH-Wet Restoration Project. Two active oil wells are located immediately to the east of DP4A. Two natural gas pipelines cross Features DP1A and DP4A.

3.2.1.11.3 Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project

One REC, a natural gas pipeline, exists in Features BWP1 and BDP2 of the Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project. One plugged and abandoned dry hole oil well exists in BDP3. There are no wells or pipelines in BDP1. There is a low probability of encountering HTRW or petroleum products in Features BDP1 and BDP3. Caution must be taken to avoid damage to or breakage of the pipeline in BWP1.

3.2.1.11.4 Plaquemines, Option 2 PS BLH-Wet Restoration Project

No RECs were found within P3D of the proposed Plaquemines Option 2 PS BLH-Wet Project. A plugged and abandoned dry hole oil well is located within P3D and a natural gas pipeline is located to the west northwest of P3D. There is a low probability of encountering HTRW or petroleum products in P3D.

3.2.1.12 Socioeconomics/Land Use, Environmental Justice, Transportation, Navigation, and Commercial Fisheries

3.2.1.12.1 Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project

The project is located on the west bank of the Mississippi River in Westwego, LA. Most of the forested site is privately-owned while 21 acres of the BLH-Dry enhancement site is located in Bayou Segnette State Park. According to 2010 U.S. Census data, there are no residents located within the boundaries of the Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project or in the vicinity. There are no commercial/industrial properties, public facilities, or transportation infrastructure within the project boundaries. The nearest major thoroughfare is Lapalco Boulevard.

3.2.1.12.2 Dufrene Ponds PS BLH-Wet Restoration Project

The project is located in Lafourche Parish near Des Allemands, Louisiana. There are commercial and residential housing units located adjacent to the boundaries of the Dufrene Ponds PS BLH-Wet Restoration project. The existing conditions as they relate to environmental justice are similar to those at the Bayou Segnette project site in that there are no residents within the project site which is open water. There are, however, approximately 338 people living along the edge of the Dufrene Ponds PS BLH-Wet Restoration Project of which approximately 18 are minority while 10% of area households are below the poverty level. There is an oil platform within the restoration area. The nearest major thoroughfare is LA Highway 90. The nearest major navigable waterway to the Dufrene Ponds Restoration PS BLH-Wet Project is the Intracoastal Waterway.

3.2.1.12.3 Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project

This project is located on existing agricultural fields between the Lake Boeuf Wildlife Management Area and Bayou Lafourche near the town of Raceland in Lafourche Parish, Louisiana. According to 2010 U.S. Census data, 281 people live in 6 census blocks comprising the Lake Boeuf project area vicinity and are part of block group 1 of census tract 20900. Land proposed for restoration is typically used for agricultural purposes and most land owners live in homes fronting Highway 308. Census block data reveals under 10% of the residents are minority and about the same percentage of households are below the poverty level. A smaller number of mitigation sites are located in block group 2 of census tract 20900. About 38% of the households in this block group have incomes below the poverty level while census block data reveals that 90% are minority. According to the Louisiana Department of Agriculture and Farm Bureau Agency, primary agricultural production within Lafourche Parish in 2013 includes sugar cane (94%) and soy beans (6%), therefore it is likely that the affected land has also been employed for similar purposes. Additionally, there are no industrial properties, or public facilities within the project. The nearest major thoroughfare is LA Highway 308. The nearest major navigable waterway is Bayou Lafourche, which is adjacent to the Lake Boeuf PS BLH-Dry & BLH-Wet Project.

3.2.1.12.4 Plaquemines, Option 2 PS BLH-Wet Restoration Project

This project is located on the west bank of Plaquemines Parish, Louisiana. There are no residents or housing units located within the boundaries of the Plaquemines Option 2 PS BLH-Wet Restoration Project as it mainly consists of open water. There are, though, about 1,300 residents living across a borrow canal on lands fronting LA Highway 23. Some of these residents own the land being considered for restoration of BLH-Wet. One quarter of the residents are minority while the larger block group data shows only 2% of households with incomes below the poverty level.

Additionally, there are no commercial/industrial properties, public facilities, or transportation infrastructure within the area. There are residential and commercial properties located adjacent to the restoration project. The nearest major thoroughfare is LA Highway 23. The nearest major navigable waterway to the Plaquemines Option 2 PS BLH-Wet Restoration Project is the Mississippi River.

3.2.1.13 Prime and Unique Farmland

3.2.1.13.1 Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project
No prime farmlands are located at this site.

3.2.1.13.2 Dufrene Ponds PS BLH-Wet Restoration Project
No prime farmlands are located at this site.

3.2.1.13.3 Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project
The entire Lake Boeuf PS BLH site is classified as Prime Farmlands; Cancienne silty clay loam, Cancienne silty loam, and Schriever clay. The majority of the site is currently being used for agriculture and includes some pasture land.

3.2.1.13.4 Plaquemines, Option 2 PS BLH-Wet Restoration Project
No prime farmlands are located at this site.

3.2.1.14 Natural & Scenic Rivers

3.2.1.14.1 Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project
Bayou Segnette State Park is a state protected land. There are no state recognized scenic streams in the vicinity of the project area.

3.2.1.14.2 Dufrene Ponds PS BLH-Wet Restoration Project
There are no State or Federally protected lands in the area. The portion of Bayou Des Allemands that runs adjacent to the project site is a state designated Scenic River.

3.2.1.14.3 Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project
There are no state recognized scenic streams in the vicinity of the project area.

3.2.1.14.4 Plaquemines, Option 2 PS BLH-Wet Restoration Project
There are no state recognized scenic streams in the vicinity of the project area.

3.2.2 MITIGATION FOR GENERAL FS BLH-WET IMPACTS

3.2.2.1 Wetlands and other Surface Waters

3.2.2.1.1 Dufrene Ponds FS BLH-Wet Restoration Project
This area is primarily open water. The proposed project site is surrounded by fresh marsh and bare land.

3.2.2.1.2 Lake Boeuf FS BLH-Wet Restoration Project (TSMP)
This area is primarily bare land consisting mainly of agricultural lands.

3.2.2.1.3 Plaquemines, Option 2 FS BLH-Wet Restoration Project
This area is primarily open water. The proposed project site is surrounded by developed and bare land, swamp, wet BLH and intermediate marsh.

3.2.2.2 Wildlife

3.2.2.2.1 Dufrene Ponds FS BLH-Wet Restoration Project

A variety of avian species utilize this project area. Brown pelicans, seabirds, dabbling and diving ducks, coots, and gallinules as well as other open water residents and migrants can be found utilizing the habitat within and around Dufrene Ponds.

3.2.2.2.2 Lake Boeuf FS BLH-Wet Restoration Project (TSMP)

Possible animals that could be found within this area would be skunks, rabbits, deer, and various species of birds including raptors, red-winged blackbirds and swallows.

3.2.2.2.3 Plaquemines, Option 2 FS BLH-Wet Restoration Project

A great variety of mammals, birds, reptiles, and amphibians are found in the vicinity. Brown pelicans, seabirds, dabbling and diving ducks, coots, and gallinules; nutria, muskrat, mink, river otter, and raccoon; rabbit; white-tailed deer; and American alligator as well as other open water residents and migrants can be found utilizing the habitat within and around the area.

3.2.2.3 Threatened and Endangered Species

3.2.2.3.1 Dufrene Ponds FS BLH-Wet Restoration Project

None of the animals under USFWS and/or NMFS jurisdiction are expected to be found in the project area.

3.2.2.3.2 Lake Boeuf FS BLH-Wet Restoration Project (TSMP)

None of the animals under USFWS and/or NMFS jurisdiction are expected to be found in the project area.

3.2.2.3.3 Plaquemines, Option 2 FS BLH-Wet Restoration Project

Of the animals and plants under USFWS and/or NMFS jurisdiction, West Indian manatee and Pallid sturgeon are expected to potentially occur within the project area.

3.2.2.4 Fisheries, Aquatic Resources, and Water Quality

3.2.2.4.1 Dufrene Ponds FS BLH-Wet Restoration Project

See Section 3.2.1.4.2

3.2.2.4.2 Lake Boeuf FS BLH-Wet Restoration Project (TSMP)

See Section 3.2.1.4.3

3.2.2.4.3 Plaquemines, Option 2 FS BLH-Wet Restoration Project

See Section 3.2.1.4.4

3.2.2.5 Essential Fish Habitat

3.2.2.5.1 Dufrene Ponds FS BLH-Wet Restoration Project

See section 3.2.1.5.2

3.2.2.5.2 Lake Boeuf FS BLH-Wet Restoration Project (TSMP)

See section 3.2.1.5.3

3.2.2.5.3 Plaquemines, Option 2 FS BLH-Wet Restoration Project

See section 3.2.1.5.4

3.2.2.6 Cultural Resources

3.2.2.6.1 Dufrene Ponds FS BLH-Wet Restoration Project
See section 3.2.1.6.2

3.2.2.6.2 Lake Boeuf FS BLH-Wet Restoration Project (TSMP)
See section 3.2.1.6.3

3.2.2.6.3 Plaquemines, Option 2 FS BLH-Wet Restoration Project
See section 3.2.1.6.4

3.2.2.7 Recreational Resources

3.2.2.7.1 Dufrene Ponds FS BLH-Wet Restoration Project
See section 3.2.1.7.2

3.2.2.7.2 Lake Boeuf FS BLH-Wet Restoration Project (TSMP)
See section 3.2.1.7.3

3.2.2.7.3 Plaquemines, Option 2 FS BLH-Wet Restoration Project
See section 3.2.1.7.4

3.2.2.8 Aesthetic Resources

3.2.2.8.1 Dufrene Ponds FS BLH-Wet Restoration Project
See section 3.2.1.8.2

3.2.2.8.2 Lake Boeuf FS BLH-Wet Restoration Project (TSMP)
See section 3.2.1.8.3

3.2.2.8.3 Plaquemines, Option 2 FS BLH-Wet Restoration Project
See section 3.2.1.8.4

3.2.2.9 Air Quality

3.2.2.9.1 Dufrene Ponds FS BLH-Wet Restoration Project
This project is in Lafourche Parish which is currently in attainment of NAAQS.

3.2.2.9.2 Lake Boeuf FS BLH-Wet Restoration Project (TSMP)
This project is in Lafourche Parish which is currently in attainment of NAAQS.

3.2.2.9.3 Plaquemines, Option 2 FS BLH-Wet Restoration Project
This project is in Plaquemines Parish which is currently in attainment of NAAQS.

3.2.2.10 Noise

3.2.2.10.1 Dufrene Ponds FS BLH-Wet Restoration Project
See section 3.2.1.10.2

3.2.2.10.2 Lake Boeuf FS BLH-Dry & BLH-Wet Restoration Project
See section 3.2.1.10.3

3.2.2.10.3 Plaquemines, Option 2 FS BLH-Wet Restoration Project
See section 3.2.1.10.4

3.2.2.11 Hazardous, Toxic, and Radioactive Waste

3.2.2.11.1 Dufrene Ponds FS BLH-Wet Restoration Project
Two plugged and abandoned dry hole oil wells and one plugged and abandoned producing oil well are located within or near DP1B. Several producing wells are located within one quarter to one half of a mile of the Dufrene Ponds FS BLH-Wet Restoration Project.

3.2.2.11.2 Lake Boeuf FS BLH-Wet Restoration Project TSMP)
Two RECs, a natural gas pipeline and one oil well are located in BWF3. The same natural gas pipeline exists in Features BWF4 and BWF5. There are no RECs in BWF1 and BWF2. A crude oil pipeline exists to the north northeast of BWF5. There is a low probability of encountering HTRW or petroleum products in Features BWF1 and BWF2.

3.2.2.11.3 Plaquemines, Option 2 FS BLH-Wet Restoration Project
No RECs were found within feature P3C of the proposed Plaquemines Option 2 FS BLH-Wet Restoration Project. A plugged and abandoned dry hole oil well is located approximately 1000 feet to the west of P3C. There is a low probability of encountering HTRW or petroleum products in the proposed restoration area.

3.2.2.12 Socioeconomics/Land Use, Environmental Justice, Transportation, Navigation, and Commercial Fisheries

3.2.2.12.1 Dufrene Ponds FS BLH-Wet Restoration Project
See section 3.2.1.12.2

3.2.2.12.2 Lake Boeuf FS BLH-Wet Restoration Project TSMP)
See section 3.2.1.12.3

3.2.2.12.3 Plaquemines, Option 2 FS BLH-Wet Restoration Project
See section 3.2.1.12.4

3.2.2.13 Prime and Unique Farmland

3.2.2.13.1 Dufrene Ponds FS BLH-Wet Restoration Project
See section 3.2.1.13.2

3.2.2.13.2 Lake Boeuf FS BLH-Wet Restoration Project TSMP)
See section 3.2.1.13.3

3.2.2.13.3 Plaquemines, Option 2 FS BLH-Wet Restoration Project
See section 3.2.1.13.4

3.2.2.14 Natural and Scenic Rivers

3.2.2.14.1 Dufrene Ponds FS BLH-Wet Restoration Project

See section 3.2.1.14.2

3.2.2.14.2 Lake Boeuf FS BLH-Wet Restoration Project TSMP)
See section 3.2.1.14.3

3.2.2.14.3 Plaquemines, Option 2 FS BLH-Wet Restoration Project
There are no state recognized scenic streams in the vicinity of the project area.

3.2.3 MITIGATION FOR GENERAL FS SWAMP IMPACTS

3.2.3.1 Wetlands and other Surface Waters

3.2.3.1.1 Lake Boeuf FS Swamp Restoration Project (TSMP)
This area is primarily bare land consisting mainly of agricultural lands with scrub/shrub wetlands in the northern most portion.

3.2.3.1.2 Plaquemines, Option 1 FS Swamp Restoration Project
This area is primarily open water. The proposed project site is surrounded by developed and bare land, swamp, wet BLH and intermediate marsh.

3.2.3.1.3 Salvador-Timken FS Swamp Restoration Project
This area is primarily open water. The proposed project site is adjacent to some wetlands consisting of wet BLH, fresh marsh and scrub/shrub wetland.

3.2.3.1.4 Simoneaux Ponds FS Swamp Restoration Project
This project site is primarily open water and is adjacent to fresh marsh.

3.2.3.2 Wildlife

3.2.3.2.1 Lake Boeuf FS Swamp Restoration Project (TSMP)
Possible animals that could be found within this area would be skunks, rabbits, deer, and various species of birds including raptors, red-winged blackbirds and swallows.

3.2.3.2.2 Plaquemines, Option 1 FS Swamp Restoration Project
A great variety of mammals, birds, reptiles, and amphibians are found in the vicinity. Brown pelicans, seabirds, dabbling and diving ducks, coots, and gallinules; nutria, muskrat, mink, river otter, and raccoon; rabbit; white-tailed deer; and American alligator as well as other open water residents and migrants can be found utilizing the habitat within and around the area.

3.2.3.2.3 Salvador-Timken FS Swamp Restoration Project
A variety of avian species utilize this project area. Brown pelicans, seabirds, dabbling and diving ducks, coots, and gallinules as well as other open water residents and migrants can be found utilizing the habitat within and around the Salvador-Timken area.

3.2.3.2.4 Simoneaux Ponds FS Swamp Restoration Project
A variety of avian species utilize this project area. Brown pelicans, seabirds, dabbling and diving ducks, coots, and gallinules as well as other open water residents and migrants can be found utilizing the habitat within and around the Simoneaux Ponds area.

3.2.3.3 Threatened and Endangered Species

3.2.3.3.1 Lake Boeuf FS Swamp Restoration Project (TSMP)
See section 3.2.1.3.3

3.2.3.3.2 Plaquemines, Option 1 FS Swamp Restoration Project
See section 3.2.1.3.4

3.2.3.3.3 Salvador-Timken FS Swamp Restoration Project
Of the animals and plants under USFWS and/or NMFS jurisdiction, only the West Indian manatee and Pallid sturgeon are expected to potentially occur within the project area. See sections 3.2.1.3.2 and 3.2.1.3.4 for full species descriptions.

3.2.3.3.4 Simoneaux Ponds FS Swamp Restoration Project
Of the animals and plants under USFWS and/or NMFS jurisdiction, only the West Indian manatee and Pallid sturgeon are expected to potentially occur within the project area. See sections 3.2.1.3.2 and 3.2.1.3.4 for full species descriptions.

3.2.3.4 Fisheries, Aquatic Resources, and Water Quality

3.2.3.4.1 Lake Boeuf FS Swamp Restoration Project (TSMP)
See Section 3.2.1.4.3

3.2.3.4.2 Plaquemines, Option 1 FS Swamp Restoration Project
See Section 3.2.1.4.4

3.2.3.4.3 Salvador-Timken FS Swamp Restoration Project
The placement area is primarily shallow open water approximately 2.5 feet deep and has sufficient fisheries access. Most of the fisheries species listed in section 3.1 could be found during part of the year or part of their life cycle in the placement and borrow area. SAV (50% converge) is prevalent throughout the project area. The dominant species are Eurasian watermilfoil, alligatorweed , water hyacinth, water lilies, American lotus, and water primrose. The average salinity during the growing season in the placement area is 0.23 ppt. The water quality of the hydrologic units encompassing this project footprint and Lake Cataouatche, from which borrow would be excavated for this project, fully supports its designated uses.

3.2.3.4.4 Simoneaux Ponds FS Swamp Restoration Project
The placement area is primarily shallow open water with approximately 25% SAV coverage (water lilies and water hyacinth) and has sufficient fisheries access. Most of the fisheries species listed in section 3.1 could be found during part of the year or part of their life cycle in the placement and borrow area. The average mean salinity during the growing season is estimated at 0.30 ppt. The water quality of the hydrologic unit encompassing this project footprint does not fully support one of its designated uses: Fish and Wildlife Propagation. The suspected source of this impairment includes introduction of non-native organisms (accidental or intentional). Lake Salvador, from which borrow would be excavated for this project, does not fully support one of its designated uses: Fish and Wildlife Propagation. The suspected sources of this impairment includes introduction of non-native organisms (accidental or intentional), sediment resuspension (clean sediment), and natural sources.

3.2.3.5 Essential Fish Habitat

3.2.3.1.1 Lake Boeuf FS Swamp Restoration Project (TSMP)

See section 3.2.1.5.3

3.2.3.5.2 Plaquemines, Option 1 FS Swamp Restoration Project
See section 3.2.1.5.4

3.2.3.5.3 Salvador-Timken FS Swamp Restoration Project
The borrow area for the project is located within an area identified as EFH for coastal migratory pelagic, red drum, and reef fish. See table 3-2 for the specific EFH per life stage. The placement area has not been identified as EFH per NOAA Mapper.

3.2.3.5.4 Simoneaux Ponds FS Swamp Restoration Project
See section 3.2.1.5.2 for the EFH in the borrow site for Simoneaux pond which is adjacent to the site for Dufrene ponds. The placement area has not been identified as EFH per NOAA Mapper.

3.2.3.6 Cultural Resources

3.2.3.6.1 Lake Boeuf FS Swamp Restoration Project (TSMP)
See section 3.2.1.6.3

3.2.3.6.2 Plaquemines, Option 1 FS Swamp Restoration Project
See section 3.2.1.6.4

3.2.3.6.3 Salvador-Timken FS Swamp Restoration Project
The project area is predominately open water connected to Lake Cataouatche. A background and literature review indicated that the only surveys for cultural resources that have been carried out in the vicinity of the project area were for the Davis Pond Freshwater Diversion (1994 and 2009). A borrow source is located in Lake Cataouatche and sediment would be transported through a slurry pipe to the two identified restoration areas. Four cultural resources have been identified within one mile of the proposed project area; 16SC27, 16SC28, 16SC29, and 16SC76. Of the four sites identified, 16SC27 was identified as significant and likely to have potential for additional research. 16SC27 consists of a prehistoric and historic component containing ceramics representing both periods, chipped stone, projectile points, shell, glass, and brick.

3.2.3.6.4 Simoneaux Ponds FS Swamp Restoration Project
Several surveys for cultural resources have been conducted within the vicinity of the proposed project area. The borrow source for the project is located in Lake Salvador, and borrow will be pumped through a slurry pipe that will be floated on the water along Bayou des Allemands and Bayou Gauche. Previous surveys have resulted in the identification of four cultural resources sites being identified within one mile of the Simoneaux Ponds restoration areas; 16SC43, 16SC44, 16SC45, and 16SC7. Site 16SC7 is the only of the four cultural resources that is located close to any activities associated with the proposed project. The proposed location of the slurry pipe between Bayou Gauche and Simoneaux Ponds is near the reported location of 16SC7. During Phase I cultural resources surveys for the Bayou Gauche sewer collection system in 1995, evidence of 16SC7 was not relocated and no additional testing of the site or area was recommended (Pincoske and Athens 1995).

3.2.3.7 Recreational Resources

3.2.3.7.1 Lake Boeuf FS Swamp Restoration Project (TSMP)

The affected environment is similar to 3.2.1.7.3 Lake Boeuf PS BLH-Dry and BLH-Wet Restoration Project except that the mitigation feature is also adjacent to Lake Boeuf WMA.

3.2.3.7.2 Plaquemines, Option 1 FS Swamp Restoration Project
See section 3.2.1.7.4

3.2.3.7.3 Salvador-Timken FS Swamp Restoration Project
The project is located within the Salvador-Timken WMA and within the WMA's Limited Access Area which provides use restrictions for 3,000 of the 33,046 acres. The LAA area is closed to all uses in October except youth deer and waterfowl hunting. The mitigation feature is located in open water. The borrow material would be dredged from Lake Cataouatche and piped to the mitigation site. Hunting (waterfowl), fishing (shrimp, fish, crabs, crawfish), and boating occur within the project area with certain restrictions. Boats with internal combustion engines are not allowed from September through January. The WMA did not receive funds from the L&WCF.

3.2.3.7.4 Simoneaux Ponds FS Swamp Restoration Project
The project area is located within privately owned open water which is leased for fishing. The Ponds are accessible via Bayou Gauche and Bayou Des Allemands.

The borrow material would be dredged from Lake Salvador and piped to Dufrene Ponds via Bayou Des Allemands and Bayou Gauche. Recreational uses in Lake Salvador and the two Bayous include boating, fishing and water fowl hunting.

3.2.3.8 Aesthetic Resources

3.2.3.8.1 Lake Boeuf FS Swamp Restoration Project (TSMP)
See section 3.2.1.8.3

3.2.3.8.2 Plaquemines, Option 1 FS Swamp Restoration Project
See section 3.2.1.8.4

3.2.3.8.3 Salvador-Timken FS Swamp Restoration Project
The area is extremely remote with limited to no access, other than by watercraft. The landscape of the region is made up of large open water areas framed by marsh, wetland and some swamp, as well as manmade canals. Much of the vegetation bounds and defines the canals, as well as the shorelines of the large open water areas. Vegetation appears to be primarily low growing scrub shrub and tall grasses with only a few larger, water tolerant trees.

There are no features that could be considered technically, institutionally or publically important. However; it is important to note that the entirety of the project falls within the boundaries of the Salvador WMA. This WMA sees the largest public use in the state for fishing.

3.2.3.8.4 Simoneaux Ponds FS Swamp Restoration Project
The area is made up of a large open water lake, bordered by marsh and wetland. Tree growth appears to be limited but does border this large water body as well as Bayou Gauche located south of and adjacent to the project area. There are also several manmade canals and other lagoons and ponds just to the south of the project area. This area has more in the way of tree growth.

Land uses in the area are dominated by low density residential and some agriculture. Much of these uses are located to the west of the project area on the protected side of a minor levee system. However; it is important to note that there is some residential located along L.A. Highway

306 in the small community of Bayou Gauche. This roadway serves as the primary thoroughfare in the area and receives the majority of user activity.

There are no features that could be considered technically, institutionally or publically important.

3.2.3.9 Air Quality

3.2.3.9.1 Lake Boeuf FS Swamp Restoration Project (TSMP)
This project is in Lafourche Parish which is currently in attainment of NAAQS.

3.2.3.9.2 Plaquemines, Option 1 FS Swamp Restoration Project
This project is in Plaquemines Parish which is currently in attainment of NAAQS.

3.2.3.9.3 Salvador-Timken FS Swamp Restoration Project
This project is in St. Charles Parish which is currently in attainment of NAAQS.

3.2.3.9.4 Simoneaux Ponds FS Swamp Restoration Project
This project is in St. Charles Parish which is currently in attainment of NAAQS.

3.2.3.10 Noise

3.2.3.10.1 Lake Boeuf FS Swamp Restoration Project (TSMP)
See section 3.2.1.10.3

3.2.3.10.2 Plaquemines, Option 1 FS Swamp Restoration Project
There are commercial and residential housing units located along Highway 23, which is located east of the project area. Noise is produced by consistent and sporadically heavy traffic on this road. The nearest major navigable waterway to the Plaquemines Option 2 Restoration project is the Mississippi River. Sporadic boat traffic along the river may produce noise levels that exceed 55 dBA.

3.2.3.10.3 Salvador-Timken FS Swamp Restoration Project
This project is located in a remote portion of St. Charles Parish, Louisiana. The nearest major navigable waterway to the Salvador-Timken Restoration project is Lake Cataouatche, LA. Sporadic boat traffic may produce noise levels that exceed 55 dBA.

3.2.3.10.4 Simoneaux Ponds FS Swamp Restoration Project
This project is located in a remote portion of St. Charles Parish, Louisiana. The nearest major thoroughfares are LA Highway 308, which is located south of the project area and Highway 632, located west of the project area. There are commercial and residential housing units located along both highways. The major nearest navigable waterway to the Simoneaux Ponds FS Swamp Restoration Project is Bayou Gauche off Bayou Des Allemands. Sporadic boat traffic may produce noise levels that exceed 55 dBA.

3.2.3.11 Hazardous, Toxic, and Radioactive Waste

3.2.3.11.1 Lake Boeuf FS Swamp Restoration Project (TSMP)

Several RECs were found within the proposed Lake Boeuf FS Swamp Restoration Project (TSMP). Many active oil wells, an injection well, and several natural gas and crude oil pipelines are located throughout the area. Several plugged and abandoned dry hole oil wells are also located throughout the area. All features, with the exception of S3 and S7, are impacted by oil wells and/or pipelines.

3.2.3.11.2 Plaquemines, Option 1 FS Swamp Restoration Project
No RECs were found within P1 of the proposed Plaquemines Option 1 Swamp Restoration area. A plugged and abandoned dry hole oil well is located approximately 1000 feet to the west of P2. There is a low probability of encountering HTRW or petroleum products in the proposed restoration area.

3.2.3.10.3 Salvador-Timken FS Swamp Restoration Project
No RECs were found within the Salvador-Timken Swamp Restoration Project. There are no pipelines crossing the proposed area. No wells or waste pits have been identified. There would be a low probability of encountering HTRW or petroleum products in the proposed restoration area.

3.2.3.11.4 Simoneaux Ponds FS Swamp Restoration Project
One REC, a natural gas pipeline, is located in the Simoneaux Ponds Swamp Restoration Project in SP3. No wells or waste pits have been identified within the project area. Precautions must be taken to prevent damage to or breakage of the pipeline.

3.2.3.12 Socioeconomics/Land Use, Environmental Justice, Transportation, Navigation, and Commercial Fisheries

3.2.3.12.1 Lake Boeuf FS Swamp Restoration Project (TSMP)
See section 3.2.1.12.3

3.2.3.12.2 Plaquemines, Option 1 FS Swamp Restoration Project
See section 3.2.1.12.4

3.2.3.12.3 Salvador-Timken FS Swamp Restoration Project
This project is located in St. Charles Parish, Louisiana. The Salvador-Timken FS Swamp Restoration Project Area is rural and according to the 2010 U.S. Census, has no residents. Additionally, there are no commercial/industrial properties, public facilities, or transportation infrastructure within the project boundaries. The nearest major navigable waterway to the Salvador-Timken FS Swamp Restoration Project is Lake Cataouatche, LA.

3.2.3.12.4 Simoneaux Ponds FS Swamp Restoration Project
This project is located in St. Charles Parish, Louisiana. There are no residents living within the proposed Simoneaux Ponds Swamp Restoration site. Approximately 85 residents live in the census blocks abutting the restoration area. All of these residents are non-minority and have household incomes well above the poverty threshold. Additionally, there are no commercial/industrial properties, public facilities, or transportation infrastructure within the project boundaries. The nearest major thoroughfare is LA Highway 306. The major nearest navigable waterway to the Simoneaux Ponds FS Swamp Restoration Project is Bayou Gauche off Bayou Des Allemands.

3.2.3.13 Prime and Unique Farmland

3.2.3.13.1 Lake Boeuf FS Swamp Restoration Project (TSMP)

See section 3.2.1.13.3

3.2.3.13.2 Plaquemines, Option 1 FS Swamp Restoration Project
No prime farmlands are located at this site.

3.2.3.13.3 Salvador-Timken FS Swamp Restoration Project
No prime farmlands are located at this site.

3.2.3.13.4 Simoneaux Ponds FS Swamp Restoration Project
No prime farmlands are located at this site.

3.2.3.14 Natural & Scenic Rivers

3.2.3.14.1 Lake Boeuf FS Swamp Restoration Project (TSMP)
See section 3.2.1.14.3

3.2.3.14.2 Plaquemines, Option 1 FS Swamp Restoration Project
There are no state recognized scenic streams in the vicinity of the project area.

3.2.3.14.3 Salvador-Timken FS Swamp Restoration Project
There are no state recognized scenic streams in the vicinity of the project area.

3.2.3.14.4 Simoneaux Ponds FS Swamp Restoration Project
Bayou Des Allamands runs a course south of the project site. This bayou is a state recognized scenic river. There is a 1 mile thick buffer between the project site and the Bayou Des Allemands that are made up of marsh, wetland and some small stands of bottomland hardwood.

3.2.4 MITIGATION FOR GENERAL FS FRESH MARSH IMPACTS

3.2.4.1 Wetlands and other Surface Waters

3.2.4.1.1 Dufrene Ponds FS Marsh Restoration Project
This area is primarily open water. The proposed project site is surrounded by fresh marsh and bare land.

3.2.4.1.2 Jean Lafitte FS Marsh Restoration Project (TSMP)
This project site in Yankee Pond is primarily open water and is surrounded by fresh marsh. Detailed existing conditions for the geocrib are can be found in USACE EAs 231 and 231-A, and the NPS EA 395. A site visit to the geocrib in January 2012 described the area as:

> "*The filled area behind the new foreshore dike seems largely completely filled. Immediately adjacent to the foreshore dike, there is a band of fill that is very high – essentially remnant containment mounds. East of this band (i.e. the majority of the filled area), the fill seems relatively level. The dominant vegetation in the level area is saltbush (Baccharis spp.). Occassionally there are patches where saltbush is sparse or absent, and cattail and rosseau cane seem dominant (but many of these patches were dead). There are also few patches of willows coming in along with scattered rattlebox (but rattlebox mainly in higher spoil areas). The fill elevation is definitely too high for fresh marsh, and will need to be lowered by 6 inches to 1 foot in the level area*."

3.2.4.1.3 Plaquemines, Option 1 FS Marsh Restoration Project

This area is primarily open water. The proposed project site is surrounded by developed and bare land, swamp, wet BLH and intermediate marsh.

3.2.4.1.4 Salvador-Timken Fresh Marsh Restoration Project

This area is primarily open water. The proposed project site is adjacent to some wetlands consisting of wet BLH, fresh marsh and scrub/shrub wetland.

3.2.4.1.5 Simoneaux Ponds FS Marsh Restoration Project

This project site is primarily open water and is adjacent to fresh marsh.

3.2.4.2 Wildlife

3.2.4.2.1 Dufrene Ponds FS Marsh Restoration Project

A variety of avian species utilize this project area. Brown pelicans, seabirds, dabbling and diving ducks, coots, and gallinules as well as other open water residents and migrants can be found utilizing the habitat within and around Dufrene Ponds.

3.2.4.2.2 Jean Lafitte FS Marsh Restoration Project (TSMP)

A variety of avian species utilize this project area. Brown pelicans, seabirds, dabbling and diving ducks, coots, and gallinules as well as other open water residents and migrants can be found utilizing the habitat within and around the Jean Lafitte area.

3.2.4.2.3 Plaquemines, Option 1 FS Marsh Restoration Project

A great variety of mammals, birds, reptiles, and amphibians are found in the vicinity. Brown pelicans, seabirds, dabbling and diving ducks, coots, and gallinules; nutria, muskrat, mink, river otter, and raccoon; rabbit; white-tailed deer; and American alligator as well as other open water residents and migrants can be found utilizing the habitat within and around the area.

3.2.4.2.4 Salvador-Timken FS Marsh Restoration Project

A variety of avian species utilize this project area. Brown pelicans, seabirds, dabbling and diving ducks, coots, and gallinules as well as other open water residents and migrants can be found utilizing the habitat within and around the Salvador-Timken area.

3.2.4.2.5 Simoneaux Ponds FS Marsh Restoration Project

A variety of avian species utilize this project area. Brown pelicans, seabirds, dabbling and diving ducks, coots, and gallinules as well as other open water residents and migrants can be found utilizing the habitat within and around the Simoneaux Ponds area.

3.2.4.3 Threatened and Endangered Species

3.2.4.3.1 Dufrene Ponds FS Marsh Restoration Project

Of the animals and plants under USFWS and/or NMFS jurisdiction, only the West Indian manatee is expected to potentially occur within the project area.

3.2.4.3.2 Jean Lafitte FS Marsh Restoration Project (TSMP)

Of the animals and plants under USFWS and/or NMFS jurisdiction, only the West Indian manatee and Pallid sturgeon are expected to potentially occur within the project area.

3.2.4.3.3 Plaquemines, Option 1 FS Marsh Restoration Project

Of the animals and plants under USFWS and/or NMFS jurisdiction, only the West Indian manatee and Pallid sturgeon are expected to potentially occur within the project area.

3.2.4.3.4 Salvador-Timken FS Marsh Restoration Project
Of the animals and plants under USFWS and/or NMFS jurisdiction, only the West Indian manatee and Pallid sturgeon are expected to potentially occur within the project area.

3.2.4.3.5 Simoneaux Ponds FS Marsh Restoration Project
Of the animals and plants under USFWS and/or NMFS jurisdiction, only the West Indian manatee and Pallid sturgeon are expected to potentially occur within the project area.

3.2.4.4 Fisheries, Aquatic Resources and Water Quality

3.2.4.4.1 Dufrene Ponds FS Marsh Restoration Project
See section 3.2.1.4.2

3.2.4.4.2 Jean Lafitte FS Marsh Restoration Project (TSMP)
The placement site in Yankee pond is open water with approximately 5% SAV coverage (coontail and Eurasian watermilfoil) and has sufficient fisheries access. The restoration site at the geocrib has all ready been impacted by the placement of material to create land, which does not provide access to fishery species due to the height. Most of the fisheries species listed in section 3.2.1.4.1 could be found during part of the year or part of their life cycle in the Yankee pond placement and borrow area. The average mean salinity during the growing season is estimated at 0.45 ppt in Yankee pond and 0.73 ppt at the geocrib. The water quality of the hydrologic units encompassing this project footprint and Lake Cataouatche, from which borrow would be excavated for this project, fully supports its designated uses.

3.2.4.4.3 Plaquemines, Option 1 FS Marsh Restoration Project
See section 3.2.3.4.2

3.2.4.4.4 Salvador-Timken FS Marsh Restoration Project
See section 3.2.3.4.3

3.2.4.4.5 Simoneaux Ponds FS Marsh Restoration Project
See section 3.2.3.4.4

3.2.4.5 Essential Fish Habitat

3.2.4.5.1 Dufrene Ponds FS Marsh Restoration Project
See section 3.2.1.5.2

3.2.4.5.2 Jean Lafitte FS Marsh Restoration Project (TSMP)
The Yankee pond placement site and borrow area for the project is located within an area identified as EFH for coastal migratory pelagic, red drum, reef fish, and shrimp. See table 3-2 for the specific EFH per life stage. The most of the geocrib placement area is presently too high to be classified as EFH.

3.2.4.5.3 Plaquemines, Option 1 FS Marsh Restoration Project
See section 3.2.1.5.4

3.2.4.5.4 Salvador-Timken FS Marsh Restoration Project
The borrow and placement areas for the project is located within an area identified as EFH for coastal migratory pelagic, red drum, and reef fish. See table 3-2 for the specific EFH per life stage.

3.2.4.5.5 Simoneaux Ponds FS Marsh Restoration Project
See section 3.2.3.5.4

3.2.4.6 Cultural Resources

3.2.4.6.1 Dufrene Ponds FS Marsh Restoration Project
See section 3.2.1.6.2

3.2.4.6.2 Jean Lafitte FS Marsh Restoration Project (TSMP)
Two locations have been proposed for Jean Lafitte fresh marsh. The two areas are a location along the east shore of Lake Salvador, and a portion of Yankee Pond. Both of these project locations are along Bayou Segnette, and posses a high probability for the presence of cultural resources.

The areas along the eastern shoreline of Lake Salvador have been the subject of several surveys for cultural resources in the past. Numerous cultural resources have been identified within one mile of the Lake Salvador shoreline project area. The Barataria Unit Historic District (listed on the NRHP on May 11, 1989) is located within one and half mile of the project area and cultural resources associated with the historic district are located along the Lake Salvador shoreline. Site 16JE46 is located just north of the Lake Salvador project area at the junction of Bayou Bardeaux and Lake Salvador, and is listed on the NRHP. Other sites within one mile of the Lake Salvador project area include 16JE55, 16JE56, 16JE66, and 16JE189. Sites 16JE55 and 16JE56 have been determined eligible for listing on the NRHP. The closest site to the Lake Salvador project area is 16JE66, identified as "the remains of a shell dam once placed across the mouth of a drill hole canal to protect its entrance from the Bayou Segnette Waterway" (Weinstein (Site Record) 1977).

Yankee Pond and the surrounding area has been the subject of several surveys for cultural resources. A borrow source for the Yankee Pond marsh restoration project has been identified in Lake Cataouatche. A slurry pipe will be floated on water along the Bayou Segnette Waterway to transport material from Lake Cataouatche to the Yankee Pond marsh restoration project area. Past surveys have not identified cultural resources within the Yankee Pond project area or along Bayou Segnette where the slurry pipe would be located. Remote sensing surveys have not previously been conducted in Lake Cataouatche, and submerged cultural resources could exist within the borrow area.

3.2.4.6.3 Plaquemines, Option 1 FS Marsh Restoration Project
See section 3.2.1.6.4

3.2.4.6.4 Salvador-Timken FS Marsh Restoration Project
See section 3.2.3.6.3

3.2.4.6.5 Simoneaux Ponds FS Marsh Restoration Project
See section 3.2.3.6.4

3.2.4.7 Recreational Resources

3.2.4.7.1 Dufrene Ponds FS Marsh Restoration Project
See section 3.2.1.7.2

3.2.4.7.2 Jean Lafitte FS Marsh Restoration Project (TSMP)

The project area is located within the JLNHPP Barataria Preserve. The mitigation features are located in Yankee Pond and Lake Salvador. Boating, fishing, and waterfowl hunting occur within the open water. Borrow material would be dredged from Lake Cataouatche and piped via Bayou Segnette to the mitigation feature. Boating, fishing and water fowl hunting are recreational uses of the lake and bayou. JLNHPP did not receive funds from the L&WCF.

3.2.4.7.3 Plaquemines, Option 1 FS Marsh Restoration Project

See section 3.2.1.7.4

3.2.4.7.4 Salvador-Timken FS Marsh Restoration Project

The affected environment is similar to 3.2.3.7.3 Salvador-Timken FS Swamp Restoration Project except the mitigation feature is located within Lake Catauoatche in the WMA.

3.2.4.7.5 Simoneaux Ponds FS Marsh Restoration Project

See section 3.2.3.7.4

3.2.4.8 Aesthetic Resources

3.2.4.8.1 Dufrene Ponds FS Marsh Restoration Project

See section 3.2.1.8.2

3.2.4.8.2 Jean Lafitte FS Marsh Restoration Project (TSMP)

The immediate project area is extremely remote with limited to no access, other than by watercraft. The landscape of the region is made up of large open water areas framed by marsh, wetland and some swamp, as well as manmade canals. Much of the vegetation bounds and defines the canals, as well as the shorelines of the large open water areas. Vegetation appears to be primarily low growing scrub shrub and tall grasses with only a few larger, water tolerant trees.

There are no features that could be considered technically, institutionally or publically important. However; it is important to note that the entirety of the project falls within the boundaries of the JLNHPP.

3.2.4.8.3 Plaquemines, Option 1 FS Marsh Restoration Project

See section 3.2.1.8.4

3.2.4.8.4 Salvador-Timken FS Marsh Restoration Project

See section 3.2.3.8.3

3.2.4.8.5 Simoneaux Ponds FS Marsh Restoration Project

See section 3.2.3.8.4

3.2.4.9 Air Quality

3.2.4.9.1 Dufrene Ponds FS Marsh Restoration Project

This project is in Lafourche Parish which is currently in attainment of NAAQS.

3.2.4.9.2 Jean Lafitte FS Marsh Restoration Project (TSMP)

This project is in Jefferson Parish which is currently in attainment of NAAQS.

3.2.4.9.3 Plaquemines, Option 1 FS Marsh Restoration Project

This project is in Plaquemines Parish which is currently in attainment of NAAQS.

3.2.4.9.4 Salvador-Timken FS Marsh Restoration Project
This project is in St. Charles Parish which is currently in attainment of NAAQS.

3.2.4.9.5 Simoneaux Ponds FS Marsh Restoration Project
This project is in St. Charles Parish which is currently in attainment of NAAQS.

3.2.4.10 Noise

3.2.4.10.1 Dufrene Ponds FS Marsh Restoration Project
See section 3.2.1.10.2

3.2.4.10.2 Jean Lafitte FS Marsh Restoration Project (TSMP)
This project is located within the JLNHPP on the west bank of Jefferson Parish, Louisiana. The nearest major thoroughfare is LA Highway 45 (Barataria Boulevard). The major nearest navigable waterways to the Jean Lafitte FS Marsh Restoration Project are Bayou Segnette and Lake Cataouatche, LA. Sporadic boat traffic may produce noise levels that exceed 55 dBA within the project area.

3.2.4.10.3 Plaquemines, Option 1 FS Marsh Restoration Project
See section 3.2.3.10.2

3.2.4.10.4 Salvador-Timken FS Marsh Restoration Project
See section 3.2.3.10.3

3.2.4.10.5 Simoneaux Ponds FS Marsh Restoration Project
See section 3.2.3.10.4

3.2.4.11 Hazardous, Toxic, and Radioactive Waste

3.2.4.11.1 Dufrene Ponds FS Marsh Restoration Project
Several RECs exist within and near the Dufrene Ponds Fresh Marsh Restoration project area. Four natural gas pipelines are located within DP3; two natural gas pipelines exist in DP5; one crude-oil pipeline is located to the east of Features DP3 and DP5; several plugged and abandoned oil wells are located near Features DP3 and DP5. Precautions must be taken to prevent damage to or breakage of the pipeline.

3.2.4.11.2 Jean Lafitte FS Marsh Restoration Project (TSMP)
No RECs were found within or near Features JL1B5 and JL15 of the proposed Jean Lafitte FS Marsh Restoration project areas. There are no pipelines crossing the proposed restoration area. No wells or waste pits have been identified. Three plugged and abandoned oil wells are located near JL1B5 and one plugged and abandoned oil well is located near JL15. There would be a low probability of encountering HTRW or petroleum products in the proposed restoration areas.

3.2.4.11.3 Plaquemines, Option 1 FS Marsh Restoration Project
No RECs were found within or near P2 of the Plaquemines Option 1 FS Marsh Restoration project area. One plugged and abandoned oil well is located within P2. There would be a low probability of encountering HTRW or petroleum products in the proposed restoration area.

3.2.4.11.4 Salvador-Timken FS Marsh Restoration Project

No RECs were found within ST2 of the Salvador-Timken FS Marsh Restoration project area. There are no pipelines crossing the proposed restoration area. No wells or waste pits have been identified. There is a low probability of encountering HTRW or petroleum products in the proposed restoration area.

3.2.4.11.5 Simoneaux Ponds FS Marsh Restoration Project

One REC, a natural gas pipeline, is located in SP2 of the Simoneaux Ponds FS Marsh Restoration project area. No wells or waste pits have been identified within the project area. Precautions must be taken to prevent damage to or breakage of the pipeline.

3.2.4.12 Socioeconomics/Land Use, Environmental Justice, Transportation, Navigation, and Commercial Fisheries

3.2.4.12.1 Dufrene Ponds FS Marsh Restoration Project

See section 3.2.1.12.2

3.2.4.12.2 Jean Lafitte FS Marsh Restoration Project (TSMP)

This project is located within the JLNHPP on the west bank of Jefferson Parish, Louisiana. The Jean Lafitte Fresh Marsh Restoration site is open water and located in the JLNHPP; there are no residents living in the vicinity, according to the 2010 U.S. Census.

Additionally, there are no commercial/industrial properties, public facilities, or transportation infrastructure within the project boundaries. The nearest major thoroughfare is LA Highway 45 (Barataria Boulevard). The major nearest navigable waterways to the Jean Lafitte FS Marsh Project are Bayou Segnette and Lake Cataouatche, LA.

3.2.4.12.3 Plaquemines, Option 1 FS Marsh Restoration Project

See section 3.2.3.12.2

3.2.4.12.4 Salvador-Timken FS Marsh Restoration Project

See section 3.2.3.12.3

3.2.4.12.5 Simoneaux Ponds FS Marsh Restoration Project

See section 3.2.3.12.4

3.2.4.13 Prime and Unique farmlands

3.2.4.13.1 Dufrene Ponds FS Marsh Restoration Project

See section 3.2.1.13.2

3.2.4.13.2 Jean Lafitte FS Marsh Restoration Project (TSMP)

No prime farmlands are located at this site.

3.2.4.13.3 Plaquemines, Option 1 FS Marsh Restoration Project

See section 3.2.3.13.2

3.2.4.13.4 Salvador-Timken FS Marsh Restoration Project

See section 3.2.1.13.3

3.2.4.13.5 Simoneaux Ponds FS Marsh Restoration Project

See section 3.2.1.13.4

3.2.4.14 Natural & Scenic Rivers

3.2.4.14.1 Dufrene Ponds FS Marsh Restoration Project
See section 3.2.1.14.2

3.2.4.14.2 Jean Lafitte FS Marsh Restoration Project (TSMP)
There are no state recognized scenic streams in the vicinity of the project area.

3.2.4.14.3 Plaquemines, Option 1 FS Marsh Restoration Project
There are no state recognized scenic streams in the vicinity of the project area.

3.2.4.14.4 Salvador-Timken FS Marsh Restoration Project
See section 3.2.3.14.3

3.2.4.14.5 Simoneaux Ponds Fresh Marsh Restoration Project
See section 3.2.3.14.4

3.2.5 MITIGATION FOR PARK/404c FS BLH-WET IMPACTS

***3.2.5.1* Wetlands And Other Surface Waters**

3.2.5.1.1 Jean Lafitte FS BLH-Wet Restoration Project (TSMP)
This project site consists of wet BLH, swamp and scrub/shrub wetlands.

3.2.5.2 Wildlife

3.2.5.2.1 Jean Lafitte FS BLH-Wet Restoration Project (TSMP)
A variety of avian species utilize this project area. Brown pelicans, seabirds, dabbling and diving ducks, coots, and gallinules as well as other open water residents and migrants can be found utilizing the habitat within and around the Jean Lafitte area.

3.2.5.3 Threatened and Endangered Species

3.2.5.3.1 Jean Lafitte FS BLH-Wet Restoration Project (TSMP)
None of the animals under USFWS and/or NMFS jurisdiction are expected to be found in the project area.

3.2.5.4 Fisheries, Aquatic Resources, and Water Quality

3.2.5.4.1 Jean Lafitte FS BLH-Wet Restoration Project (TSMP)
The placement area is primarily shallow open water and limited fisheries and tidal access. Most of the fisheries species listed in section 3.1 could be found during part of the year or part of their life cycle in the placement area. The water quality of the hydrologic units encompassing this project footprint fully supports its designated uses.

3.2.5.5 Essential Fish Habitat

3.2.5.5.1 Jean Lafitte FS BLH-Wet Restoration Project (TSMP)
The placement area has not been identified as EFH per NOAA Mapper.

3.2.5.6 Cultural Resources

3.2.5.6.1 Jean Lafitte FS BLH-Wet Restoration Project (TSMP)

Several surveys for cultural resources have been conducted within the vicinity of the proposed project area. Previous surveys have resulted in the identification of one cultural resources site within one mile of the proposed BLH-Wet restoration areas. Site 16JE41 is located approximately 0.5 miles from the project area and was originally recorded in 1995 during surveys for the enlargement of an existing levee. The site is described as a Neo-Indian campsite consisting of decorated and undecorated ceramics, and Rangia shell. At the time site 16JE41 was recorded, it was determined to be in excellent condition with a possible intact midden.

3.2.5.7 Recreational Resources

3.2.5.7.1 Jean Lafitte FS BLH-Wet Restoration Project (TSMP)

The project area is located within JLNHP Barataria Preserve. No recreation use is expected in mitigation features JL14A and JL14B which is a borrow pit with no public access.

Borrow material would be dredged from the GIWW and transported via roads to the mitigation feature. There is the potential for fishing and boating in the GIWW.

3.2.5.8 Aesthetic Resources

3.2.5.8.1 Jean Lafitte FS BLH-Wet Restoration Project (TSMP)

Much of this area is similar to that described under 3.2.4.8.2. However; project locations along the eastern and southeastern boundary of the JLNHPP fall adjacent to residential areas and some major roadways.

Water resources are similar as well, but include the Algiers Canal and Bayou Segnette as significant shipping and recreation channels. Vegetation is more varied on the eastern side of JLNHPP with denser forestation and swampy conditions. Land uses that abut project's features tend to be low and medium density residential with some minimal commercial. These communities include Estelle, the north side of Jean Lafitte, and the southernmost side of the Naval Air Station in Belle Chasse. Site lines to the proposed project features are limited due to existing levee systems, vegetation and distance.

There are no features that could be considered technically, institutionally or publically important. However; it is important to note that the entirety of the project features fall within the boundaries of the JLNHPP.

3.2.5.9 Air Quality

3.2.5.9.1 Jean Lafitte FS BLH-Wet Restoration Project (TSMP)

This project is in Jefferson Parish which is currently in attainment of NAAQS.

3.2.5.10 Noise

3.2.5.10.1 Jean Lafitte FS BLH-Wet Restoration Project (TSMP)

See section 3.2.4.10.2

3.2.5.11 Hazardous, Toxic, and Radioactive Waste

3.2.5.11.1 Jean Lafitte FS BLH-Wet Restoration Project (TSMP)
No RECs were found within JL14B of the Jean Lafitte FS BLH-Wet Restoration project area. One REC, a natural gas pipeline, is located within JL14A. One plugged and abandoned dry hole oil well is located to the south of Features JL14A and JL14B. Precautions must be taken to prevent damage to or breakage of the pipeline.

3.2.5.12 Socioeconomics/Land Use, Environmental Justice, Transportation, Navigation, and Commercial Fisheries

3.2.5.12.1 Jean Lafitte FS BLH-Wet Restoration Project (TSMP)
See section 3.2.4.12.2

3.2.5.13 Prime and Unique Farmlands

3.2.5.13.1 Jean Lafitte FS BLH-Wet Restoration Project (TSMP)
No prime farmlands are located at this site.

3.2.5.14 Natural & Scenic Rivers

3.2.5.14.1 Jean Lafitte FS BLH-Wet Restoration Project (TSMP)
See section 3.2.4.14.2

3.2.6 MITIGATION FOR PARK/404c FS SWAMP IMPACTS

3.2.6.1 Wetlands and Other Surface Waters

3.2.6.1.1 Jean Lafitte FS Swamp Restoration Project (TSMP)
This project site consists of open water and some BLH-wet.

3.2.6.2 Wildlife

3.2.6.2.1 Jean Lafitte FS Swamp Restoration Project (TSMP)
A great variety of mammals, birds, reptiles, and amphibians are found in the vicinity of the Jean Lafitte FS Swamp Restoration Project. Species inhabiting the area include white-tailed deer, skunks, rabbits, squirrels, armadillos, and a variety of smaller mammals. Various raptors such as barred owls, red-shouldered hawks, northern harriers (marsh hawks), American kestrel, and red-tailed hawks are present. Passerine birds present include sparrows, vireos, warblers, Northern mockingbirds, grackles, red-winged blackbirds, wrens, blue jays, northern cardinals, and crows. Many of these birds are present primarily during periods of spring and fall migrations. The area provides habitat for salamanders, toads, frogs, turtles, and several species of poisonous and nonpoisonous snakes.

3.2.6.3 Threatened and Endangered Species

3.2.6.3.1 Jean Lafitte FS Swamp Restoration Project (TSMP)
Of the animals and plants under USFWS and/or NMFS jurisdiction, only the Pallid sturgeon is expected to potentially occur within the project area.

3.2.6.4 Fisheries, Aquatic Resources, and Water Quality

3.2.6.4.1 Jean Lafitte FS Swamp Restoration Project (TSMP)

The placement area is primarily shallow open water and adequate fisheries and tidal access. Most of the fisheries species listed in section 3.1 could be found during part of the year or part of their life cycle in the placement area. The water quality of the hydrologic unit encompassing this project footprint and Bayou Segnette, from which borrow would be excavated for this project, does not fully support two of its designated uses: Fish and Wildlife Propagation and Primary Contact Recreation. The suspected sources of this impairment includes sediment resuspension (clean sediment), marina/boating sanitary on-vessel discharge, municipal point source discharges, natural sources, and other unknown sources.

3.2.6.5 Essential Fish Habitat

3.2.6.5.1 Jean Lafitte FS Swamp Restoration Project (TSMP)

The placement areas JL8 and JL9 are located within an area identified as EFH for coastal migratory pelagic, red drum, and reef fish. See table 3-2 for the specific EFH per life stage. The placement area JL7 has not been identified as EFH per NOAA Mapper.

3.2.6.6 Cultural Resources

3.2.6.6.1 Jean Lafitte FS Swamp Restoration Project (TSMP)

Several surveys for cultural resources have been conducted within the vicinity of the proposed project area. Previous surveys have resulted in the identification of one cultural resources site within one mile of the proposed BLH-Wet restoration areas. Site 16JE41 is located approximately 0.2 miles from the project area and was originally recorded in 1995 during surveys for the enlargement of an existing levee. The site is described as a Neo-Indian campsite consisting of decorated and undecorated ceramics, and Rangia shell. At the time site 16JE41 was recorded, it was determined to be in excellent condition with a possible intact midden.

3.2.6.7 Recreational Resources

3.2.6.7.1 Jean Lafitte FS Swamp Restoration Project (TSMP)

The project area is located within JLNHP Barataria Preserve. There are no developed recreation sites within the project area. There is an undesignated trail along the north side of mitigation JL7 that people may access the adjacent canal for fishing and boating. Use is limited due to thick aquatic vegetation. No recreation use is expected in mitigation features JL8 and JL9 which are borrow pits with no public access.

Borrow material would be dredged from the GIWW and transported via roads to the mitigation feature. There is the potential for fishing and boating in the GIWW.

3.2.6.8 Aesthetic Resources

3.2.6.8.1 Jean Lafitte FS Swamp Restoration Project (TSMP)

See section 3.2.5.8.1

3.2.6.9 Air Quality

3.2.6.9.1 Jean Lafitte FS Swamp Restoration Project (TSMP)
This project is in Jefferson Parish which is currently in attainment of NAAQS.

3.2.6.10 Noise

3.2.6.10.1 Jean Lafitte FS Swamp Restoration Project (TSMP)
See section 3.2.4.10.2

3.2.6.11 Hazardous, Toxic, and Radioactive Waste

3.2.6.11.1 Jean Lafitte FS Swamp Restoration Project (TSMP)
No RECs were found within features JL7, JL8, and JL9 of the Jean Lafitte FS Swamp Restoration Project. Two plugged and abandoned dry hole oil wells are located within JL8 and one plugged and abandoned dry hole oil well is located within JL9. There would be a low probability of encountering HTRW or petroleum products in the proposed restoration areas.

3.2.6.12 Socioeconomics/Land Use, Environmental Justice, Transportation, Navigation, and Commercial Fisheries

3.2.6.12.1 Jean Lafitte FS Swamp Restoration Project (TSMP)
See section 3.2.4.12.2

3.2.6.13 Prime And Unique Farmlands

3.2.6.13.1 Jean Lafitte FS Swamp Restoration Project (TSMP)
No prime farmlands are located at this site.

3.2.6.14 Natural & Scenic Rivers

3.2.6.14.1 Jean Lafitte FS Swamp Restoration Project (TSMP)
See section 3.2.4.14.2

3.2.7 MITIGATION FOR PARK/404c FS FRESH MARSH IMPACTS

3.2.7.1 Wetlands and Other Surface Waters

3.2.7.1.1 Jean Lafitte FS Marsh Restoration Project (TSMP)
This project site is primarily open water and is surrounded by fresh marsh.

3.2.7.2 Wildlife

3.2.7.2.1 Jean Lafitte FS Marsh Restoration Project (TSMP)
A variety of avian species utilize this project area. Brown pelicans, seabirds, dabbling and diving ducks, coots, and gallinules as well as other open water residents and migrants can be found utilizing the habitat within and around the Jean Lafitte FS Marsh Project.

3.2.7.3 Threatened and Endangered Species

3.2.7.3.1 Jean Lafitte FS Marsh Restoration Project (TSMP)

Of the animals and plants under USFWS and/or NMFS jurisdiction, only the West Indian manatee and Pallid sturgeon are expected to potentially occur within the project area.

3.2.7.4 Fisheries, Aquatic Resources, and Water Quality

3.2.7.4.1 Jean Lafitte FS Marsh Restoration Project (TSMP)
See section 3.2.4.4.2

3.2.7.5 Essential Fish Habitat

3.2.7.5.1 Jean Lafitte FS Marsh Restoration Project (TSMP)
See section 3.2.4.5.2

3.2.7.6 Cultural Resources

3.2.7.6.1 Jean Lafitte FS Marsh Restoration Project (TSMP)
This project feature is located in the southwest corner of Yankee Pond and includes the same borrow source identified in Lake Cataouatche. Yankee Pond and the surrounding area has been the subject of several surveys for cultural resources. No cultural resources have been identified in the Yankee Pond project area during past surveys. A borrow source for the Yankee Pond marsh restoration project has been identified in Lake Cataouatche. A slurry pipe will be floated on water along the Bayou Segnette Waterway to transport material from Lake Cataouatche to the Yankee Pond marsh restoration project area. Past surveys have not identified cultural resources within the Yankee Pond project area or along Bayou Segnette where the slurry pipe would be located. Remote sensing surveys have not previously been conducted in Lake Cataouatche, and submerged cultural resources could exist within the borrow area. In accordance with the Programmatic Agreement executed on June 18, 2013, any portions of the project area requiring investigation will be surveyed for cultural resources prior to project implementation. Identified historic properties that are determined to be eligible for listing or are listed on the NRHP will be avoided. If avoidance is not possible, mitigation strategies would be developed in accordance with the stipulations of the Programmatic Agreement.

3.2.7.7 Recreational Resources

3.2.7.7.1 Jean Lafitte FS Marsh Restoration Project (TSMP)
The project area is located in Yankee Pond within the JLNHPP Barataria Preserve. The mitigation feature is located in open water used for boating, fishing, and waterfowl hunting. Borrow material would be dredged from Lake Cataouatche and piped via Bayou Segnette to the mitigation feature. Boating, fishing and water fowl hunting are recreational uses of the lake and bayou.

3.2.7.8 Aesthetic Resources

3.2.7.8.1 Jean Lafitte FS Marsh Restoration Project (TSMP)
See section 3.2.5.8.1

3.2.7.9 Air Quality

3.2.7.9.1 Jean Lafitte FS Marsh Restoration Project (TSMP)
This project is in Jefferson Parish which is currently in attainment of NAAQS.

3.2.7.10 Noise

3.2.7.10.1 Jean Lafitte FS Marsh Restoration Project (TSMP)
See section 3.2.4.10.2

3.2.7.11 Hazardous, Toxic, and Radioactive Waste

3.2.7.11.1 Jean Lafitte FS Marsh Restoration Project (TSMP)
No RECs were found within JL1B4 of the Jean Lafitte FS Marsh Restoration project area. There are no pipelines crossing the proposed project area. No wells or waste pits have been identified. There would be a low probability of encountering HTRW or petroleum products in the proposed restoration area.

3.2.7.11.2 Socioeconomics/Land Use, Environmental Justice, Transportation, Navigation, and Commercial Fisheries

3.2.7.1.1 Jean Lafitte FS Marsh Restoration Project (TSMP)
See section 3.2.4.12.2

3.2.7.13 Prime and unique farmlands

3.2.7.13.1 Jean Lafitte FS Marsh Restoration Project (TSMP)
No prime farmlands are located at this site.

3.2.7.14 Natural & Scenic Rivers

3.2.7.14.1 Jean Lafitte FS Marsh Restoration Project (TSMP)
See section 3.2.4.14.2

4. ENVIRONMENTAL CONSEQUENCES OF THE FINAL ARRAY OF MITIGATION PROJECTS

4.1 INTRODUCTION

This section describes the direct, indirect and cumulative effects of mitigation projects based on their description at the time of the AEP. Appendix A, figure 8 shows those significant resources found within the WBV mitigation basin, and notes whether they would be impacted by implementation of the project. The period of impact analysis begins when project construction is completed and generally extends 50 years for USACE projects.

Direct impacts are those that are caused by the action taken and occur at the same time and place (40 CFR §1508.8(a)). Indirect impacts are those that are caused by the action and are later in time or further removed in distance, but are still reasonably foreseeable (40 CFR §1508.8(b)). Cumulative impacts are the effects on the environment that results from the incremental impact of the proposed project when added to other past, present, and reasonably foreseeable future action, regardless of what agency or person undertakes such actions. More information on the Cumulative impacts is discussed in section 6.

4.2 MITIGATION PROJECTS BY HABITAT TYPES

4.2.1 MITIGATION FOR GENERAL PS BLH-DRY AND BLH-WET IMPACTS

4.2.1.1 Wetlands and other Surface Waters

4.2.1.1.1 Mitigation Bank Project (TSMP)

Direct Impacts, Indirect and Cumulative Impacts
As the proposed action, the CEMVN would purchase sufficient BLH-Wet credits from a bank within the WBV basin to mitigate 261.96 AAHUs. The particular bank to be utilized is unknown at this time. Since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect or cumulative impacts to wetlands and other surface waters would be incurred from the purchase of these credits for the HSDRRS mitigation.

4.2.1.1.2 Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project

Direct Impacts
There would be a beneficial impact to wetlands as approximately 1,264 acres of existing early successional BLH species would be replaced with high quality BLH species.

Indirect and Cumulative Impacts
Implementation of this project would prevent an overall loss in the basin of BLH habitat. This project, when added to other past, present, and reasonably foreseeable ecosystem restoration and mitigation projects in the basin would help retard the loss of wetlands.

4.2.1.1.3 Dufrene Ponds PS BLH-Wet Restoration Project

Direct Impacts
There would be a beneficial impact to wetlands as approximately 573 acres of open water habitat would be converted to BLH-Wet habitat.

Indirect and Cumulative Impacts

Implementation of this project would prevent an overall loss in the basin of BLH-Wet habitat. This project, when added to other past, present, and reasonably foreseeable ecosystem restoration and mitigation projects in the basin would help retard the loss of wetlands. There would be an overall loss of open water habitat in the WBV basin, but no permanent adverse impacts are anticipated because this habitat is prevalent throughout the basin.

4.2.1.1.4 Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project

Direct Impacts
There would be a beneficial impact to wetlands as approximately 592 acres of Ag land would be converted to BLH habitat.

Indirect and Cumulative Impacts
Implementation of this project would prevent an overall loss in the basin of BLH-Wet habitat. This project, when added to other past, present, and reasonably foreseeable ecosystem restoration and mitigation projects in the basin would help retard the loss of wetlands.

4.2.1.1.5 Plaquemines Option 2 PS BLH-Wet Restoration Project

Direct Impacts
There would be a beneficial impact to wetlands as approximately 417 acres of open water habitat would be converted to BLH-Wet habitat.

Indirect and Cumulative Impacts
Implementation of this project would prevent an overall loss in the basin of BLH-Wet habitat. This project, when added to other past, present, and reasonably foreseeable ecosystem restoration and mitigation projects in the basin would help retard the loss of wetlands. There would be an overall loss of open water habitat in the WBV basin, but no permanent adverse impacts are anticipated because this habitat is prevalent throughout the basin.

4.2.1.2 Wildlife

4.2.1.2.1 Mitigation Bank Project (TSMP)

Direct Impacts, Indirect and Cumulative Impacts

Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect or cumulative impacts to wildlife would be incurred from the purchase of these credits for the HSDRRS mitigation.

4.2.1.2.2 Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project

Direct Impacts
Any wildlife present at the time of construction would be temporarily displaced to adjacent habitat due to noise, movement and vibration. It is anticipated they would return once construction is complete.

Indirect Impacts
Beneficial impacts would be the enhancement of approximately 1,264 acres of BLH habitat which would offer better shelter and foraging grounds for wildlife in the area.

Cumulative Impacts
This project would prevent an overall loss in the basin of BLH habitat necessary for many wildlife species. This project, when added to other past, present, and reasonably foreseeable ecosystem restoration and mitigation projects in the basin, would help retard the loss of wetlands and overall decline of wildlife species within the basin and would be beneficial to preserving the species bio-diversity.

4.2.1.2.3 Dufrene Ponds PS BLH-Wet Restoration Project

Direct Impacts
Any wildlife present at the time of construction would be permanently displaced. The common inhabitants of this area are avian species which are fully equipped to relocate to nearby open water. A survey would be performed prior to construction to identify the presence of colonial nesting water birds or nesting bald eagles. If colonial nesting water birds are present, best management practices (BMPs), developed in coordination with USFWS, would be implemented to avoid potential impacts. If nesting bald eagles are present, the National Bald Eagle Management Guidelines would be followed.

Indirect Impacts
Approximately 573 acres of shallow open water would be converted to BLH-wet habitat. This conversion would eliminate wintering habitat for brown pelican, and increase habitat for white-tailed deer, skunks, rabbits, squirrels and armadillos; various raptors such as barred owls, red-shouldered hawks, northern harriers (marsh hawks), American kestrel, and red-tailed hawks; passerine birds such as sparrows, vireos, warblers, Northern mockingbirds, grackles, red-winged blackbirds, wrens, blue jays, northern cardinals, and crows.

Cumulative Impacts
This project would prevent an overall loss in the basin of BLH habitat necessary for many wildlife species. This project, when added to other past, present, and reasonably foreseeable ecosystem restoration and mitigation projects in the basin, would help retard the loss of wetlands and overall decline of wildlife species within the basin and would be beneficial to preserving the species bio-diversity.

4.2.1.2.4 Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project

Direct Impacts
Any wildlife present at the time of construction would be temporarily displaced to adjacent habitat due to noise, movement and vibration. It is anticipated they would return once construction is complete.

Indirect Impacts
With the creation of approximately 592 acres of BLH habitat, it is assumed that more species, in abundance and diversity, would utilize the area.

Cumulative Impacts
This project would prevent an overall loss in the basin of BLH habitat necessary for many wildlife species. This project, when added to other past, present, and reasonably foreseeable ecosystem restoration and mitigation projects in the basin, would help retard the loss of wetlands and overall decline of wildlife species within the basin and would be beneficial to preserving the species bio-diversity.

4.2.1.2.5 Plaquemines Option 2 PS BLH-Wet Restoration Project

Direct Impacts
Any wildlife present at the time of construction would be permanently displaced. The common inhabitants of this area are avian species which are fully equipped to relocate to nearby open water. A survey would be performed prior to construction to identify the presence of colonial nesting water birds or nesting bald eagles. If colonial nesting water birds are present, BMPs, developed in coordination with USFWS, would be implemented to avoid potential impacts. If nesting bald eagles are present, the National Bald Eagle Management Guidelines would be followed.

Indirect Impacts
Approximately 417 acres of shallow open water would be converted to BLH-wet habitat. This conversion would eliminate wintering habitat for brown pelican, and increase habitat for white-tailed deer, skunks, rabbits, squirrels and armadillos; various raptors such as barred owls, red-shouldered hawks, northern harriers (marsh hawks), American kestrel, and red-tailed hawks; passerine birds such as sparrows, vireos, warblers, Northern mockingbirds, grackles, red-winged blackbirds, wrens, blue jays, northern cardinals, and crows.

Cumulative Impacts
This project would prevent an overall loss in the basin of BLH habitat necessary for many wildlife species. This project, when added to other past, present, and reasonably foreseeable ecosystem restoration and mitigation projects in the basin, would help retard the loss of wetlands and overall decline of wildlife species within the basin and would be beneficial to preserving the species bio-diversity.

4.2.1.3 Threatened and Endangered Species

4.2.1.3.1 Mitigation Bank Project (TSMP)

Direct, Indirect, and Cumulative Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect or cumulative impacts to threatened and endangered species would be incurred from the purchase of these credits for the HSDRRS mitigation.

4.2.1.3.2 Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project

Direct, Indirect and Cumulative Impacts
None of the animals under USFWS and/or NMFS jurisdiction are expected to be found in the project area, therefore no impacts are anticipated.

4.2.1.3.3 Dufrene Ponds PS BLH-Wet Restoration Project

Direct Impacts
Of the animals and plants under USFWS and/or NMFS jurisdiction, only the West Indian manatee is expected to potentially occur within the project area. Direct impacts to the West Indian manatee would be avoided in accordance with the ESA. The presence of construction-related activities, machinery, and noise would be expected to cause this species to avoid the project area during the construction period. However, in order to further minimize the potential for construction activities to

cause adverse impacts to manatees during the construction period, the standard manatee protection measures found in section 5.2.2.3.1 would be implemented.

Indirect
Potential indirect impacts from the proposed action would primarily consist of effects from dredging operations, increased turbidity and benthic species removal. However, although the rise in turbidity could immediately reduce water quality in the project area, those effects would be temporary and would be reduced by movement of the tides. Any manatees in the area would be free to relocate during construction since the project area encompasses only a small section of a large estuarine/brackish lake. Additional foraging areas are available for manatees to utilize throughout Lake Salvador in the interim. As such, no impacts to manatees are anticipated.

Cumulative Impacts
Potential cumulative impacts to threatened or endangered species (manatee) from construction of the Dufrene Ponds project would involve the combined adverse effects on the species from the other projects within the WBV basin. Due to the size of Lake Salvador, the relatively small size of the borrow area, the temporary nature of the borrow activities, the use of a cutterhead dredge for borrow procurement, the duration of dredging, and the ability of these species to avoid the project area during the construction period, the Dufrene Ponds project would add very little and only temporary impacts to any other impacts resulting from past, present and reasonably foreseeable projects in the basin and would not contribute significantly to cumulative impacts to threatened and endangered species in the basin.

4.2.1.3.4 Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project

Direct, Indirect and Cumulative Impacts
None of the animals under USFWS and/or NMFS jurisdiction are expected to be found in the project area therefore no impacts are anticipated.

4.2.1.3.5 Plaquemines Option 2 PS BLH-Wet Restoration Project

Direct Impacts
Of the animals and plants under USFWS and/or NMFS jurisdiction, only the West Indian manatee and Pallid sturgeon are expected to potentially occur within the project area. Direct impacts to the West Indian manatee and the Pallid sturgeon would be avoided in accordance with the ESA. The presence of construction-related activities, machinery, and noise would be expected to cause this species to avoid the project area during the construction period. However, in order to minimize the potential for construction activities to cause adverse impacts to manatees or Pallid sturgeon during the construction period, the standard manatee protection measures and Pallid sturgeon protection measures found in section 5.2.2.3.1 would be implemented.

Indirect and Cumulative Impacts
See section 4.2.1.3.3

4.2.1.4 Fisheries, Aquatic Resources and Water Quality

4.2.1.4.1 Mitigation Bank Project (TSMP)

Direct Impacts, Indirect, and Cumulative Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct,

indirect or cumulative impacts to these resources would be incurred from the purchase of these credits for the HSDRRS mitigation.

4.2.1.4.2 Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project

Direct Impacts, Indirect and Cumulative Impacts
There would be no direct, indirect or cumulative impacts to fisheries or aquatic resources due to the construction of this project since the area presently does not currently contain fisheries or aquatic resources. There would be minor temporary direct and indirect impacts to water quality during the clearing of the invasive species and filling, realignment and/or construction of new drainage ditches. These impacts would be minimized via BMPs that would reduce any potential runoff from the site hence there should be no cumulative impacts on water quality.

4.2.1.4.3 Dufrene Ponds PS BLH-Wet Restoration Project

Direct and indirect Impacts
With implementation of this project, there would be some direct and indirect impacts to fisheries in the form of physically altered open water bottom habitat, and temporary increases in turbidity during construction activities. Approximately 573 acres of open water would be converted to BLH-Wet habitat and no longer be available for fishery and aquatic species. Approximately 927 acres of lake water bottom would be deepened by an average of 12 feet. It is anticipated that anoxic conditions would be avoided with this depth of dredging and that mobile fishery species would avoid the proposed borrow site during construction, thereby minimizing direct and indirect impacts to those species. Sediment particles suspended due to construction activities may impact filter feeding benthic invertebrates by fouling feeding apparatus if the concentration of such particles is excessively high at the dredge site and adjacent to the placement site. Due to the lack of escape routes, most fish species in the placement area would be experience demise during borrow material placement. There would be a short term direct impact to the benthic community at the borrow site. The animals that are living on or in the dredged material would most likely be killed in either the transportation of the dredge material or the placement. The new bottom of the borrow pit would be quickly recolonized and species make up would be similar. There would be no long term impact. There would also be direct impact to the benthic community due to burial and conversion from open water to BLH habitat. These species are commonly found throughout the basin in similar shallow water environments that exist in abundance. As such, impacts to the overall population of these species in the basin from the borrow placement is expected to be negligible. Direct impacts caused by increases in suspended sediments during placement of stabilization materials would be minimal, localized, and short-lived.

Cumulative Impacts
Though construction of this project would result in the loss of fisheries habitat, some fish, and temporary impacts to water quality and benthic habitat; this habitat is abundant throughout the basin, impacts to existing fisheries are minimal, and water quality and benthic species would rebound once project construction is complete. As such, construction of this project would result in minimal loss to fisheries, aquatic resources, and water quality experienced in the basin from the past, present and reasonably foreseeable projects in the basin The reinstitution of BLH in areas that are currently open water could provide indirect benefits to fisheries in the future by providing nutrients to the system in the form of detritus. As a result of borrow placement and the type of containment utilized for this project, land adjacent to the mitigation project may receive material suspended in the dredge effluent. This would nourish adjacent marsh habitat and may cause adjacent shallow open water to become shallower or be filled; encouraging the existing habitat to move through early successional phases faster.

These temporary impacts to water quality would add incrementally to similar cumulative impacts throughout the WBV basin as other projects listed in the FWOP conditions are constructed, causing temporary decreases in water quality throughout the basin. However, those projects in the FWOP conditions which include marsh restoration as well as the proposed action for HSDRRS Mitigation could have the long-term beneficial impact of increased dissolved oxygen and increased filtration which helps control local turbidity. The temporary impacts to Lake Salvador from borrow excavation are not anticipated to be substantial enough to cause water quality impairment under the standards of Louisiana Administrative Code, Title 33, Part IX, Chapter 11. Impacts in the fill area would temporarily add to the water quality impairment of this subsegment through increased turbidity, but these impacts would be minimized through BMPs and would cease after construction. Although there would be a loss of open water from construction of this project, open water is found in abundance throughout the WBV basin.

4.2.1.4.4 Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project

Direct Impacts, Indirect, and Cumulative Impacts
There would be no direct, indirect or cumulative impacts to fisheries or aquatic resources due to the construction of this project since the area presently does not currently contain fisheries or aquatic resources. There would be minor temporary direct and indirect impacts to water quality during the clearing and grubbing; grading and tilling necessary to level the surface and prepare the area for planting and to achieve the required elevation. These impacts would be minimized via BMPs that would reduce any potential runoff from the site hence there should be no negative cumulative impacts on water quality. By taking this area out of agricultural production there could be a potential for a reduction in non point source pollution which would have a positive long term indirect and cumulative impact on water quality.

4.2.1.4.5 Plaquemines Option 2 PS BLH-Wet Restoration Project

Direct, Indirect, and Cumulative Impacts
The direct and indirect impacts that would be similar to those described in section 4.2.1.4.3. Approximately 417 acres of open water would no longer be accessible by fisheries or aquatic species. Approximately 230 acres of Mississippi River bottom would deepen to approximately -85 feet NAVD88. Due to flow of the river it is anticipated that the pits would refill overtime and no anoxic conditions would develop. The temporary impacts to the Mississippi River from borrow excavation are not anticipated to be substantial enough to cause water quality impairment under the standards of Louisiana Administrative Code, Title 33, Part IX, Chapter 11. Although there would be a loss of open water from construction of this project, open water is found in abundance throughout the WBV basin.

4.2.1.5 Essential Fish Habitat

4.2.1.5.1 Mitigation Bank Project (TSMP)

Direct, Indirect and Cumulative Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect or cumulative impacts to EFH would be incurred from the purchase of these credits for the HSDRRS mitigation.

4.2.1.5.2 Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project

Direct, Indirect, and Cumulative Impacts
There would be no direct, indirect or cumulative impacts to EFH due to the construction of this project since the area presently does not currently contain EFH.

4.2.1.5.3 Dufrene Ponds PS BLH-Wet Restoration Project

Direct Impacts
This project would directly and permanently convert approximately 573 acres of coastal migratory pelagic, red drum, reef fish, and shrimp EFH (See table 3-2) to uplands. Compensatory mitigation for these losses of EFH would be required per the draft guidelines for when impacts to open water would require mitigation (Appendix D). These impacts would be mitigated as tidal fresh marsh and would be disclosed in the TIER in which mitigation for that marsh type is a constructible feature. Approximately 927 acres of lake water bottom would go from an elevation of -8 feet to -20 feet but would continue to provide EFH for multiple managed species.

Indirect and Cumulative Impacts
There could be a short term indirect impact to EFH due to temporary increases in turbidity and increased sedimentation rates adjacent to the placement and dredge area. These areas would return to normal once the construction ends. There would be an overall loss of EFH in the WBV basin, but no permanent cumulative impacts are anticipated because of the required mitigation.

4.2.1.5.4 Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project

Direct, Indirect, and Cumulative Impacts
There would be no impacts to EFH per the rational in section 4.2.1.5.2.

4.2.1.5.5 Plaquemines Option 2 PS BLH-Wet Restoration Project

Direct Impacts
There would be no direct impacts to EFH at the placement site due to the construction of this project since the area presently does not currently contain EFH. Approximately 230 acres of Mississippi River water bottom would be deepened to an elevation of -85 feet but would continue to provide EFH for multiple managed species.

Indirect and Cumulative Impacts
There could be a short term indirect impact to EFH due to temporary increases in turbidity and increased sedimentation rates adjacent to the placement area. These areas would return to normal once the construction ends. There would be a minor temporal loss of EFH in the WBV basin, but no permanent cumulative impacts are anticipated.

4.2.1.6 Cultural Resources

4.2.1.6.1 Mitigation Bank Project (TSMP)

Direct Impacts
Various mitigation banks within the WBV basin may be capable of supplying enough credits to meet the BLH-Dry and BLH-Wet mitigation requirements. Impacts from constructing permitted mitigation banks have been assessed during the Regulatory approval process; no new impacts to cultural resources would be incurred from the purchase of these credits.

Indirect and Cumulative Impacts
The erosion caused by natural forces and human activity would continue to impact cultural resources in the WBV Basin, and the loss of land would continue to threaten the existence and integrity of cultural resources sites. Cumulative impacts to cultural resources would be the additive combination of impacts by this and other Federal, state, local, and private restoration efforts in the WBV basin.

4.2.1.6.2 Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project

Direct Impacts
A review of previous research in the project area identified cultural resources that could be directly impacted by the proposed project. Several surveys have been conducted in the proposed project area, but there is a potential that additional cultural resources could exist within portions of the project area not previously surveyed. Activities associated with this project have the potential to directly impact previously undocumented cultural resources. The stipulations of the Programmatic Agreement executed on June 18, 2013 would be followed. As individual project features are developed the project would be assessed for its effect on historic properties, and survey strategies and the Area of Potential Effect would be coordinated with the LA SHPO, tribes, and other interested parties as required by the Programmatic Agreement. Identified cultural resources that are determined to be eligible for listing or are listed on the NRHP would be avoided. If avoidance is not possible, mitigation strategies would be developed in accordance with the stipulations of the Programmatic Agreement.

Indirect and Cumulative Impacts
The erosion and land loss caused by natural forces and human activity would continue to impact cultural resources in the project area. The loss of land within the project area threatens the existence and integrity of cultural resources. The implementation of measures to restore ecosystems and habitat could work to reduce continued land loss and erosion, and prevent exposure and impact to significant cultural resources.

Implementation of this project would work synergistically with other ecosystem restoration projects in coastal Louisiana. Cumulative impacts to cultural resources would be the additive combination of impacts by this and other Federal, state, local, and private restoration efforts, and would be further evaluated on a project-by-project basis.

4.2.1.6.3 Dufrene Ponds PS BLH-Wet Restoration Project

Direct Impacts
Activities associated with this project could have a direct impact on existing or as yet undiscovered cultural resources in the project area. Submerged cultural resources could exist within the borrow area located in Lake Salvador and could be directly impacted. The stipulations of the Programmatic Agreement executed on June 18, 2013 would be followed. As individual project features are developed the project would be assessed for its effect on historic properties, and survey strategies and the Area of Potential Effect would be coordinated with the LA SHPO, tribes, and other interested parties as required by the Programmatic Agreement. Identified cultural resources that are determined to be eligible for listing or are listed on the NRHP would be avoided. If avoidance is not possible, mitigation strategies would be developed in accordance with the stipulations of the Programmatic Agreement.

Indirect and Cumulative Impacts
See section **4.2.1.6.2.**

4.2.1.6.4 Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project

Direct Impacts
Activities associated with this project have the potential to directly impact cultural resources in the project area. In accordance with the Programmatic Agreement executed on June 18, 2013, the proposed Lake Boeuf project would be surveyed for cultural resources prior to project implementation. As individual project features are developed, the project would be assessed for its effect on historic properties, and survey strategies and the Area of Potential Effect would be coordinated with the LA SHPO, tribes, and other interested parties as required by the Programmatic Agreement. Identified cultural resources that are determined to be eligible for listing or are listed on the NRHP will be avoided. If avoidance is not possible, mitigation strategies would be developed in accordance with the stipulations of the Programmatic Agreement.

Indirect and Cumulative Impacts
See section **4.2.1.6.2.**

4.2.1.6.5 Plaquemines Option 2 PS BLH-Wet Restoration Project

Direct Impacts
It is not likely that activities associated with the proposed restoration project would have a direct impact on site 16PL186 or other cultural resources that may be located within the vicinity of the project area. The stipulations of the Programmatic Agreement executed on June 18, 2013 would be followed. As individual project features are developed, the project would be assessed for its effect on historic properties, and survey strategies and the Area of Potential Effect would be coordinated with the LA SHPO, tribes, and other interested parties as required by the Programmatic Agreement. Identified cultural resources that are determined to be eligible for listing or are listed on the NRHP would be avoided. If avoidance is not possible, mitigation strategies would be developed in accordance with the stipulations of the Programmatic Agreement.

Indirect and Cumulative Impacts
See section **4.2.1.6.2.**

4.2.1.7 Recreational Resources

4.2.1.7.1 Mitigation Bank Project (TSMP)

Direct Impacts
There would be no direct impacts.

Indirect and Cumulative Impacts
There would be no indirect and cumulative impacts.

4.2.1.7.2 Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project

Direct Impacts
During the construction of features BS4 and BS6, campers at Bayou Segnette State Park may be impacted by noise during the day. No direct impacts are expected from construction of the other features.

Indirect and Cumulative Impacts
Features BS4 and BS6 with the addition of trees may provide additional opportunities for wildlife viewing and bird watching. There may be a visual benefit to the campground and visitors utilizing the cabins. The conversion of private land to public land may provide opportunities such as hiking and bird watching depending on the how the land is managed in the future.

4.2.1.7.3 Dufrene Ponds PS BLH-Wet Restoration Project

Direct Impacts
Boat access from the camps to adjacent waters including Petite Lac des Allemands, Bayou des Allemands, Lac Des Allemands and Bayou Gauche would remain available. Protected side mitigation features would eliminate 572.6 acres of available water for boating and fishing in the private lake.

Borrow material would be dredged from Lake Salvador via a pipeline through Bayou Des Allemands. Fishing in waters adjacent to the borrow site and receiving areas may be impacted by increased turbidity caused by dredging and placement activities. These impacts would cease once construction is complete. Additionally, the floating pipeline may cause a temporary inconvenience to boaters traveling in the area.

Indirect and Cumulative Impacts
The project with both, protected and flood side, mitigation features would eliminate 987.4 acres of available water for boating and fishing in the private lake. Conversion of private land to public land may provide opportunities for recreational activities such as duck hunting and bird watching depending on the how the land is managed in the future.

4.2.1.7.4 Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project

Direct Impacts
There would be no direct impacts.

Indirect and Cumulative Impacts
Conversion of private land to public land may provide opportunities for recreational activities such as hunting depending on the how the land is managed in the future.

4.2.1.7.5 Plaquemines Option 2 PS BLH-Wet Restoration Project

Direct Impacts
People bank fishing along the Mississippi River may be temporarily displaced during construction activities.

Indirect and Cumulative Impacts
Conversion of private land to public land may provide opportunities for recreational activities such as hunting depending on the how the land is managed in the future.

4.2.1.8 Aesthetic Resources

4.2.1.8.1 Mitigation Bank Project (TSMP)

Direct Impacts
Purchase of BLH-Wet mitigation credits from an approved mitigation bank will not impact to visual resources.

Indirect and Cumulative Impacts
Purchase of BLH-Wet mitigation credits from an approved mitigation bank will not have indirect or cumulative impacts to visual resources.

4.2.1.8.2 Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project

Direct and Indirect Impacts
The removal of invasive species will greatly enhance the visual resources of Bayou Segnette State Park and the surrounding private lands. Much of the privately owned lands are remote and the viewing public will not be able to see the proposed improvements. However; due to the public and institutional significance that the state park provides, the proposed measures will greatly enhance the landscape and the park visitors' experience there.

Temporary impacts could potentially occur due to construction efforts in the area. Increased traffic due to construction vehicles, dust, debris and increased noise volumes could affect park patrons. These temporary impacts should return to normal upon completion of the project.

Cumulative Impacts
The project would not add measurably to cumulative impacts to visual resources in the study area. Cumulative impacts would be the incremental direct and indirect impacts of implementing the proposed action combined with the continued activities of growth and development in the area. These incremental direct and indirect impacts would be in addition to the direct and indirect impacts to visual resources in the region, Louisiana and the Nation caused by other restoration projects, destruction of natural habitats due to human development and the evolution of the landscape due to natural processes.

4.2.1.8.3 Dufrene Ponds PS BLH-Wet Restoration Project

Direct and Indirect Impacts
The introduction of landmass and bottomland hardwoods will greatly enhance the visual resources of the Dufrene Ponds region. Under the governance of technical significance, and in terms of the basic design elements, the proposed measures would greatly increase the value of view sheds from U.S. Highway 90 and Bayou Des Allemands, which is a state designated scenic stream. Trees and land mass could provide framing elements for open water areas, create texture and repetition, and provide a variety of color to the area that wasn't there before. This measure could increase wildlife diversity and recreational opportunities as well.

Temporary impacts could potentially occur due to construction efforts in the area. Increased traffic due to construction vehicles, dust, debris and increased noise volumes could affect residents of the area. These temporary impacts should return to normal upon completion of the project.

Cumulative Impacts
Cumulative impacts could include how Bayou Des Allemands would be affected in the long term. Visually, creating a bank and shoreline for the bayou could improve view sheds from the water and from Highway 90. As far as the future highway that is planned, the introduction of bottomland hardwoods and landmass could work to create an enticing view shed from that roadway as well. The roadway will most likely be elevated, offering a 360 degree panorama of the surrounding area. Cumulative impacts would be the incremental direct and indirect impacts of implementing the proposed action combined with the continued activities of growth and development in the area. These incremental direct and indirect impacts would be in addition to the direct and indirect impacts of visual resources in the region, Louisiana and the Nation caused by other restoration projects, destruction of natural habitats due to human development and the evolution of the landscape due to natural processes.

4.2.1.8.4 Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project

Direct and Indirect Impacts
The introduction of bottomland hardwoods will greatly enhance the visual resources of the Lake Boeuf project region. Under the governance of technical significance, and in terms of the basic design elements, the proposed measures would greatly increase the value of view sheds from L.A. Highway 308 and the surrounding local roads. Trees could provide framing elements for open areas and undergrowth, create texture and repetition, and provide a variety of color to the area that wasn't there before. This measure could increase wildlife diversity and recreational opportunities as well.

Temporary impacts could potentially occur due to construction efforts in the area. Increased traffic due to construction vehicles, dust, debris and increased noise volumes could affect residents of the area. These temporary impacts should return to normal upon completion of the project.

Cumulative Impacts
The project would not add measurably to cumulative impacts to visual resources in the study area. Cumulative impacts would be the incremental direct and indirect impacts of implementing the proposed action combined with the continued activities of growth and development in the area. These incremental direct and indirect impacts would be in addition to the direct and indirect impacts of visual resources in the region, Louisiana and the Nation caused by other restoration projects, destruction of natural habitats due to human development and the evolution of the landscape due to natural processes.

4.2.1.8.5 Plaquemines Option 2 PS BLH-Wet Restoration Project

Direct and Indirect Impacts
Due to the remoteness of the site and inaccessibility, direct impacts to visual resources would be negligible. The large levee and borrow canal that separates the residential areas (located to the east) from the site creates a barrier that makes visual access to the site nearly impossible. Existing trees and vegetation at the toe of the levee, on the flood side, also add in screening the project site as it exists today. Also, there are no features that could be considered publically or institutionally significant.

Temporary impacts could potentially occur due to construction efforts in the area. Increased traffic due to construction vehicles, dust, debris and increased noise volumes could residents of the area. These temporary impacts should return to normal upon completion of the project.

Cumulative Impacts
The project would not add measurably to cumulative impacts to visual resources in the study area. Cumulative impacts would be the incremental direct and indirect impacts of implementing the proposed action combined with the continued activities of growth and development in the area. These incremental direct and indirect impacts would be in addition to the direct and indirect impacts of visual resources in the region, Louisiana and the Nation caused by other restoration projects, destruction of natural habitats due to human development and the evolution of the landscape due to natural processes.

4.2.1.9 Air Quality

4.2.1.9.1 Mitigation Bank Project (TSMP)

Direct Indirect and Cumulative Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect or cumulative air quality impacts would be incurred from the purchase of these credits for the HSDRRS mitigation.

4.2.1.9.2 Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project

Direct Impacts
During construction of this project, an increase in air emissions could be expected. These emissions could include 1) exhaust emissions from operations of various types of non-road construction equipment such as a hydro axe, skidder, ATV etc. and 2) fugitive dust due to earth disturbance. Emission of fugitive dust near the construction area is not anticipated to be a problem as the site is fairly remote, and the majority of the work is anticipated to be completed by hand.

Any site-specific construction effects would be temporary and dust emissions, if any, would be controlled using standard BMPs. Air quality would return to pre-construction conditions shortly after the completion of construction activities. Because the project area is in a parish in attainment of NAAQS, a conformity analysis is not required.

Indirect Impacts
There would be no adverse indirect impacts to air quality in the parish with construction of the proposed action.

Cumulative Impacts
Cumulative impacts to air quality in the project area due to construction of this project in addition to the other construction activities within the WBV basin that may be occurring concurrently would be temporary and would be very minimal, especially considering that placement of dredged material would not create fugitive dust. After the construction period, there would be no incremental contribution to cumulative air quality impacts due to the proposed action.

4.2.1.9.3 Dufrene Ponds PS BLH-Wet Restoration Project

Direct Impacts
During construction of this project, an increase in air emissions could be expected during construction. These emissions could include exhaust emissions from operations of various types of non-road construction equipment such as a cutterhead dredge, backhoes, tractors, etc. and from

vehicles used to access the project area. Fugitive dust emissions are not anticipated during construction.

Any site-specific construction effects to air quality would be temporary, and air quality would return to pre-construction conditions shortly after the completion of construction activities. Because the project area is in a parish in attainment of NAAQS, a conformity analysis is not required.

Indirect Impacts
There would be no adverse indirect impacts to air quality in the parish with construction of the proposed action.

Cumulative Impacts
Cumulative impacts to air quality in the project area due to construction of this project in addition to the other construction activities within the WBV basin that may be occurring concurrently would be temporary and would be very minimal, especially considering that placement of dredged material would not create fugitive dust. After the construction period, there would be no incremental contribution to cumulative air quality impacts due to the proposed action.

4.2.1.9.4 Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project

Direct Impacts
During construction of this project, an increase in air emissions could be expected. These emissions could include exhaust emissions from vehicles used to access the project area as well as non-road vehicles such as backhoes, graders, etc. Emission of fugitive dust near the construction area is not anticipated to be a problem.

Any site-specific construction effects would be temporary and dust emissions, if any, would be controlled using standard BMPs. Air quality would return to pre-construction conditions shortly after the completion of construction activities. Because the project area is in a parish in attainment of NAAQS, a conformity analysis is not required.

Indirect Impacts
There would be no adverse indirect impacts to air quality in the parish with construction of the proposed action.

Cumulative Impacts
Cumulative impacts to air quality in the project area due to construction of this project in addition to the other construction activities within the WBV basin that may be occurring concurrently would be temporary and would be very minimal. After the construction period, there would be no incremental contribution to cumulative air quality impacts due to the proposed action.

4.2.1.9.5 Plaquemines Option 2 PS BLH-Wet Restoration Project

Direct, Indirect and Cumulative Impacts
See section 4.2.1.9.3

4.2.1.10 Noise

4.2.1.10.1 Mitigation Bank Project (TSMP)

Direct, Indirect and Cumulative Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, there would be no new direct, indirect or cumulative noise impacts would be incurred from the purchase of these credits for the HSDRRS mitigation.

4.2.1.10.2 Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project

Direct Impacts
Backhoes, hydro-axes, gyro-tracks, mulchers, and dump trucks would be the primary pieces of equipment used for construction of this project. These pieces of equipment exceed noise levels above 55 dBA at 50 feet. Noise levels may result in wildlife avoiding the project area during construction; however, movement of equipment during construction would result in the same avoidance behaviors from wildlife species. In addition, noise levels quickly drop off once a buffer is established between the noise source and the receptor (e.g. vegetation). No impact to human populations is anticipated as noise levels would quickly drop off due to the vegetative buffer surrounding the project area.

Indirect and Cumulative Impacts
Construction of this project is not anticipated to add significantly to the cumulative effect of noise in the WBV basin as the construction activities would be temporary, the area is buffered by vegetation, and avoidance of the project area would occur due to the movement of machinery in the area even without the additional noise.

4.2.1.10.3 Dufrene Ponds PS BLH-Wet Restoration Project

Direct and Indirect Impacts
Cutterhead dredges, backhoes, slurry pumps, marsh tracked vehicles and barge mounted equipment would be the primary pieces of equipment used for construction of this project. These pieces of equipment exceed noise levels above 55 dBA. Noise levels may result in wildlife avoiding the project area during construction; however, movement of equipment during construction would result in the same avoidance behaviors from wildlife species. Residences could experience higher than ambient noise levels during construction, however these levels would be temporary during the period of construction and would be limited to daylight hours.

Cumulative Impacts
Construction of this project is not anticipated to add significantly to the cumulative effect of noise in the WPV basin as the construction activities would be temporary during the period of construction, restricted to daylight hours and avoidance of the project area by wildlife would occur due to the movement of machinery in the area even without the additional noise.

4.2.1.10.4 Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project

Direct and Indirect Impacts
Construction equipment necessary for the initial project construction phase would include dump trucks, bulldozers, tractors, graders, and similar equipment. These pieces of equipment exceed noise levels above 55 dBA. Noise levels may result in wildlife avoiding the project area during

construction; however, movement of equipment during construction would result in the same avoidance behaviors from wildlife species. Residences could experience higher than ambient noise levels during construction, however these levels would be temporary during the period of construction and would be limited to daylight hours.

Cumulative Impacts
Construction of this project is not anticipated to add significantly to the cumulative effect of noise in the WPV basin as the construction activities would be temporary during the period of construction, restricted to daylight hours and avoidance of the project area by wildlife would occur due to the movement of machinery in the area even without the additional noise.

4.2.1.10.5 Plaquemines Option 2 PS BLH-Wet Restoration Project

Direct and Indirect Impacts
Cutterhead dredges, backhoes, slurry pumps, marsh tracked vehicles and barge mounted equipment would be the primary pieces of equipment used for construction of this project. These pieces of equipment exceed noise levels above 55 dBA. Noise levels may result in wildlife avoiding the project area during construction; however, movement of equipment during construction would result in the same avoidance behaviors from wildlife species. Residences could experience higher than ambient noise levels during construction, however these levels would be temporary during the period of construction and would be limited to daylight hours.

Cumulative Impacts
Construction of this project is not anticipated to add significantly to the cumulative effect of noise in the WPV basin as the construction activities would be temporary during the period of construction, restricted to daylight hours and avoidance of the project area by wildlife would occur due to the movement of machinery in the area even without the additional noise.

4.2.1.11 Hazardous, Toxic, and Radioactive Waste

4.2.1.11.1 Mitigation Bank Project (TSMP)

Direct, Indirect and Cumulative Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect, or cumulative HTRW impacts to would be incurred from the purchase of these credits for the HSDRRS mitigation.

4.2.1.11.2 Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project

Direct, Indirect and Cumulative Impacts
One REC and one potential REC are located in the Bayou Segnette Enhancement Project area. Mitigation will mainly involve eradicating Chinese tallow trees and replanting of native BLH species. As long as the construction traffic involved in the mitigation process follows proper precautions, there is a low probability of encountering HTRW or petroleum products in the proposed mitigation area. Cumulative impacts may include additional oil and gas explorations and additional land development but there are no known exploration or development projects scheduled for this area.

4.2.1.11.3 Dufrene Ponds PS BLH-Wet Restoration Project

Direct, Indirect and Cumulative Impacts
Two natural gas pipelines cross Features DP1A and DP4A. The areas proposed for mitigation are currently open water. They would be filled with dredged material from a borrow site in Lake Salvador to establish a platform, then planting native BLH species. USACE Engineer Regulation, ER 1165-2-132, Hazardous, Toxic, and Radioactive Waste (HTRW) for Civil Works Projects, states that dredged material and sediments beneath navigable waters proposed for dredging qualify as HTRW only if they are within the boundaries of a site designated by the EPA or a state for a response action (either a removal or a remedial action) under CERCLA, or if they are a part of a National Priority List (NPL) site under CERCLA (NPL is also known as "Superfund"). None of the area proposed for dredging is included in the National Priority List or within the boundaries of a CERCLA site.

There is a low probability that the proposed restoration within the Dufrene Ponds area using material from Lake Salvador would encounter HTRW or introduce toxic materials into the Dufrene Ponds area. However, precautions must be taken to prevent damage to or breakage of the pipelines during placement of the dredged material. Cumulative impacts may include additional oil and gas exploration in the project area and adjacent features but it is unknown whether there are any scheduled projects.

4.2.1.11.4 Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project

Direct, Indirect and Cumulative Impacts
One REC, a natural gas pipeline, exists in Features BWP1 and BDP2. One plugged and abandoned dry hole oil well exists in Feature BDP3. There are no wells or pipelines in BDP1. There is a low probability of encountering HTRW or petroleum products in Features BDP1 and BDP3. Precautions must be taken to prevent damage to or breakage of the pipelines during the proposed restoration of Features BDP2 and BDW1 within the Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project. No direct, indirect, and cumulative impacts are expected at this project site.

4.2.1.11.5 Plaquemines Option 2 PS BLH-Wet Restoration Project

Direct, Indirect and Cumulative Impacts
No RECs were found within Feature P3D of the proposed Plaquemines Option 2 BLH-Wet PS BLH-Wet Restoration Project. The area proposed for mitigation is currently open water. It would be filled with dredged material from a borrow site in the Mississippi River to establish a platform, then planting native BLH species. USACE Engineer Regulation, ER 1165-2-132, Hazardous, Toxic, and Radioactive Waste (HTRW) for Civil Works Projects, states that dredged material and sediments beneath navigable waters proposed for dredging qualify as HTRW only if they are within the boundaries of a site designated by the EPA or a state for a response action (either a removal or a remedial action) under CERCLA, or if they are a part of a National Priority List (NPL) site under CERCLA (NPL is also known as "Superfund"). None of the area proposed for dredging is included in the National Priority List or within the boundaries of a CERCLA site. There is a low probability of encountering HTRW or petroleum products in Feature P3D. No direct, indirect, or cumulative impacts are expected at this project site.

4.2.1.12 Socioeconomics/Land Use, Environmental Justice, Transportation, Navigation, and Commercial Fisheries

4.2.1.12.1 Mitigation Bank Project (TSMP)

Direct, Indirect and Cumulative Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect or cumulative impacts to socioeconomics/land use, environmental justice, transportation, navigation and commercial fisheries would be incurred from the purchase of these credits for the HSDRRS mitigation. However, depending on the amount of BLH-Wet mitigation bank credits available in the basin at the time of credit purchase for the HSDRRS mitigation, use of mitigation bank credits to offset HSDRRS BLH-Dry and BLH-Wet impacts may significantly reduce the number of credits available to permittees to compensate for BLH impacts authorized by Department of the Army Section 10/404 permits. In the event sufficient credits are not available to offset impacts associated with a proposed permit, the district engineer would determine appropriate permittee responsible compensatory mitigation based on the factors described in 33 CFR Part 332.3(b).

4.2.1.12.2 Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project

Direct, Indirect and Cumulative Impacts
According to 2010 U.S. Census data, there are no residents located within the boundaries of the Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement project site or in the vicinity and therefore impacts to population or housing are not expected to occur. There are no indirect or cumulative impacts to the Environmental Justice socio-economic resource. Environmental Justice issues do not typically arise from the construction of restoration projects as the mitigation sites are uninhabited.

There are no commercial/industrial properties, public facilities, or transportation infrastructure within the project boundaries therefore there will be no direct impacts to land use. Minimal indirect land use impacts may occur when privately owned land is converted to public use. No impacts to employment, businesses, industry public facilities and services, community and regional growth community cohesion, or tax revenues and property values are anticipated to occur with construction of this project.

There would be no direct and only minimal indirect impacts to transportation in nearby residential area during construction due to heavy vehicle traffic in the vicinity of the restoration site. It is expected that once the necessary construction equipment is on site that no additional transportation impacts would occur until the project construction is complete.

There would be no direct or indirect impacts to navigation or commercial fishing on any of the nearby waterways from implementation of the project.

The cumulative impacts of the projects, when added to other past, present, and reasonably foreseeable ecosystem restoration, mitigation or other type projects in the basin would minimally and temporarily affect socio-economic resources. Cumulative impacts include the Pre-Katrina BLH-Wet enhancement mitigation project. Due to the relatively small size of the Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project, the temporary nature of the project activities and the duration of enhancement projects, the Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project would add very little and only temporary impacts to any other impacts resulting from past,

present and reasonably foreseeable projects in the WBV HSDRRS and would not contribute significantly to cumulative impacts to socio-economic resources in the basin.

4.2.1.12.3 Dufrene Ponds PS BLH-Wet Restoration Project

Direct, Indirect and Cumulative Impacts
According to 2010 U.S. Census data, there are no residents living on the proposed mitigation sites while approximately 338 people live near the Dufrene Ponds PS BLH-Wet Restoration Project of which 18 are minority while 10% of area households are below the poverty level. Therefore, no disproportionately high or adverse effects on minority or low-income populations would occur. Indirect and cumulative impacts to the Environmental Justice socio-economic resource are similar to those impacts described in section 4.2.1.12.2.

There is a commercial oil rig within the project boundaries. The expectation is that the operation will continue to function after the restoration work is completed. However, there may be a temporary disruption in business during the restoration phase, which could result in some loss of revenue to business. Minimal indirect land use impacts may occur when privately owned land is converted to public use.

There would be no direct and only minimal indirect impacts to transportation in nearby residential area during construction due to heavy vehicle traffic in the vicinity of the restoration site. It is expected that once the necessary construction equipment is on site that no additional transportation impacts would occur until the project construction is complete. The nearest thoroughfare to the Dufrene Ponds PS BLH-Wet Restoration Project is LA Highway 90.

There would be some direct or indirect impacts to navigation or commercial fishing as borrow would be pumped from Lake Salvador and routed through Bayou Poule De Eau.

The cumulative impacts of all projects, when added to other past, present, and reasonably foreseeable ecosystem restoration, mitigation or other type projects in the basin would minimally and temporarily affect socio-economic resources. It should be noted that with or without the project, an extension of Hwy 90 is planned by the Louisiana Department of Transportation and Development (DOTI). Due to the size of Dufrene Ponds PS BLH-Wet Restoration and its relatively small size, the temporary nature of the project activities and the duration of enhancement projects, the Dufrene Ponds PS BLH-Wet Restoration Project would add very little and only temporary impacts to any other impacts resulting from past, present and reasonably foreseeable projects in the WBV HSDRRS and would not contribute significantly to cumulative impacts to socio-economic resources in the basin.

4.2.1.12.4 Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project

Direct, Indirect and Cumulative Impacts
According to 2010 U.S. Census data, 281 people live in 6 census blocks comprising the Lake Boeuf project area and are part of block group 1 of census tract 20900. However, there are no residents living on the mitigation sites; instead the sites are mainly used for agriculture. A vast majority of the owners of the agriculture land are not minority residents or low-income households. Several of the mitigation sites are located in census tract 20900, block group 2, which does have a majority percent of its households with incomes below the poverty level. However, the low income/minority residents of block group 2 reside further east of the mitigation sites. The activities associated with the proposed action are not expected to adversely impact low income or minority residents in the Raceland community of Lafourche Parish. There would be no disproportionately high or adverse

effects on minority or low-income populations. Indirect and cumulative impacts to the Environmental Justice socio-economic resource are similar to those impacts described in section 4.2.1.12.3

There would be direct land use impacts as private agricultural land is converted to public use which in turn will impact business revenue and ultimately local tax revenues to some degree. Minimal indirect land use impacts may occur when privately owned land is converted to public use.

There would be no direct and only minimal indirect impacts to transportation in nearby residential area during construction due to heavy vehicle traffic in the vicinity of the restoration site. It is expected that once the necessary construction equipment is on site that no additional transportation impacts would occur until the project construction is complete.

There would be no direct or indirect impacts to navigation or commercial fishing on any of the nearby waterways from implementation of the project.

The cumulative impacts of the projects, when added to other past, present, and reasonably foreseeable ecosystem restoration, mitigation or other type projects in the basin would minimally and temporarily affect socio-economic resources. Cumulative impacts include Lake Boeuf FS BLH-Wet and Swamp Restoration Projects. Due to the relatively small size of the Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project, the temporary nature of the project activities and the duration of enhancement projects, the Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project would add very little and only temporary impacts to any other impacts resulting from past, present and reasonably foreseeable projects in the WBV HSDRRS and would not contribute significantly to cumulative impacts to socio-economic resources in the basin.

4.2.1.12.5 Plaquemines Option 2 PS BLH-Wet Restoration Project

Direct, Indirect and Cumulative Impacts
According to 2010 U.S. Census data, there are no residents located within the boundaries of the Plaquemines Option 2 PS BLH-Wet Restoration which is open water and; therefore, no impacts to population or housing are expected to occur. However, residents who own the proposed mitigation sites do live across a borrow canal in homes fronting on LA Highway 23. One-quarter of the residents are minority. As this is a programmatic feature, additional Environmental Justice analysis would be conducted and documented in supplemental NEPA documents. Indirect and cumulative impacts to the Environmental Justice socio-economic resource are similar to those impacts described in section 4.2.1.12.3

There are no commercial/industrial properties, public facilities, or transportation infrastructure within the project boundaries therefore there will be no direct impacts to land use. Minimal indirect land use impacts may occur when privately owned land is converted to public use. No impacts to employment, businesses, industry public facilities and services, community and regional growth community cohesion, or tax revenues and property values are anticipated to occur with construction of this project.

There would be no direct and only minimal indirect impacts to transportation in the nearby residential area during construction as pumping will be direct from the Mississippi River.

There would be minimal direct or indirect impacts to navigation or commercial fishing as access to impacted area will be from the Mississippi River during implementation of the project.

The cumulative impacts of the projects, when added to other past, present, and reasonably foreseeable ecosystem restoration, mitigation or other type projects in the basin would minimally and temporarily affect socio-economic resources. Due to the relatively small size of the Plaquemines Option 2 PS BLH-Wet Restoration Project, the temporary nature of the project activities and the duration of enhancement projects, the Plaquemines Option 2 PS BLH-Wet Restoration Project would add very little and only temporary impacts to any other impacts resulting from past, present and reasonably foreseeable projects in the WBV HSDRRS and would not contribute significantly to cumulative impacts to socio-economic resources in the basin.

4.2.1.13 Prime and Unique Farmland

4.2.1.13.1 Mitigation Bank Project (TSMP)

Direct, Indirect and Cumulative Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect or cumulative impacts to prime and unique farmland would be incurred from the purchase of these credits for the HSDRRS mitigation.

4.2.1.13.2 Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project

Direct, Indirect and Cumulative Impacts
No anticipated impacts as no prime and unique farmlands are located at this site.

4.2.1.13.3 Dufrene Ponds PS BLH-Wet Restoration Project

Direct, Indirect and Cumulative Impacts
No anticipated impacts as no prime and unique farmlands are located at this site.

4.2.1.13.4 Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project

Direct Impacts
Approximately 601.3 acres of Prime Farmland (NRCS, 2013) would be impacted by this project (591.6 acres) and the associated existing mitigation roadways (9.7 acres) including 376.3 acres of Cancienne silty clay loam, 142 acres of Cancienne sity loam, and 83 acres of Schriever clay. Once the site is developed for mitigation, this area could not be used as productive farmland in the future.

Indirect and Cumulative Impacts
There are approximately 104,520.7 acres combined of Cancienne silty clay loam, Cancienne silty loam, and Schriever clay in Lafourche parish (NRCS, 2013). The project would result in impacts to 376.3 acres of Cancienne silty clay loam, 142 acres of Cancienne sity loam, and 83 acres of Schriever clay, which is less than 0.7% of the soils currently found in Lafourche Parish, being removed from future potential agricultural development. Since the project area is presently farmed, current agricultural production in the parish would be affected. The cumulative impacts of the implementation of this project and the Lake Boeuf FS BLH-Wet and Swamp restoration projects affect such a small amount of prime farmland as to have a negligible effect on agricultural production in the parish.

The cumulative impacts of the implementation of this project and the TSMPA for Lake Boeuf FS BLH-Wet and TSMPA for Lake Boeuf Swamp restoration projects would affect approximately 546.2 acres of prime farmland including 512.8 acres within the project and 33.4 acres associated with

existing and proposed mitigation roadways. Since some of these roadways are coincident with the roadways needed for the BLH-Swamp General TSP, if both TSPs were built together, then the two projects combined would reduce impacts to prime farmland by 9.4 acres. A negligible effect on agricultural production in the parish would occur due to the small amount of prime farmland affected.

4.2.1.13.5 Plaquemines Option 2 PS BLH-Wet Restoration Project

Direct, Indirect and Cumulative Impacts
No anticipated impacts as no prime and unique farmlands are located at this site.

4.2.1.14 Natural & Scenic Rivers

4.2.1.14.1 Mitigation Bank Project (TSMP)

Direct, Indirect and Cumulative Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect, or cumulative impacts to Natural and Scenic Rivers would be incurred from the purchase of these credits for the HSDRRS mitigation.

4.2.1.14.2 Bayou Segnette PS BLH-Dry & BLH-Wet Enhancement Project

Direct Indirect and Cumulative Impacts
There are no state or federally designated scenic streams in the vicinity of the project area therefore there are no anticipated impacts.

4.2.1.14.3 Dufrene Ponds PS BLH-Wet Restoration Project

Direct Impacts
The portion of Bayou Des Allemands that runs adjacent to the project site, and where the borrow pipeline would be ran, is a state designated Scenic River. The pipeline would be floating and would be placed using marsh tracked vehicles. No significant impacts to the bayou are anticipated. Any impacts would be minimal and temporary and would not degrade the ecological integrity of the bayou. The activities associated with this project feature would be coordinated with LDWF as a permit would be necessary in order to perform work within Bayou Des Allemands.

Indirect and Cumulative Impacts
Beneficial indirect impacts would include the creation of BLH habitat adjacent to Bayou Des Allemands which would enhance the scenic beauty and wilderness quality of the bayou. Cumulatively, this project and others proposed in the surrounding areas would enhance the beauty of the Louisiana Natural and Scenic Rivers System.

4.2.1.14.4 Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project

Direct Indirect and Cumulative Impacts
There are no state or federally designated scenic streams in the vicinity of the project area therefore there are no anticipated impacts.

4.2.1.14.5 Plaquemines Option 2 PS BLH-Wet Restoration Project

Direct Indirect and Cumulative Impacts
There are no state or federally designated scenic streams in the vicinity of the project area therefore there are no anticipated impacts.

4.2.2 MITIGATION FOR GENERAL FS BLH-WET IMPACTS

4.2.2.1 Wetlands and other Surface Waters

4.2.2.1.1 Dufrene Ponds FS BLH-Wet Restoration Project

Direct Impacts
There would be a beneficial impact to wetlands as approximately 276 acres of open water habitat would be converted to BLH-Wet habitat.

Indirect and Cumulative Impacts
See section 4.2.1.1.3

4.2.2.1.2 Lake Boeuf FS BLH-Wet Restoration Project (TSMP)

Direct Impacts
There would be a beneficial impact to wetlands as approximately 222 acres of open water habitat would be converted to BLH-Wet habitat.

Indirect and Cumulative Impacts
See section 4.2.1.1.4

4.2.2.1.3 Plaquemines Option 2 FS BLH-Wet Restoration Project

Direct Impacts
There would be a beneficial impact to wetlands as approximately 206 acres of open water habitat would be converted to BLH-Wet habitat.

Indirect and Cumulative Impacts
See section 4.2.1.1.5

4.2.2.2 Wildlife

4.2.2.2.1 Dufrene Ponds FS BLH-Wet Restoration Project

Direct, Indirect and Cumulative Impacts
See section *4.2.1.2.3*

4.2.2.2.2 Lake Boeuf FS BLH-Wet Restoration Project (TSMP)

Direct, Indirect and Cumulative Impacts
See section *4.2.1.2.4*

4.2.2.2.3 Plaquemines Option 2 FS BLH-Wet Restoration Project

Direct, Indirect and Cumulative Impacts
See section *4.2.1.2.5*

4.2.2.3 Threatened and Endangered Species

4.2.2.3.1 Dufrene Ponds FS BLH-Wet Restoration Project

Direct, Indirect and Cumulative Impacts
See section 4.2.1.3.3

4.2.2.3.2 Lake Boeuf FS BLH-Wet Restoration Project (TSMP)

Direct, Indirect and Cumulative Impacts
See section 4.2.1.3.4

4.2.2.3.3 Plaquemines Option 2 FS BLH-Wet Restoration Project

Direct, Indirect and Cumulative Impacts
See section 4.2.1.3.5

4.2.2.4 Fisheries, Aquatic Resources, and Water Quality

4.2.2.4.1 Dufrene Ponds FS BLH-Wet Restoration Project

Direct, Indirect, and Cumulative Impacts
These impacts would be similar to those described in section 4.2.1.4.3 but smaller in scale. Approximately 276 acres of open water would be no longer would be accessible by fisheries or aquatic species. Approximately 415 acres of lake bottom would be deepened.

4.2.2.4.2 Lake Boeuf FS BLH-Wet Restoration Project (TSMP)

Direct, Indirect, and Cumulative Impacts
There would be no impacts to aquatic species per the rational in section 4.2.1.5.2.

4.2.2.4.3 Plaquemines Option 2 FS BLH-Wet Restoration Project

Direct, Indirect, and Cumulative Impacts
These impacts would be similar to those described in section 4.2.1.4.5 but smaller in scale. Approximately 206 acres of open water would be no longer would be accessible by fisheries or aquatic species. The same borrow area in the river would be deepened to an elevation of -70 feet rather than -85 feet.

4.2.2.5 Essential Fish Habitat

4.2.2.5.1 Dufrene Ponds BLH-Wet Restoration Project

Direct, Indirect, and Cumulative Impacts
The impacts to EFH would be similar to those described in section 4.2.1.5.3 but smaller in scale. Approximately 276 acres of open water would be no longer would be considered EFH.

Approximately 415 acres of lake bottom would be deepened. These impacts would be mitigated as tidal fresh marsh and would be disclosed in the TIER in which mitigation for that marsh type is a constructible feature.

4.2.2.5.2 Lake Boeuf BLH-Wet Restoration Project (TSMP)

Direct, Indirect, and Cumulative Impacts
There would be no impacts to EFH per the rational in section 4.2.1.5.2.

4.2.2.5.3 Plaquemines Option 2 BLH-Wet Restoration Project

Direct, Indirect, and Cumulative Impacts
The impacts to EFH would be similar to those described in section 4.2.1.5.5 but smaller in scale. There would be no direct impacts to EFH at the placement site due per the rational in section 4.2.1.5.5. The same borrow area in the river would be deepened to an elevation of -70 feet rather than -85 feet.

4.2.2.6 Cultural Resources

4.2.2.6.1 Dufrene Ponds FS BLH-Wet Restoration Project

Direct Impacts
See section 4.2.1.6.3.

Indirect and Cumulative Impacts
See section 4.2.1.6.2.

4.2.2.6.2 Lake Boeuf FS BLH-Wet Restoration Project (TSMP)

Direct Impacts
See section 4.2.1.6.4.

Indirect and Cumulative Impacts
See section 4.2.1.6.2.

4.2.2.6.3 Plaquemines Option 2 FS BLH-Wet Restoration Project

Direct Impacts
See section 4.2.1.6.5.

Indirect and Cumulative Impacts
See section 4.2.1.6.2.

4.2.2.7 Recreational Resources

4.2.2.7.1 Dufrene Ponds FS BLH-Wet Restoration Project

Direct Impacts
Impacts are similar to 4.2.1.7.3 Dufrene Ponds PS BLH-Wet Restoration Project except flood side impacts would impact 276.2 acres of available water for boating and fishing in the private lake.

Indirect and Cumulative Impacts
See section 4.2.1.7.3

4.2.2.7.2 Lake Boeuf FS BLH-Wet Restoration Project (TSMP)

Direct Impacts
See section 4.2.1.7.4

Indirect and Cumulative Impacts
See section 4.2.1.7.4

4.2.2.7.3 Plaquemines Option 2 FS BLH-Wet Restoration Project

Direct Impacts
See section 4.2.1.7.5

Indirect and Cumulative Impacts
See section 4.2.1.7.5

4.2.2.8 Aesthetic Resources

4.2.2.8.1 Dufrene Ponds FS BLH-Wet Restoration Project

Direct Impacts
See section 4.2.1.8.3

Indirect and Cumulative Impacts
See section 4.2.1.8.3

4.2.2.8.2 Lake Boeuf FS BLH-Wet Restoration Project (TSMP)

Direct Impacts
See section 4.2.1.8.4

Indirect and Cumulative Impacts
See section 4.2.1.8.4

4.2.2.8.3 Plaquemines Option 2 FS BLH-Wet Restoration Project

Direct Impacts
See section 4.2.1.8.5

Indirect and Cumulative Impacts
See section 4.2.1.8.5

4.2.2.9 Air Quality

4.2.2.9.1 Dufrene Ponds FS BLH-Wet Restoration Project

Direct Impacts
During construction of this project, an increase in air emissions could be expected during construction. These emissions could include exhaust emissions from operations of various types of non-road construction equipment such as a cutterhead dredge, backhoes, tractors, etc. and from vehicles used to access the project area. Fugitive dust emissions are not anticipated during construction.

Any site-specific construction effects to air quality would be temporary, and air quality would return to pre-construction conditions shortly after the completion of construction activities. Because the project area is in a parish in attainment of NAAQS, a conformity analysis is not required.

Indirect Impacts
There would be no adverse indirect impacts to air quality in the parish with construction of the proposed action.

Cumulative Impacts
Cumulative impacts to air quality in the project area due to construction of this project in addition to the other construction activities within the WBV basin that may be occurring concurrently would be temporary and would be very minimal, especially considering that placement of dredged material would not create fugitive dust. After the construction period, there would be no incremental contribution to cumulative air quality impacts due to the proposed action.

4.2.2.9.2 Lake Boeuf FS BLH-Wet Restoration Project (TSMP)

Direct Impacts
During construction of this project, an increase in air emissions could be expected. These emissions could include exhaust emissions from vehicles used to access the project area as well as non-road vehicles such as backhoes, graders, etc. Emission of fugitive dust near the construction area is not anticipated to be a problem.

Any site-specific construction effects would be temporary and dust emissions, if any, would be controlled using standard BMPs. Air quality would return to pre-construction conditions shortly after the completion of construction activities. Because the project area is in a parish in attainment of NAAQS, a conformity analysis is not required.

Indirect Impacts
There would be no adverse indirect impacts to air quality in the parish with construction of the proposed action.

Cumulative Impacts
Cumulative impacts to air quality in the project area due to construction of this project in addition to the other construction activities within the WBV basin that may be occurring concurrently would be temporary and would be very minimal. After the construction period, there would be no incremental contribution to cumulative air quality impacts due to the proposed action.

4.2.2.9.3 Plaquemines Option 2 FS BLH-Wet Restoration Project

Direct, Indirect and Cumulative Impacts
See section 4.2.2.9.1

4.2.2.10 Noise

4.2.2.10.1 Dufrene Ponds FS BLH-Wet Restoration Project

Direct, Indirect and Cumulative Impacts

See Section 4.2.1.10.3

4.2.2.10.2 Lake Boeuf FS BLH-Wet Restoration Project (TSMP)

Direct, Indirect and Cumulative Impacts

See Section 4.2.1.10.4

4.2.2.10.3 Plaquemines Option 2 FS BLH-Wet Restoration Project

Direct, Indirect and Cumulative Impacts

See Section 4.2.1.10.5

4.2.2.11 Hazardous, Toxic, and Radioactive Waste

4.2.2.11.1 Dufrene Ponds FS BLH-Wet Restoration Project

Direct, Indirect and Cumulative Impacts

Two plugged and abandoned dry hole oil wells and one plugged and abandoned producing oil well are located within or near Feature DP1B. The areas proposed for mitigation are currently open water. They would be filled with dredged material from a borrow site in Lake Salvador to establish a platform, then planted with native BLH species. USACE Engineer Regulation, ER 1165-2-132, Hazardous, Toxic, and Radioactive Waste (HTRW) for Civil Works Projects, states that dredged material and sediments beneath navigable waters proposed for dredging qualify as HTRW only if they are within the boundaries of a site designated by the EPA or a state for a response action (either a removal or a remedial action) under CERCLA, or if they are a part of a National Priority List (NPL) site under CERCLA (NPL is also known as "Superfund"). None of the area proposed for dredging is included in the National Priority List or within the boundaries of a CERCLA site.

There is a low probability that the proposed restoration within the Dufrene Ponds FS BLH-Wet Restoration Project using material from Lake Salvador would encounter HTRW or introduce toxic materials into the Dufrene Ponds FS BLH-Wet Restoration Project area. Cumulative impacts may include additional oil and gas exploration in the project area and adjacent features but it is unknown whether there are any scheduled exploration projects.

4.2.2.11.2 Lake Boeuf FS BLH-Wet Restoration Project (TSMP)

Direct, Indirect and Cumulative Impacts

Two RECs, a natural gas pipeline and one oil well are located in Feature BWF3. The same natural gas pipeline exists in Features BWF4 and BWF5. No RECs are noted in Features BWF1 and BWF2. Precautions must be taken to prevent damage to or breakage of the pipeline in Features BWF3, BWF4, and BWF5 as well as to the oil well in BWF3. No direct, indirect, and cumulative impacts are expected at this project site.

4.2.2.11.3 Plaquemines Option 2 FS BLH-Wet Restoration Project

Direct, Indirect and Cumulative Impacts

No RECs were found within Feature P3C of the proposed Plaquemines Option 2 FS BLH-Wet project. The area proposed for mitigation is currently open water. It would be filled with dredged material from a borrow site in the Mississippi River to establish a platform, then planting native BLH species. USACE Engineer Regulation, ER 1165-2-132, Hazardous, Toxic, and Radioactive Waste (HTRW) for Civil Works Projects, states that dredged material and sediments beneath navigable waters proposed for dredging qualify as HTRW only if they are within the boundaries of a site designated by the EPA or a state for a response action (either a removal or a remedial action) under CERCLA, or if they are a part of a National Priority List (NPL) site under CERCLA (NPL is also known as "Superfund"). None of the area proposed for dredging is included in the National Priority List or within the boundaries of a CERCLA site. There is a low probability of encountering HTRW or petroleum products in Feature P3C. No direct, indirect, or cumulative impacts are expected at this project site.

4.2.2.12 Socioeconomics/Land Use, Environmental Justice, Transportation, Navigation, and Commercial Fisheries

4.2.2.12.1 Dufrene Ponds FS BLH-Wet Restoration Project

Direct, Indirect and Cumulative impacts
See Section 4.2.1.12.3.

4.2.2.12.2 Lake Boeuf FS BLH-Wet Restoration Project (TSMP)

Direct, Indirect and Cumulative impacts
See Section 4.2.1.12.4.

4.2.2.12.3 Plaquemines Option 2 FS BLH-Wet Restoration Project

Direct, Indirect and Cumulative impacts
See Section 4.2.1.12.5.

4.2.2.13 Prime and Unique Farmland

4.2.2.13.1 Dufrene Ponds BLH-Wet Restoration Project

Direct Indirect and Cumulative Impacts
See Section 4.2.1.13.3

4.2.2.13.2 Lake Boeuf FS BLH-Wet Restoration Project (TSMP)

Direct Impacts
Approximately 240.6 acres of Prime Farmland (NRCS, 2013) would be impacted by this project (221.7 acres) and the associated existing and proposed mitigation roadways (18.9 acres) including 79.7 acres of Cancienne silty clay loam, 51.5 acres of Cancienne sity loam, and 109.4 acres of Schriever clay. Once the site is developed for mitigation, this area could not be used as productive farmland in the future.

Indirect and Cumulative Impacts
There are approximately 104,520.7 acres combined of Cancienne silty clay loam, Cancienne silty loam, and Schriever clay in Lafourche parish (NRCS, 2013). The project would result in impacts to 79.7 acres of Cancienne silty clay loam, 51.5 acres of Cancienne sity loam, and 109.4 acres of Schriever clay, which is less than 0.3% of the soils currently found in Lafourche Parish, being removed from future potential agricultural development. Since the majority of the project area is presently farmed, current agricultural production in the parish would be affected.

The cumulative impacts of the implementation of this project and the Lake Boeuf FS Swamp Project would affect approximately 546.2 acres of prime farmland including 512.8 acres within the project and 33.4 acres associated with existing and proposed mitigation roadways. Since some of these roadways are coincident with the roadways needed for the BLH-Swamp General TSP, if both TSPs were built together, then the two projects combined would reduce impacts to prime farmland by 9.4 acres. A negligible effect on agricultural production in the parish would occur due to the small amount of prime farmland affected.

4.2.2.13.3 Plaquemines Option 2 FS BLH-Wet Restoration Project

Direct, Indirect and Cumulative Impacts
See Section 4.2.1.13.5.

4.2.2.14 Natural and Scenic Rivers

4.2.2.14.1 Dufrene Ponds FS BLH-Wet Restoration Project

Direct, Indirect and Cumulative Impacts
See section 4.2.1.14.3

4.2.2.14.2 Lake Boeuf FS BLH-Wet Restoration Project (TSMP)

Direct, Indirect and Cumulative Impacts
See section 4.2.1.14.4

4.2.2.14.3 Plaquemines Option 2 FS BLH-Wet Restoration Project

Direct, Indirect and Cumulative Impacts
See section 4.2.1.14.5

4.2.3 MITIGATION FOR GENERAL FS SWAMP IMPACTS

4.2.3.1 Wetlands and other Surface Waters

4.2.3.1.1 Lake Boeuf FS Swamp Restoration Project (TSMP)

Direct Impacts
There would be a beneficial impact to wetlands as approximately 320 acres of Ag land would be converted to swamp habitat.

Indirect and Cumulative Impacts
See section 4.2.1.1.4

4.2.3.1.2 Plaquemines Option 1 FS Swamp Restoration Project

Direct, Indirect and Cumulative Impacts
See section 4.2.1.1.5

4.2.3.1.3 Salvador-Timken FS Swamp Restoration Project

Direct Impacts
There would be a beneficial impact to wetlands as approximately 315 acres of open water habitat would be converted to swamp habitat.

Indirect and Cumulative Impacts
See section 4.2.1.1.3

4.2.3.1.4 Simoneaux Ponds FS Swamp Restoration Project

Direct Impacts
There would be a beneficial impact to wetlands as approximately 315 acres of open water habitat would be converted to swamp habitat.

Indirect and Cumulative Impacts
See section 4.2.1.1.3

4.2.3.2 Wildlife

4.2.3.2.1 Lake Boeuf FS Swamp Restoration Project (TSMP)

Direct, Indirect and Cumulative Impacts
See section 4.2.1.2.4

4.2.3.2.2 Plaquemines Option 1 FS Swamp Restoration Project

Direct, Indirect and Cumulative Impacts
See section 4.2.1.2.5

4.2.3.2.3 Salvador-Timken FS Swamp Restoration Project

Direct, Indirect and Cumulative Impacts
See section 4.2.1.2.3

4.2.3.2.4 Simoneaux Ponds FS Swamp Restoration Project

Direct, Indirect and Cumulative Impacts
See section 4.2.1.2.3

4.2.3.3 Threatened and Endangered Species

4.2.3.3.1 Lake Boeuf FS Swamp Restoration Project (TSMP)

Direct, Indirect and Cumulative Impacts
See section 4.2.1.3.4

4.2.3.3.2 Plaquemines Option 1 FS Swamp Restoration Project

Direct, Indirect and Cumulative Impacts
See section 4.2.1.3.5

4.2.3.3.3 Salvador-Timken FS Swamp Restoration Project

Direct, Indirect and Cumulative Impacts
See section 4.2.1.3.5

4.2.3.3.4 Simoneaux Ponds FS Swamp Restoration Project

Direct, Indirect and Cumulative Impacts
See section 4.2.1.3.5

4.2.3.4 Fisheries, Aquatic Resources and Water Quality

4.2.3.4.1 Lake Boeuf FS Swamp Restoration Project (TSMP)

Direct Impacts, Indirect, and Cumulative Impacts
Impacts would be similar to those discussed in section 4.2.1.4.4, but there could be a positive indirect and cumulative impact on fisheries and aquatic species if the area is connected to Theriot canal. The area could provide a new area for fresh water species to colonize and provide for the export of the nutrients (decaying plant material) from the new swamp to the surrounding marsh.

4.2.3.4.2 Plaquemines Option 1 FS Swamp Restoration Project

Direct, Indirect, and Cumulative Impacts
The direct, indirect, and cumulative impacts that would be similar to those described in section 4.2.1.4.3 except approximately 311 acres of shallow open water would be replaced with high quality swamp. This swamp would be accessible by fisheries and aquatic species to an extent that is similar to the without project condition. Approximately 230 acres of Mississippi River bottom would deepen to approximately -85 feet NAVD88. Due to flow of the river it is anticipated that the pits would refill overtime and no anoxic conditions would develop. The temporary impacts to the

Mississippi River from borrow excavation are not anticipated to be substantial enough to cause water quality impairment under the standards of Louisiana Administrative Code, Title 33, Part IX, Chapter 11. Although there would be a loss of open water from construction of this project, open water is found in abundance throughout the WBV basin. There would be a positive indirect and cumulative impact on fisheries and aquatic species due to the long term stability of the new swamp.

4.2.3.4.3 Salvador-Timken FS Swamp Restoration Project

Direct, Indirect, and Cumulative Impacts
The direct, indirect, and cumulative impacts that would be similar to those described in section 4.2.3.4.2. Approximately 315 acres of shallow open water and early successional wetland plant species would be replaced with high quality swamp species. Approximately 365 acres of lake bottom would deepen to approximately -20 feet NAVD88. It is anticipated that anoxic conditions would be avoided with this depth of dredging and that mobile fishery species would avoid the proposed borrow site during construction, thereby minimizing direct and indirect impacts to those species. The temporary impacts to Lake Cataouatche from borrow excavation are not anticipated to be substantial enough to cause water quality impairment under the standards of Louisiana Administrative Code, Title 33, Part IX, Chapter 11. Although there would be a loss of open water from construction of this project, open water is found in abundance throughout the WBV basin.

4.2.3.4.4 Simoneaux Ponds FS Swamp Restoration Project

Direct, Indirect, and Cumulative Impacts
The direct, indirect, and cumulative impacts that would be similar to those described in section 4.2.3.4.3. Approximately 315 acres of shallow open water and early successional wetland plant species would be replaced with high quality swamp species. Approximately 442 acres of Lake Salvador bottom would deepen to approximately -20 feet NAVD88.

4.2.3.5 Essential Fish Habitat

4.2.3.5.1 Lake Boeuf FS Swamp Restoration Project (TSMP)

Direct, Indirect, and Cumulative Impacts
There would be no impacts to EFH per the rational in section 4.2.1.5.2.

4.2.3.5.2 Plaquemines Option 1 FS Swamp Restoration Project

Direct, Indirect, and Cumulative Impacts
See section 4.2.1.5.5.

4.2.3.5.3 Salvador-Timken FS Swamp Restoration Project

Direct Impacts
There would be no direct impacts to EFH at the placement site due to the construction of this project since the area presently does not currently contain EFH. Approximately 365 acres of Lake Cataouatche water bottom would be deepened to an elevation of -20 feet but would continue to provide EFH for multiple managed species.

Indirect and Cumulative Impacts
There could be a short term indirect impact to EFH due to temporary increases in turbidity and increased sedimentation rates adjacent to the placement area. These areas would return to normal

once the construction ends. There would be a minor temporal loss of EFH in the WBV basin, but no permanent cumulative impacts are anticipated

4.2.3.5.4 Simoneaux Ponds FS Swamp Restoration Project

Direct, Indirect, and Cumulative Impacts
The impacts to EFH would be the similar as in section 4.2.3.5.3. Approximately 442 acres of Lake Salvador water bottom would be deepened to an elevation of -20 feet but would continue to provide EFH for multiple managed species.

4.2.3.6 Cultural Resources

4.2.3.6.1 Lake Boeuf FS Swamp Restoration Project (TSMP)

Direct Impacts
See section 4.2.1.6.4.

Indirect and Cumulative Impacts
See section 4.2.1.6.2.

4.2.3.6.2 Plaquemines Option 1 FS Swamp Restoration Project

Direct Impacts
See section 4.2.1.6.5.

Indirect and Cumulative Impacts
See section 4.2.1.6.2.

4.2.3.6.3 Salvador-Timken FS Swamp Restoration Project

Direct Impacts
It is not likely that activities associated with the proposed restoration project would have a direct impact on cultural resources site 16SC27, or any of the other cultural resources previously identified within one mile of the proposed project area. Submerged cultural resources could exist in the proposed borrow source located in Lake Cataouatche, and the removal of borrow could have a direct impact on those cultural resources. The stipulations of the Programmatic Agreement executed on June 18, 2013 would be followed. As individual project features are developed, the project would be assessed for its effect on historic properties, and survey strategies and the Area of Potential Effect would be coordinated with the LA SHPO, tribes, and other interested parties as required by the Programmatic Agreement. Identified cultural resources that are determined to be eligible for listing or are listed on the NRHP would be avoided. If avoidance is not possible, mitigation strategies would be developed in accordance with the stipulations of the Programmatic Agreement.

Indirect and Cumulative Impacts
See section 4.2.1.6.2.

4.2.3.6.4 Simoneaux Ponds FS Swamp Restoration Project

Direct Impacts
It is not likely that activities associated with the proposed restoration project would have a direct impact on cultural resources within the project area. Submerged cultural resources could exist within the borrow area located in Lake Salvador, and the removal of borrow could have a direct impact on those cultural resources. The stipulations of the Programmatic Agreement executed on June 18, 2013 would be followed. As individual project features are developed, the project would be assessed for its effect on historic properties, and survey strategies and the Area of Potential Effect would be coordinated with the LA SHPO, tribes, and other interested parties as required by the Programmatic Agreement. Identified cultural resources that are determined to be eligible for listing or are listed on the NRHP would be avoided. If avoidance is not possible, mitigation strategies would be developed in accordance with the stipulations of the Programmatic Agreement.

Indirect and Cumulative Impacts
See section 4.2.1.6.2.

4.2.3.7 Recreational Resources

4.2.3.7.1 Lake Boeuf FS Swamp Restoration Project (TSMP)

Direct Impacts
See section 4.2.1.7.4

Indirect and Cumulative Impacts
Impacts are similar to 4.2.1.7.4 Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project except that there would be the potential for recreation connectivity between Lake Boeuf WMA and the adjacent mitigation feature. There may be the potential for small, shallow draft boats during times of peak inundation to utilize portions of the swamp. Recreational use and access would depend on how the land is managed in the future. Recreational boating and fishing opportunities abound in southeast Louisiana and the project would not be expected to contribute significantly to cumulative effects to recreation in the region.

4.2.3.7.2 Plaquemines Option 1 FS Swamp Restoration Project

Direct Impacts
See section 4.2.1.7.5

Indirect and Cumulative Impacts
See section 4.2.1.7.5

4.2.3.7.3 Salvador-Timken FS Swamp Restoration Project

Direct Impacts
Approximately 314.8 acres of water would be converted to swamp. The project area would not be available for recreation use such as hunting, fishing, and boating during construction (approximately 2 years.)

Borrow material would be dredged from Lake Cataouatche and piped to the mitigation feature. Fishing in waters adjacent to the borrow site and receiving areas may be impacted by increased turbidity caused by dredging and placement activities. These impacts would cease once

construction is complete. Additionally, the floating pipeline may cause a temporary inconvenience to boaters traveling in the area.

Indirect and Cumulative Impacts
Recreational use and access will depend on how it is managed in the future. Recreational boating and fishing opportunities abound in southeast Louisiana and the project would not be expected to contribute significantly to cumulative effects to recreation in the region.

4.2.3.7.4 Simoneaux Ponds FS Swamp Restoration Project

Direct Impacts
Approximately 314 acres of water would be converted to swamp. People would be unable to boat and fish during the 2 year construction phase.

The borrow material would come from Lake Salvador via a pipeline through Bayou Des Allemands and Bayou Gauche. Fishing in waters adjacent to the borrow site and receiving areas may be impacted by increased turbidity caused by dredging and placement activities. These impacts would cease once construction is complete. Additionally, the floating pipeline may cause a temporary inconvenience to boaters traveling in the area.

Indirect and Cumulative Impacts
Recreational use and access will depend on how it is managed in the future. Recreational boating and fishing opportunities abound in southeast Louisiana and the project would not be expected to contribute significantly to cumulative effects to recreation in the region.

4.2.3.8 Aesthetic Resources

4.2.3.8.1 Lake Boeuf FS Swamp Restoration Project (TSMP)

Direct and Indirect Impacts
The restoration and rehabilitation of swamplands will greatly enhance the visual resources of the Lake Boeuf project region. This particular portion of the project area does not have the impact on the public viewer like the previous Lake Boeuf measures do however. The Southern Pacific railroad creates a barrier to view sheds from L.A. Highway 308, as does sheer distance. This measure could increase wildlife diversity and recreational opportunities and help to enhance the Lake Boeuf Wildlife Management Area.

Temporary impacts could potentially occur due to construction efforts in the area. Increased traffic due to construction vehicles, dust, debris and increased noise volumes could residents of the area. These temporary impacts should return to normal upon completion of the project.

Cumulative Impacts
Cumulative impacts could include how Lake Boeuf WMA would be affected in the long term. There is an opportunity to create additional havens for wildlife, thereby adding to the aesthetic value of area. Cumulative impacts would be the incremental direct and indirect impacts of implementing the proposed action combined with the continued activities of growth and development in the area. These incremental direct and indirect impacts would be in addition to the direct and indirect impacts of visual resources in the region, Louisiana and the Nation caused by other restoration projects, destruction of natural habitats due to human development and the evolution of the landscape due to natural processes.

4.2.3.8.2 Plaquemines Option 1 FS Swamp Restoration Project

Direct and Indirect Impacts
See section 4.2.1.8.5

Cumulative Impacts
See section 4.2.1.8.5

4.2.3.8.3 Salvador-Timken FS Swamp Restoration Project

Direct and Indirect Impacts
Direct Impacts would be similar to that listed under 4.2.1.8.5 Plaquemines Option 2 PS BLH-Wet Restoration Project. As the most used WMA in the state in regards to fishing, Salvador WMA would benefit from the addition of fresh marsh and swamplands. These measures have the potential to create great habitat for fish and increase opportunities for recreation. For those that would venture out on watercraft, aesthetics would be improved through the basic design elements, as discussed in earlier sections.

Temporary impacts could potentially occur due to construction efforts in the area. Increased traffic due to construction vehicles and vessels, dust, debris and increased noise volumes could affect recreational fishermen. These temporary impacts should return to normal upon completion of the project.

Cumulative Impacts
Cumulative impacts could include how Salvador WMA would be affected in the long term. There is an opportunity to create additional havens for wildlife, thereby adding to the aesthetic value of area. Cumulative impacts would be the incremental direct and indirect impacts of implementing the proposed action combined with the continued activities of growth and development in the area. These incremental direct and indirect impacts would be in addition to the direct and indirect impacts of visual resources in the region, Louisiana and the Nation caused by other restoration projects, destruction of natural habitats due to human development and the evolution of the landscape due to natural processes.

4.2.3.8.4 Simoneaux Ponds FS Swamp Restoration Project

Direct and Indirect Impacts
The restoration and rehabilitation of swamplands will greatly enhance the visual resources of Simoneaux Ponds project region. Under the governance of technical significance, and in terms of the basic design elements, the proposed measures would greatly increase the value of view sheds from the residential areas to the west and south at Bayou Gauche. Water tolerant trees and other vegetation, in conjunction with some land mass could provide framing elements for open water areas, create texture and repetition, and provide a variety of color to the area that wasn't there before. This measure could increase wildlife diversity and recreational opportunities as well.

Temporary impacts could potentially occur due to construction efforts in the area. Increased traffic due to construction vehicles, dust, debris and increased noise volumes could affect residents of the area. These temporary impacts should return to normal upon completion of the project.

Cumulative Impacts
This measure, in conjunction with the proposed marsh restoration measure, could create a landscape that is varied and diverse offering an excellent haven for wildlife and an improved visual quality that will be enjoyed by many. Cumulative impacts would be the incremental direct and indirect impacts of implementing the proposed action combined with the continued activities of growth and development in the area. These incremental direct and indirect impacts would be in addition to the direct and indirect impacts of visual resources in the region, Louisiana and the Nation caused by other restoration projects, destruction of natural habitats due to human development and the evolution of the landscape due to natural processes.

4.2.3.9 Air Quality

4.2.3.9.1 Lake Boeuf FS Swamp Restoration Project (TSMP)

Direct Impacts
During construction of this project, an increase in air emissions could be expected. These emissions could include exhaust emissions from vehicles used to access the project area as well as non-road vehicles such as backhoes, graders, etc. Emission of fugitive dust near the construction area is not anticipated to be a problem.

Any site-specific construction effects would be temporary and dust emissions, if any, would be controlled using standard BMPs. Air quality would return to pre-construction conditions shortly after the completion of construction activities. Because the project area is in a parish in attainment of NAAQS, a conformity analysis is not required.

Indirect Impacts
There would be no adverse indirect impacts to air quality in the parish with construction of the proposed action.

Cumulative Impacts
Cumulative impacts to air quality in the project area due to construction of this project in addition to the other construction activities within the WBV basin that may be occurring concurrently would be temporary and would be very minimal. After the construction period, there would be no incremental contribution to cumulative air quality impacts due to the proposed action.

4.2.3.9.2 Plaquemines Option 1 FS Swamp Restoration Project

Direct Impacts
During construction of this project, an increase in air emissions could be expected during construction. These emissions could include exhaust emissions from operations of various types of non-road construction equipment such as a cutterhead dredge, backhoes, tractors, etc. and from vehicles used to access the project area. Fugitive dust emissions are not anticipated during construction.

Any site-specific construction effects to air quality would be temporary, and air quality would return to pre-construction conditions shortly after the completion of construction activities. Because the project area is in a parish in attainment of NAAQS, a conformity analysis is not required.

Indirect Impacts
There would be no adverse indirect impacts to air quality in the parish with construction of the proposed action.

Cumulative Impacts
Cumulative impacts to air quality in the project area due to construction of this project in addition to the other construction activities within the WBV basin that may be occurring concurrently would be temporary and would be very minimal, especially considering that placement of dredged material would not create fugitive dust. After the construction period, there would be no incremental contribution to cumulative air quality impacts due to the proposed action.

4.2.3.9.3 Salvador-Timken FS Swamp Restoration Project

Direct, Indirect and Cumulative Impacts
See section 4.2.3.9.2

4.2.3.9.4 Simoneaux Ponds FS Swamp Restoration Project

Direct, Indirect and Cumulative Impacts
See section 4.2.3.9.2

4.2.3.10 Noise

4.2.3.10.1 Lake Boeuf FS Swamp Restoration Project (TSMP)

Direct, Indirect and Cumulative Impacts
See section 4.2.2.10.2

4.2.3.10.2 Plaquemines Option 1 FS Swamp Restoration Project

Direct, Indirect and Cumulative Impacts
See section 4.2.1.10.5

4.2.3.10.3 Salvador-Timken FS Swamp Restoration Project

Direct and Indirect Impacts
Cutterhead dredges, backhoes, slurry pumps, marsh tracked vehicles and barge mounted equipment would be the primary pieces of equipment used for construction of this project. These pieces of equipment exceed noise levels above 55 dBA. Noise levels may result in wildlife avoiding the project area during construction; however, movement of equipment during construction would result in the same avoidance behaviors from wildlife species. Noise levels quickly drop off once a buffer is established between the noise source and the receptor (e.g. vegetation). As such, any wildlife in the adjacent habitats should be largely undisturbed by the additional noise from this project's construction. No impact to human populations is anticipated as this project area is remote and uninhabited.

Cumulative Impacts
Construction of this project is not anticipated to add significantly to the cumulative effect of noise in the WBV basin as the construction activities would be temporary, the area is remote, and avoidance of the project area by wildlife would occur due to the movement of machinery in the area even without the additional noise.

4.2.3.10.4 Simoneaux Ponds FS Swamp Restoration Project

Direct and Indirect Impacts
Cutterhead dredges, backhoes, hydro-axes, gyro-tracks, mulchers, and dump trucks would be the primary pieces of equipment used for construction of this project. These pieces of equipment exceed noise levels above 55 dBA at 50 feet. Noise levels may result in wildlife avoiding the project area during construction; however, movement of equipment during construction would result in the same avoidance behaviors from wildlife species. In addition, noise levels quickly drop off once a buffer is established between the noise source and the receptor (e.g. vegetation). As such, any wildlife in the adjacent on-shore habitats should be largely undisturbed by the additional noise from this project's construction. No impact to human populations is anticipated as noise levels would quickly drop off due to the vegetative buffer surrounding the project area.

Cumulative Impacts
Construction of this project is not anticipated to add significantly to the cumulative effect of noise in the WBV basin as the construction activities would be temporary, the area is buffered by vegetation, and avoidance of the project area would occur due to the movement of machinery in the area even without the additional noise.

4.2.3.11 Hazardous, Toxic, and Radioactive Waste

4.2.3.11.1 Lake Boeuf FS Swamp Restoration Project (TSMP)

Direct, Indirect and Cumulative Impacts
Several RECs exist in most of these features of the Lake Boeuf FS Swamp Restoration Project. A crude-oil pipeline crosses through features S6, S9, and S10. Natural-gas pipelines cross through features S1, S6, S8, and S10. Active oil and gas wells exist in features S2, S4, S5, and S8. Several plugged and abandoned producing wells and dry-hole oil wells are scattered throughout the features. Several plugged and abandoned producing wells are also located in areas surrounding the features. Precautions must be taken to prevent damage to or breakage of the pipeline in Features S1, S6, S8, S9, and S10 as well as to the oil wells in S2, S4, S5, and S8. No direct, indirect, and cumulative impacts are expected at this project site.

4.2.3.11.2 Plaquemines Option 1 FS Swamp Restoration Project

Direct, Indirect and Cumulative Impacts
No RECs were found within Feature P1 of the proposed Plaquemines Option 1 FS Swamp Restoration Project. The area proposed for mitigation is currently open water. It would be filled with dredged material from a borrow site in the Mississippi River to establish a platform and then planted with native swamp species. USACE Engineer Regulation, ER 1165-2-132, Hazardous, Toxic, and Radioactive Waste (HTRW) for Civil Works Projects, states that dredged material and sediments beneath navigable waters proposed for dredging qualify as HTRW only if they are within the boundaries of a site designated by the EPA or a state for a response action (either a removal or a remedial action) under CERCLA, or if they are a part of a National Priority List (NPL) site under CERCLA (NPL is also known as "Superfund"). None of the area proposed for dredging is included in the National Priority List or within the boundaries of a CERCLA site. There is a low probability of encountering HTRW or petroleum products in Feature P1. No direct, indirect, or cumulative impacts are expected at this project site.

4.2.3.11.3 Salvador-Timken FS Swamp Restoration Project

Direct, Indirect and Cumulative Impacts
No RECs were found within Feature ST1 of the Salvador-Timken FS Swamp Restoration Project. The area proposed for mitigation is currently open water. It would be filled with dredged material from a borrow site in Lake Cataouatche to establish a platform and then planted with native swamp species. USACE Engineer Regulation, ER 1165-2-132, Hazardous, Toxic, and Radioactive Waste (HTRW) for Civil Works Projects, states that dredged material and sediments beneath navigable waters proposed for dredging qualify as HTRW only if they are within the boundaries of a site designated by the EPA or a state for a response action (either a removal or a remedial action) under CERCLA, or if they are a part of a National Priority List (NPL) site under CERCLA (NPL is also known as "Superfund"). None of the area proposed for dredging is included in the National Priority List or within the boundaries of a CERCLA site. There is a low probability of encountering HTRW or petroleum products in Feature ST1. No direct, indirect, or cumulative impacts are expected at this project site.

4.2.3.11.4 Simoneaux Ponds FS Swamp Restoration Project

Direct, Indirect and Cumulative Impacts
One REC, a natural gas pipeline, crosses through Feature SP3 of the Simoneaux Ponds FS Swamp Restoration Project. The area proposed for mitigation is currently open water. It would be filled with dredged material from a borrow site in Lake Salvador to establish a platform and then planted with native swamp species. USACE Engineer Regulation, ER 1165-2-132, Hazardous, Toxic, and Radioactive Waste (HTRW) for Civil Works Projects, states that dredged material and sediments beneath navigable waters proposed for dredging qualify as HTRW only if they are within the boundaries of a site designated by the EPA or a state for a response action (either a removal or a remedial action) under CERCLA, or if they are a part of a National Priority List (NPL) site under CERCLA (NPL is also known as "Superfund"). None of the area proposed for dredging is included in the National Priority List or within the boundaries of a CERCLA site. Precautions must be taken to prevent damage to or breakage of the pipeline in Feature SP3. There is a low probability of encountering HTRW or petroleum products in Feature SP3.

4.2.3.12 Socioeconomics/Land Use, Environmental Justice, Transportation, Navigation, and Commercial Fisheries

4.2.3.12.1 Lake Boeuf FS Swamp Restoration Project (TSMP)

Direct, Indirect and Cumulative impacts
See section 4.2.1.12.4.

4.2.3.12.2 Plaquemines Option 1 FS Swamp Restoration Project

Direct, Indirect and Cumulative Impacts
See section 4.2.1.12.5.

4.2.3.12.3 Salvador-Timken FS Swamp Restoration Project

Direct, Indirect and Cumulative Impacts
According to 2010 U.S. Census data, there are no residents located within the boundaries of the Salvador-Timken FS Swamp Restoration Project and therefore impacts to population or housing are

not expected to occur. Indirect and cumulative impacts to the Environmental Justice resource are similar to those impacts described in section 4.2.1.12.2

There are no commercial/industrial properties, public facilities, or transportation infrastructure within the project boundaries therefore there will be no direct impacts to land use. Minimal indirect land use impacts may occur as the land is publically owned. No impacts to employment, businesses, industry public facilities and services, community and regional growth community cohesion, or tax revenues and property values are anticipated to occur with construction of this project.

Since there are no nearby residential areas, there would be no direct or indirect impacts to transportation in or near the restoration area. Similarly, no minority or low income population would be disproportionately affected.

There would be some direct or indirect impacts to navigation or commercial fishing as borrow would be pumped from Lake Cataouatche.

The cumulative impacts of all projects, when added to other past, present, and reasonably foreseeable ecosystem restoration, mitigation or other type projects in the basin would minimally and temporarily affect socio-economic resources. Due to the relatively small size of Salvador-Timken FS Swamp Restoration Project, the temporary nature of the project activities and the duration of enhancement projects, the Salvador-Timken FS Swamp Restoration Project would add very little and only temporary impacts to any other impacts resulting from past, present and reasonably foreseeable projects in the region and would not contribute significantly to cumulative impacts to socio-economic resources in the basin.

4.2.3.12.4 Simoneaux Ponds FS Swamp Restoration Project

Direct, Indirect and Cumulative Impacts
According to 2010 U.S. Census data, there are no residents or housing units located within the boundaries of the Simoneaux Ponds FS Swamp Restoration Project and therefore no impacts to population, housing, or minority or low-income populations are expected to occur. Indirect and cumulative impacts to the Environmental Justice resource are similar to those impacts described in section 4.2.1.12.3.

There are no commercial/industrial properties, public facilities, or transportation infrastructure within the project boundaries therefore there will be no direct impacts to land use. Minimal indirect land use impacts may occur when privately owned land is converted to public use. No impacts to employment, businesses, industry public facilities and services, community and regional growth community cohesion, or tax revenues and property values are anticipated to occur with construction of this project.

There may be some minimal disturbance to residences as the pipeline will traverse through the nearby neighborhood along Hwy 306. There would be direct and indirect impacts to transportation in the nearby residential area during construction due to installation of a pipeline by means of jack and bore and heavy vehicle traffic in the vicinity of the restoration site. It is expected that once the necessary construction equipment is on site that no additional transportation impacts would occur until the project construction is complete.

There would be some direct or indirect impacts to navigation or commercial fishing as borrow would be pumped from Lake Salvador.

The cumulative impacts of all projects, when added to other past, present, and reasonably foreseeable ecosystem restoration, mitigation or other type projects in the basin would minimally and temporarily affect socio-economic resources. Due to the relatively small size of Simoneaux Ponds FS Swamp Restoration Project, the temporary nature of the project activities and the duration of enhancement projects, the Simoneaux Ponds FS Swamp Restoration Project would add very little and only temporary impacts to any other impacts resulting from past, present and reasonably foreseeable projects in the region and would not contribute significantly to cumulative impacts to socio-economic resources in the basin.

4.2.3.13 Prime and Unique Farmland

4.2.3.13.1 Lake Boeuf FS Swamp Restoration Project (TSMP)

Direct Impacts
Approximately 315 acres of Prime Farmland (NRCS, 2013) would be impacted by this project (291.1 acres) and the associated existing and proposed mitigation roadways (23.9 acres) including 87 acres of Cancienne silty clay loam, 37 acres of Cancienne sity loam, and 191 acres of Schriever clay. Once the site is developed for mitigation, this area could not be used as productive farmland in the future.

Indirect and Cumulative Impacts
There are approximately 104,520.7 acres combined of Cancienne silty clay loam, Cancienne silty loam, and Schriever clay in Lafourche parish. The project would result in impacts to 87 acres of Cancienne silty clay loam, 37 acres of Cancienne sity loam, and 191 acres of Schriever clay, which is less than 0.4% of the soils currently found in Lafourche Parish, being removed from future potential agricultural development. Since the majority of the project area is presently farmed, current agricultural production in the parish would be affected.

The cumulative impacts of the implementation of this project and the Lake Boeuf FS BLH-Wet Project would affect approximately 546.2 acres of prime farmland including 512.8 acres within the project and 33.4 acres associated with existing and proposed mitigation roadways. Since some of these roadways are coincident with the roadways needed for the BLH-Swamp General TSP, if both TSPs were built together, then the two projects combined would reduce impacts to prime farmland by 9.4 acres. A negligible effect on agricultural production in the parish would occur due to the small amount of prime farmland affected.

4.2.3.13.2 Plaquemines Option 1 FS Swamp Restoration Project

Direct Indirect and Cumulative Impacts
See section 4.2.1.13.5.

4.2.3.13.3 Salvador-Timken FS Swamp Restoration Project

Direct, Indirect and Cumulative Impacts
No impacts are anticipated as no prime and unique farmlands are located at this site.

4.2.3.13.4 Simoneaux Ponds FS Swamp Restoration Project

Direct, Indirect and Cumulative Impacts
No impacts are anticipated as no prime and unique farmlands are located at this site.

4.2.3.14 Natural and Scenic Rivers

4.2.3.14.1 Lake Boeuf FS Swamp Restoration Project (TSMP)

Direct, Indirect and Cumulative Impacts
See section 4.2.1.14.4

4.2.3.13.2 Plaquemines Option 1 FS Swamp Restoration Project

Direct, Indirect and Cumulative Impacts
See section 4.2.1.14.5

4.2.3.13.3 Salvador-Timken FS Swamp Restoration Project

Direct, Indirect and Cumulative Impacts
There are no state recognized scenic streams in the vicinity of the project area; therefore there are no anticipated impacts.

4.2.3.13.4 Simoneaux Ponds FS Swamp Restoration Project

Direct, Indirect and Cumulative Impacts
See section 4.2.1.14.3

4.2.4 MITIGATION FOR GENERAL FS FRESH MARSH IMPACTS

4.2.4.1 Wetlands and other Surface Waters

4.2.4.1.1 Dufrene Ponds FS Marsh Restoration Project

Direct Impacts
Approximately 139 acres of open water habitat would be converted to fresh marsh.

Indirect and Cumulative Impacts
See section 4.2.1.1.3

4.2.4.1.2 Jean Lafitte FS Marsh Restoration Project (TSMP)

Direct Impacts
Approximately 88 acres of open water habitat and approximately 50 acres of un-established marsh platform would be converted to fresh marsh.

Indirect and Cumulative Impacts
See section 4.2.1.1.3

4.2.4.1.3 Plaquemines Option 1 FS Marsh Restoration Project

Direct Impacts
Approximately 171 acres of open water habitat would be converted to fresh marsh.

Indirect and Cumulative Impacts
See section 4.2.1.1.3

4.2.4.1.4 Salvador-Timken FS Marsh Restoration Project

Direct Impacts
Approximately 163 acres of open water habitat would be converted to fresh marsh.

Indirect and Cumulative Impacts
See section 4.2.1.1.3

4.2.4.1.5 Simoneaux Ponds FS Marsh Restoration Project

Direct Impacts
Approximately 163 acres of open water habitat would be converted to fresh marsh.

Indirect and Cumulative Impacts
See section 4.2.1.1.3

4.2.4.2 Wildlife

4.2.4.2.1 Dufrene Ponds FS Marsh Restoration Project

Direct Impacts
Approximately 139 acres of shallow open water would be converted to fresh marsh habitat. This conversion would eliminate wintering habitat for brown pelican, and increase habitat for wading birds, shorebirds, and raptors (LCWCRTF and WCRA, 1999) as well nutria, muskrat, mink, river otter, raccoon, reptiles and amphibians. The project area is not anticipated to be of sufficient depth to be utilized by bottlenose dolphins. As such construction of the project should not result in entrapment of this species within the marsh creation site.

Indirect
Species that utilize shallow open water habitats may be displaced due to the habitat conversion. However, these impacts would be temporary. Many species utilizing the current habitat type would thrive with the additional foraging, cover and resting habitat the project would create. A rise in turbidity at the borrow site could immediately reduce water quality in the area however those effects would be temporary and would be reduced by movement of the tides. Any bottlenose dolphins or their prey in the area would be free to relocate during construction since the borrow area encompasses only a small section of a large estuarine/brackish lake.

Cumulative Impacts
This project would prevent an overall loss in the basin of fresh marsh habitat necessary for many wildlife species. This project, when added to other past, present, and reasonably foreseeable ecosystem restoration and mitigation projects in the basin, would help retard the loss of wetlands and overall decline of wildlife species within the basin and would be beneficial both to preserve species bio-diversity and combat the current trend of conversion of marsh to open water.

4.2.4.2.2 Jean Lafitte FS Marsh Restoration Project (TSMP)

Direct Impacts
Approximately 91 acres of shallow open water would be converted to fresh marsh habitat. The impacts would be similar to those discussed in section 4.2.4.2.1

Indirect and Cumulative Impacts
See section 4.2.4.2.1

4.2.4.2.3 Plaquemines Option 1 FS Marsh Restoration Project

Direct Impacts
Approximately 171 acres of shallow open water would be converted to fresh marsh. The impacts would be similar to those discussed in section 4.2.4.2.1

Indirect and Cumulative Impacts
See section 4.2.4.2.1

4.2.4.2.4 Salvador-Timken FS Marsh Restoration Project

Direct Impacts
Approximately 163 acres of shallow open water would be converted to fresh marsh habitat. The impacts would be similar to those discussed in section 4.2.4.2.1

Indirect and Cumulative Impacts
See section 4.2.4.2.1

4.2.4.2.5 Simoneaux Ponds FS Marsh Restoration Project

Direct Impacts
Approximately 163 acres of shallow open water would be converted to fresh marsh habitat. Impacts would be similar to those discussed in section 4.2.4.2.1

Indirect and Cumulative Impacts
See section 4.2.4.2.1

4.2.4.3 Threatened and Endangered Species

4.2.4.3.1 Dufrene Ponds FS Marsh Restoration Project

Direct, Indirect and Cumulative Impacts
See section *4.2.1.3.3*

4.2.4.3.2 Jean Lafitte FS Marsh Restoration Project (TSMP)

Direct, Indirect and Cumulative Impacts
See section *4.2.1.3.5*

4.2.4.3.3 Plaquemines Option 1 FS Marsh Restoration Project

Direct, Indirect and Cumulative Impacts
See section *4.2.1.3.5*

4.2.4.3.4 Salvador-Timken FS Marsh Restoration Project

Direct, Indirect and Cumulative Impacts
See section *4.2.1.3.5*

4.2.4.3.5 Simoneaux Ponds FS Marsh Restoration Project

Direct, Indirect and Cumulative Impacts
See section 4.2.1.3.5.

4.2.4.4 Fisheries, Aquatic Resources and Water Quality

4.2.4.4.1 Dufrene Ponds FS Marsh Restoration Project

Direct, Indirect and Cumulative Impacts
Impacts would be similar to but smaller than those described in section 4.2.1.4.5 except approximately 139 acres of new marsh would be created and continue to be available for fishery and aquatic species. Approximately 220 acres of lake water bottom would be deepened. The temporary water impacts to Lake Salvador from borrow excavation are not anticipated to be substantial enough to cause water quality impairment under the standards of Louisiana Administrative Code, Title 33, Part IX, Chapter 11. Although there would be a loss of open water from construction of this project, open water is found in abundance throughout the WBV basin.

4.2.4.4.2 Jean Lafitte FS Marsh Restoration Project (TSMP)

Direct, Indirect and Cumulative Impacts
Impacts would be similar to but smaller than those described in section 4.2.4.4.1 for the approximately 88 and 8 acres of new marsh in Yankee Pond and at the geocrib respectively and approximately 42 acres of borrow in Lake Cataouatche. Approximately 50 acres of existing high "marsh platform" will degraded to be available for fisheries and aquatic resources. The temporary water impacts to Lake Salvador from borrow excavation are not anticipated to be substantial enough to cause water quality impairment under the standards of Louisiana Administrative Code, Title 33, Part IX, Chapter 11.

4.2.4.4.3 Plaquemines Option 1 FS Marsh Restoration Project

Direct, Indirect and Cumulative Impacts
Impacts would be similar to but larger than those described in section 4.2.4.4.1 for the approximately 171 acres of new marsh and approximately 230 acres of borrow in the Mississippi River. Once the dikes are degraded there would be a positive indirect and cumulative impact from the increase in fishery and aquatic species access over without project conditions. The temporary water impacts to the Mississippi River from borrow excavation are not anticipated to be substantial enough to cause water quality impairment under the standards of Louisiana Administrative Code, Title 33, Part IX, Chapter 11.

4.2.4.4.4 Salvador-Timken FS Marsh Restoration Project

Direct, Indirect and Cumulative Impacts
Impacts would be similar to but larger than those described in section 4.2.4.4.1 for the approximately 163 acres of new marsh and approximately 211 acres of borrow. The temporary water impacts to Lake Cataouatche from borrow excavation are not anticipated to be substantial enough to cause water quality impairment under the standards of Louisiana Administrative Code, Title 33, Part IX, Chapter 11.

4.2.4.4.5 Simoneaux Ponds FS Marsh Restoration Project

Direct, Indirect and Cumulative Impacts
Impacts would be similar to but larger than those described in section 4.2.4.4.1 for the approximately 163 acres of new marsh and approximately 184 acres of borrow. The temporary water impacts to Lake Salvador from borrow excavation are not anticipated to be substantial enough to cause water quality impairment under the standards of Louisiana Administrative Code, Title 33, Part IX, Chapter 11.

4.2.4.5 Essential Fish Habitat

4.2.4.5.1 Dufrene Ponds FS Marsh Restoration Project

Direct and Indirect Impacts
Several types of EFH associated with open water would be permanently replaced with estuarine emergent marsh and other associated EFH. Negative impacts to the existing EFH would be more than offset by the creation estuarine emergent wetlands since the support functions of the created marsh is greater than the support functions of the existing open water. Compensatory mitigation for this conversion of EFH would not be required per the draft guidelines for when impacts to open water would require mitigation (Appendix D). Excavation of borrow from Lake Salvador would deepen estuarine water column and may expose a different bottom substrate, which could impact managed species by reducing available cover and foraging habitat.

Cumulative Impacts
This project would cause one type of EFH in the WBV basin to be replaced by another type of EFH. The switching of EFH types from construction of the proposed project is not anticipated to have a significant impact to the overall EFH in the WBV basin. Impacts to cover and foraging for Managed species are not anticipated to contribute significant increases in cumulative impacts to managed species as the borrow area is small in size compared to the available EFH habitat in the basin providing similar habitat.

4.2.4.5.2 Jean Lafitte FS Marsh Restoration Project (TSMP)

Direct, Indirect and Cumulative Impacts
Impacts would be similar to but smaller than those described in section 4.2.4.5.1for the approximately 88 and 8 acres of new marsh in Yankee Pond and at the geocrib respectively and approximately 42 acres of borrow in Lake Cataouatche. Additionally approximately 50 acres of existing high “marsh platform” that presently is not considered EFH will be degraded to become EFH.

4.2.4.5.3 Plaquemines Option 1 FS Marsh Restoration Project

Direct and Indirect Impacts
Excavation of borrow from the Mississippi River would deepen estuarine water column and may expose a different bottom substrate, which could impact managed species by reducing available cover and foraging habitat. There is a potential positive indirect impact to managed species if the gapping of the dikes allows for enough tidal exchange for those species to utilize the enclosed habitat.

Cumulative Impacts
This project would cause one type of EFH in the WBV basin to be replaced by another type of EFH. The switching of EFH types from construction of the proposed project is not anticipated to have a significant impact to the overall EFH in the WBV basin. Impacts to cover and foraging for Managed species are not anticipated to contribute significant increases in cumulative impacts to managed species as the borrow area is small in size compared to the available EFH habitat in the basin providing similar habitat. Depending on the success of the connectivity changes there could be a positive cumulative impact due to new EFH being designated in the area.

4.2.4.5.4 Salvador-Timken FS Marsh Restoration Project

Direct, Indirect and Cumulative Impacts
Impacts would be similar to but larger than those described in section 4.2.4.5.1 for the approximately 163 acres of new marsh and approximately 211 acres of borrow.

4.2.4.5.5 Simoneaux Ponds FS Marsh Restoration Project

Direct, Indirect and Cumulative Impacts
Impacts would be similar to but larger than those described in section 4.2.4.5.1 for the approximately 163 acres of new marsh and approximately 184 acres of borrow.

4.2.4.6 Cultural Resources

4.2.4.6.1 Dufrene Ponds FS Marsh Restoration Project

Direct Impacts
See section 4.2.1.6.3

Indirect and Cumulative Impacts
See section 4.2.1.6.2

4.2.4.6.2 Jean Lafitte FS Marsh Restoration Project (TSMP)

Direct Impacts
It is not likely that activities associated with the proposed restoration project would have a direct impact on cultural resources within the project area. Submerged cultural resources could exist within the borrow area located in Lake Cataouatche, and the removal of borrow could have a direct impact on those cultural resources. The stipulations of the Programmatic Agreement executed on June 18, 2013 would be followed. As individual project features are developed, the project would be assessed for its effect on historic properties, and survey strategies and the Area of Potential Effect would be coordinated with the LA SHPO, tribes, and other interested parties as required by the Programmatic Agreement. Identified cultural resources that are determined to be eligible for

listing or are listed on the NRHP would be avoided. If avoidance is not possible, mitigation strategies would be developed in accordance with the stipulations of the Programmatic Agreement.

Elements of the proposed project are located on the Jean Lafitte National Historical Park and Preserve. The National Park Service (NPS) will conduct an independent assessment of potential impacts to cultural resources that are identified on NPS managed lands. The NPS will conduct consultation in accordance with Section 106 of the National Historic Preservation Act with the LA SHPO and federally recognized Indian Tribes for restoration projects that are located on NPS managed lands. In accordance with the stipulations of the Programmatic Agreement, the U.S. Army Corps of Engineers, New Orleans District will assess impacts to cultural resources that may result from proposed restoration projects located on NPS lands and will coordinate findings with the NPS to ensure that consistent information is being provided to the LA SHPO and federally recognized Indian Tribes.

Indirect and Cumulative Impacts
See section 4.2.1.6.2.

4.2.4.6.3 Plaquemines Option 1 FS Marsh Restoration Project

Direct Impacts
See section 4.2.1.6.5.

Indirect and Cumulative Impacts
See section 4.2.1.6.2.

4.2.4.6.4 Salvador-Timken FS Marsh Restoration Project

Direct Impacts
See section 4.2.3.6.3.

Indirect and Cumulative Impacts
See section 4.2.1.6.2.

4.2.4.6.5 Simoneaux Ponds FS Marsh Restoration Project

Direct Impacts
See section 4.2.3.6.4.

Indirect and Cumulative Impacts
See section 4.2.1.6.2.

4.2.4.7 Recreational Resources

4.2.4.7.1 Dufrene Ponds FS Marsh Restoration Project

Direct Impacts
Impacts are similar to 4.2.1.7.3 Dufrene Ponds PS BLH-Wet Restoration Project except flood side impacts would impact 138.6 acres of available water for boating and fishing in the private lake.

Indirect and Cumulative Impacts
See section 4.2.1.7.3

4.2.4.7.2 Jean Lafitte FS Marsh Restoration Project (TSMP)

Direct Impacts
Open water from Yankee Pond (87.6 acres) and un-established marsh platform in Lake Salvador (50.4 acres) would be converted to marsh. The project area would not be available for recreation use such as hunting, fishing, and boating during construction (approximately 2 years.)

Material would be dredged from Lake Cataouatche and piped via Bayou Segnette to the project area. Fishing in waters adjacent to the borrow site and receiving areas may be impacted by increased turbidity caused by dredging and placement activities. These impacts would cease once construction is complete. Additionally, the floating pipeline in Bayou Segnette would block access temporarily during construction and may cause an inconvenience to boaters traveling in the area.
Indirect and Cumulative Impacts
Recreational use and access will depend on how it is managed in the future.

4.2.4.7.3 Plaquemines Option 1 FS Marsh Restoration Project

Direct Impacts
See section 4.2.1.7.5

Indirect and Cumulative Impacts
See section 4.2.1.7.5

4.2.4.7.4 Salvador-Timken FS Marsh Restoration Project

Direct Impacts
Impacts are similar to 4.2.3.7.3 Salvador-Timken FS Swamp Restoration Project except the marsh mitigation feature would impact 163.3 acres of available water for boating, fishing and waterfowl hunting in the WMA.

Indirect and Cumulative Impacts
See section 4.2.3.7.3

4.2.4.7.5 Simoneaux Ponds FS Marsh Restoration Project

Direct Impacts
See section 4.2.3.7.4

Indirect and Cumulative Impacts
See section 4.2.3.7.4

4.2.4.8 Aesthetic Resources

4.2.4.8.1 Dufrene Ponds FS Marsh Restoration Project

Direct and Indirect Impacts
The introduction of marsh will greatly enhance the visual resources of the Dufrene Ponds region. Under the governance of technical significance, and in terms of the basic design elements, the proposed measures would greatly increase the value of view sheds from Bayou Des Allamands, which is a state designated scenic stream. Water tolerant grasses and other vegetation, in conjunction with some land mass could provide framing elements for open water areas, create

texture and repetition, and provide a variety of color to the area that wasn't there before. This measure could increase wildlife diversity and recreational opportunities as well.

Temporary impacts could potentially occur due to construction efforts in the area. Increased traffic due to construction vehicles, dust, debris and increased noise volumes could affect residents of the area. These temporary impacts should return to normal upon completion of the project.

Cumulative Impacts
Cumulative impacts could include how Bayou Des Allemands would be affected in the long term. Visually, creating a bank and shoreline for the bayou could improve view sheds from the water and from Highway 90. As far as the future highway that is planned, the introduction of marsh and landmass could work to create an enticing view shed from that roadway as well. This measure, in conjunction with the proposed bottomland hardwood measures, could create a landscape that is varied and diverse offering an excellent haven for wildlife and an improved visual quality that will be enjoyed by many, before and after the proposed highway. The roadway will most likely be elevated, offering a 360 degree panorama of the surrounding area. Cumulative impacts would be the incremental direct and indirect impacts of implementing the proposed action combined with the continued activities of growth and development in the area. These incremental direct and indirect impacts would be in addition to the direct and indirect impacts of visual resources in the region, Louisiana and the Nation.

4.2.4.8.2 Jean Lafitte FS Marsh Restoration Project (TSMP)

Direct Indirect and Cumulative Impacts
See section 4.2.3.8.3

4.2.4.8.3 Plaquemines Option 1 FS Marsh Restoration Project

Direct Indirect and Cumulative Impacts
See section 4.2.1.8.5

4.2.4.8.4 Salvador-Timken FS Marsh Restoration Project

Direct Indirect and Cumulative Impacts
See section 4.2.3.8.3

4.2.4.8.5 Simoneaux Ponds FS Marsh Restoration Project

Direct and Indirect Impacts
The introduction of marsh will greatly enhance the visual resources of the Simoneaux Ponds region. Under the governance of technical significance, and in terms of the basic design elements, the proposed measures would greatly increase the value of view sheds from the residential areas to the west and south at Bayou Gauche. Water tolerant grasses and other vegetation, in conjunction with some land mass could provide framing elements for open water areas, create texture and repetition, and provide a variety of color to the area that wasn't there before. This measure could increase wildlife diversity and recreational opportunities as well.

Temporary impacts could potentially occur due to construction efforts in the area. Increased traffic due to construction vehicles, dust, debris and increased noise volumes could affect residents of the area. These temporary impacts should return to normal upon completion of the project.

Cumulative Impacts
This measure, in conjunction with the proposed swamp restoration measure, could create a landscape that is varied and diverse offering an excellent haven for wildlife and an improved visual quality that will be enjoyed by many. Cumulative impacts would be the incremental direct and indirect impacts of implementing the proposed action combined with the continued activities of growth and development in the area. These incremental direct and indirect impacts would be in addition to the direct and indirect impacts of visual resources in the region, Louisiana and the Nation.

4.2.4.9 Air Quality

4.2.4.9.1 Dufrene Ponds FS Marsh Restoration Project

Direct Impacts
During construction of this project, an increase in air emissions could be expected during construction. These emissions could include exhaust emissions from operations of various types of non-road construction equipment such as a cutterhead dredge, backhoes, tractors, etc. and from vehicles used to access the project area. Fugitive dust emissions are not anticipated during construction.

Any site-specific construction effects to air quality would be temporary, and air quality would return to pre-construction conditions shortly after the completion of construction activities. Because the project area is in a parish in attainment of NAAQS, a conformity analysis is not required.

Indirect Impacts
There would be no adverse indirect impacts to air quality in the parish with construction of the proposed action.

Cumulative Impacts
Cumulative impacts to air quality in the project area due to construction of this project in addition to the other construction activities within the WBV basin that may be occurring concurrently would be temporary and would be very minimal, especially considering that placement of dredged material would not create fugitive dust. After the construction period, there would be no incremental contribution to cumulative air quality impacts due to the proposed action.

4.2.4.9.2 Jean Lafitte FS Marsh Restoration Project (TSMP)

Direct, Indirect and Cumulative Impacts
See section 4.2.4.9.1

4.2.4.9.3 Plaquemines Option 1 FS Marsh Restoration Project

Direct, Indirect and Cumulative Impacts
See section 4.2.4.9.1

4.2.4.9.4 Salvador-Timken FS Marsh Restoration Project

Direct, Indirect and Cumulative Impacts
See section 4.2.4.9.1

4.2.4.9.5 Simoneaux Ponds FS Marsh Restoration Project

Direct, Indirect and Cumulative Impacts
See section 4.2.4.9.1

4.2.4.10 Noise

4.2.4.10.1 Dufrene Ponds FS Marsh Restoration Project

Direct, Indirect and Cumulative Impacts
See section 4.2.2.10.1

4.2.4.10.2 Jean Lafitte FS Marsh Restoration Project (TSMP)

Direct Impacts
Cutterhead dredges, backhoes, slurry pumps, marsh tracked vehicles and barge mounted equipment would be the primary pieces of equipment used for construction of this project. These pieces of equipment exceed noise levels above 55 dBA. Noise levels may result in wildlife avoiding the project area during construction; however, movement of equipment during construction would result in the same avoidance behaviors from wildlife species. Noise levels quickly drop off once a buffer is established between the noise source and the receptor (e.g. vegetation). As such, any wildlife in the adjacent habitats should be largely undisturbed by the additional noise from this project's construction. No impact to human populations is anticipated as this project area is remote and uninhabited.

Indirect and Cumulative Impacts
Construction of this project is not anticipated to add significantly to the cumulative effect of noise in the WBV basin as the construction activities would be temporary, the area is remote, and avoidance of the project area by wildlife would occur due to the movement of machinery in the area even without the additional noise.

4.2.4.10.3 Plaquemines Option 1 FS Marsh Restoration Project

Direct, Indirect and Cumulative Impacts
See section 4.2.1.10.5

4.2.4.10.4 Salvador-Timken FS Marsh Restoration Project

Direct, Indirect and Cumulative Impacts
See section 4.2.3.10.3

4.2.4.10.5 Simoneaux Ponds FS Marsh Restoration Project

Direct, Indirect and Cumulative Impacts
See section 4.2.3.10.4

4.2.4.11 Hazardous, Toxic, and Radioactive Waste

4.2.4.11.1 Dufrene Ponds FS Marsh Restoration Project

Direct, Indirect and Cumulative Impacts
Several RECs exist within or near features DP3 and DP5 of the Dufrene Ponds FS Marsh Restoration project. Natural-gas pipelines cross DP3 and DP5 and one directional oil well exists very near DP3. The areas proposed for mitigation are currently open water. They would be filled with dredged material from a borrow site in Lake Salvador to establish a platform, which would allow native marsh plants to colonize. USACE Engineer Regulation, ER 1165-2-132, Hazardous, Toxic, and Radioactive Waste (HTRW) for Civil Works Projects, states that dredged material and sediments beneath navigable waters proposed for dredging qualify as HTRW only if they are within the boundaries of a site designated by the EPA or a state for a response action (either a removal or a remedial action) under CERCLA, or if they are a part of a National Priority List (NPL) site under CERCLA (NPL is also known as "Superfund"). None of the area proposed for dredging is included in the National Priority List or within the boundaries of a CERCLA site.

There is a low probability that the proposed restoration within the Dufrene Ponds area using material from Lake Salvador would encounter HTRW or introduce toxic materials into the Dufrene Ponds area. However, precautions must be taken to prevent damage to or breakage of the pipelines or oil wells during placement of the dredged material. Cumulative impacts may include additional oil and gas exploration in the project area and adjacent features but it is unknown whether there are any scheduled exploration projects.

4.2.4.11.2 Jean Lafitte FS Marsh Restoration Project (TSMP)

Direct, Indirect and Cumulative Impacts
No RECs were found within Features JL1B5 and JL15 of the Jean Lafitte FS Marsh Restoration project. One area proposed for mitigation, JL1B5, is currently open water. It would be filled with dredged material from a borrow site in Lake Cataouatche to establish a platform, which would allow native marsh plants to colonize. USACE Engineer Regulation, ER 1165-2-132, Hazardous, Toxic, and Radioactive Waste (HTRW) for Civil Works Projects, states that dredged material and sediments beneath navigable waters proposed for dredging qualify as HTRW only if they are within the boundaries of a site designated by the EPA or a state for a response action (either a removal or a remedial action) under CERCLA, or if they are a part of a National Priority List (NPL) site under CERCLA (NPL is also known as "Superfund"). None of the area proposed for dredging is included in the National Priority List or within the boundaries of a CERCLA site.

Feature JL15 has largely already been built. Some grading of the feature and improvements to the rock dike will occur. Native marsh plants will then be allowed to colonize.

There is a low probability of encountering HTRW or petroleum products in Feature JL1B5 and JL15. No direct, indirect, or cumulative impacts are expected at this project site.

4.2.4.11.3 Plaquemines Option 1 FS Marsh Restoration Project

Direct, Indirect and Cumulative Impacts
No RECs were found within Feature P2 of the proposed Plaquemines Option 1 FS Marsh Restoration Project. The area proposed for mitigation is currently open water. It would be filled with dredged material from a borrow site in the Mississippi River to establish a platform, which would allownative marsh plants to colonize. USACE Engineer Regulation, ER 1165-2-132,

Hazardous, Toxic, and Radioactive Waste (HTRW) for Civil Works Projects, states that dredged material and sediments beneath navigable waters proposed for dredging qualify as HTRW only if they are within the boundaries of a site designated by the EPA or a state for a response action (either a removal or a remedial action) under CERCLA, or if they are a part of a National Priority List (NPL) site under CERCLA (NPL is also known as "Superfund"). None of the area proposed for dredging is included in the National Priority List or within the boundaries of a CERCLA site. There is a low probability of encountering HTRW or petroleum products in Feature P2. No direct, indirect, or cumulative impacts are expected at this project site.

4.2.4.11.4 Salvador-Timken FS Marsh Restoration Project

Direct, Indirect and Cumulative Impacts
No RECs were found within Feature ST2 of the Salvador-Timken FS Marsh Restoration project. The area proposed for mitigation is currently open water. It would be filled with dredged material from a borrow site in Lake Cataouatche to establish a platform, which would allow native marsh plants to colonize. USACE Engineer Regulation, ER 1165-2-132, Hazardous, Toxic, and Radioactive Waste (HTRW) for Civil Works Projects, states that dredged material and sediments beneath navigable waters proposed for dredging qualify as HTRW only if they are within the boundaries of a site designated by the EPA or a state for a response action (either a removal or a remedial action) under CERCLA, or if they are a part of a National Priority List (NPL) site under CERCLA (NPL is also known as "Superfund"). None of the area proposed for dredging is included in the National Priority List or within the boundaries of a CERCLA site. There is a low probability of encountering HTRW or petroleum products in Feature ST2. No direct, indirect, or cumulative impacts are expected at this project site.

4.2.4.11.5 Simoneaux Ponds FS Marsh Restoration Project

Direct, Indirect and Cumulative Impacts
One REC, a natural gas pipeline, crosses through Feature SP2 of the Simoneaux Ponds FS Marsh Restoration Project. The area proposed for mitigation is currently open water. It would be filled with dredged material from a borrow site in Lake Salvador to establish a platform and then planted with native marsh plants. USACE Engineer Regulation, ER 1165-2-132, Hazardous, Toxic, and Radioactive Waste (HTRW) for Civil Works Projects, states that dredged material and sediments beneath navigable waters proposed for dredging qualify as HTRW only if they are within the boundaries of a site designated by the EPA or a state for a response action (either a removal or a remedial action) under CERCLA, or if they are a part of a National Priority List (NPL) site under CERCLA (NPL is also known as "Superfund"). None of the area proposed for dredging is included in the National Priority List or within the boundaries of a CERCLA site. Precautions must be taken to prevent damage to or breakage of the pipeline in Feature SP2. There is a low probability of encountering HTRW or petroleum products in Feature SP2. No direct, indirect, or cumulative impacts are expected at this project site.

4.2.4.12 Socioeconomics/Land Use, Environmental Justice, Transportation, Navigation, and Commercial Fisheries

4.2.4.12.1 Dufrene Ponds FS Marsh Restoration Project

Direct, Indirect and Cumulative impacts
See section 4.2.1.12.3.

4.2.4.12.2 Jean Lafitte FS Marsh Restoration Project (TSMP)

Direct, Indirect and Cumulative Impacts
According to 2010 U.S. Census data, there are no residents or housing units located within the boundaries of the Jean Lafitte FS Marsh Restoration Project and therefore no impacts to population, housing, or minority or low-income populations are expected to occur. Potential indirect and cumulative impacts to the Environmental Justice resource that may result from this project would be similar to those impacts discussed in section 4.2.1.12.2.

There are no commercial/industrial properties, public facilities, or transportation infrastructure within the project boundaries therefore there will be no direct impacts to land use. Minimal indirect land use impacts may occur when privately owned land is converted to public use. No impacts to employment, businesses, industry public facilities and services, community and regional growth community cohesion, or tax revenues and property values are anticipated to occur with construction of this project.

Since there are no nearby residential areas, there would be no direct or indirect impacts to transportation during construction due to heavy vehicle traffic in the vicinity of the restoration site. Similarly, no minority or low income populations would be disproportionately affected.

There would be some direct or indirect impacts to navigation or commercial fishing as borrow would be pumped from Lake Cataouatche.

The cumulative impacts of all projects, when added to other past, present, and reasonably foreseeable ecosystem restoration, mitigation or other type projects in the basin would minimally and temporarily affect socio-economic resources. Cumulative impacts include the Pre-Katrina BLH-Wet enhancement mitigation project. Due to the relatively small size of the Jean Lafitte FS Marsh Restoration Project, the temporary nature of the project activities and the duration of enhancement projects, the Jean Lafitte FS Marsh Restoration Project would add very little and only temporary impacts to any other impacts resulting from past, present and reasonably foreseeable projects in the region.

4.2.4.12.3 Plaquemines Option 1 FS Marsh Restoration Project

Direct, Indirect and Cumulative impacts
See section 4.2.3.12.2.

4.2.4.12.4 Salvador-Timken FS Marsh Restoration Project

Direct, Indirect and Cumulative impacts
See section 4.2.3.12.3.

4.2.4.12.5 Simoneaux Ponds FS Marsh Restoration Project

Direct, Indirect and Cumulative impacts
See section 4.2.3.12.4.

4.2.4.13 Prime and Unique Farmland

4.2.4.13.1 Dufrene Ponds FS Marsh Restoration Project

See section 4.2.1.13.3

4.2.4.13.2 Jean Lafitte FS Marsh Restoration Project (TSMP)
There are no prime and unique farmlands in the project area and therefore no anticipated impacts.

4.2.4.13.3 Plaquemines Option 1 FS Marsh Restoration Project
See section 4.2.1.13.5.

4.2.4.13.4 Salvador-Timken FS Marsh Restoration Project
See section 4.2.3.13.3

4.2.4.13.5 Simoneaux Ponds FS Marsh Restoration Project
See section 4.2.3.13.4

4.2.4.14 Natural and Scenic Rivers

4.2.4.14.1 Dufrene Ponds FS Marsh Restoration Project

Direct, Indirect and Cumulative Impacts
See section 4.2.1.14.3

4.2.4.14.2 Jean Lafitte FS Marsh Restoration Project (TSMP)

Direct, Indirect and Cumulative Impacts
There are no state recognized scenic streams in the vicinity of the project area and therefore no anticipated impacts.

4.2.4.14.3 Plaquemines Option 1 FS Marsh Restoration Project

Direct, Indirect and Cumulative Impacts
See section 4.2.1.14.5

4.2.4.14.4 Salvador-Timken FS Marsh Restoration Project

Direct, Indirect and Cumulative Impacts
See section 4.2.3.13.3

4.2.4.14.5 Simoneaux Ponds FS Marsh Restoration Project

Direct, Indirect and Cumulative Impacts
See section 4.2.1.14.3

4.2.5 MITIGATION FOR PARK/404c FS BLH-WET IMPACTS; JEAN LAFITTE FS BLH-WET RESTORATION PROJECT (TSMP)

4.2.5.1 Wetlands And Other Surface Waters

Direct, Indirect and Cumulative Impacts
Approximately 12 acres of BLH would be restored. Impacts would be similar to those discussed in 4.2.1.1.2

4.2.5.2 Wildlife

Direct, Indirect and Cumulative Impacts
See section 4.2.1.2.2

4.2.5.3 Threatened and Endangered Species

Direct, Indirect and Cumulative Impacts
See section 4.2.1.3.2

4.2.5.4 Fisheries, Aquatic Resources, and Water Quality

Direct, Indirect and Cumulative Impacts
Impacts would be similar but much smaller to those discussed in section 4.2.1.4.3. Approximately 12.2 acres of shallow open water and early successional wetland plant species would be replaced with BLH-wet in an existing borrow pit. The impacts to the area where the borrow would be excavated are not known at this time since the offsite government and/or contractor furnished site has not been identified. Pursuant to HSDRRS borrow processes, material would not be taken from sites that have wetlands or BLH. The temporary water impacts from borrow placement are not anticipated to be substantial enough to cause water quality impairment under the standards of Louisiana Administrative Code, Title 33, Part IX, Chapter 11.

4.2.5.5 Essential Fish Habitat

Direct Impacts Indirect and Cumulative Impacts
There are not anticipated impact to EFH since the areas is not presently designated as such.

4.2.5.6 Cultural Resources

Direct Impacts
It is not likely that activities associated with the proposed restoration project would have a direct impact on cultural resources site 16JE41, or other cultural resources that could exist in the project area and are yet to be identified. The stipulations of the Programmatic Agreement executed on June 18, 2013 would be followed. As individual project features are developed, the project would be assessed for its effect on historic properties, and survey strategies and the Area of Potential Effect would be coordinated with the LA SHPO, tribes, and other interested parties as required by the Programmatic Agreement. Identified cultural resources that are determined to be eligible for listing or are listed on the NRHP would be avoided. If avoidance is not possible, mitigation strategies would be developed in accordance with the stipulations of the Programmatic Agreement.

For restoration projects proposed on the Jean Lafitte National Historical Park and Preserve, the National Park Service (NPS) will conduct an independent assessment of potential impacts to cultural resources that are identified on NPS managed lands. The NPS will conduct consultation in accordance with Section 106 of the National Historic Preservation Act with the LA SHPO and federally recognized Indian Tribes for restoration projects that are located on NPS managed lands. In accordance with the stipulations of the Programmatic Agreement, the U.S. Army Corps of Engineers, New Orleans District will assess impacts to cultural resources that may result from proposed restoration projects located on NPS lands and will coordinate findings with the NPS to ensure that consistent information is being provided to the LA SHPO and federally recognized Indian Tribes.

Indirect and Cumulative Impacts
See section 4.2.1.6.2.

4.2.5.7 Recreational Resources

Direct Impacts
People bank fishing along the GIWW may be temporarily displaced. The impact is expected to be minimal.

Indirect and Cumulative Impacts
Recreational use and access will depend on the how the land is managed in the future.

4.2.5.8 Aesthetic Resources

Direct Indirect and Cumulative Impacts
See section 4.2.1.8.5

4.2.5.9 Air Quality

Direct Impacts
During construction of this project, an increase in air emissions could be expected. These emissions could include exhaust emissions from vehicles used to access the project area as well as non-road vehicles such as backhoes, graders, etc. Emission of fugitive dust near the construction area is not anticipated to be a problem as the site is relatively small and isolated from the nearby community by an existing hurricane protection levee.

Any site-specific construction effects would be temporary, and dust emissions, if any, would be controlled using standard BMPs. Air quality would return to pre-construction conditions shortly after the completion of construction activities. Because the project area is in a parish in attainment of NAAQS, a conformity analysis is not required.

Indirect Impacts
There would be no adverse indirect impacts to air quality in the parish with construction of the proposed action.

Cumulative Impacts
Cumulative impacts to air quality in the project area due to construction of this project in addition to the other construction activities within the WBV basin that may be occurring concurrently would be temporary and would be very minimal. After the construction period, there would be no incremental contribution to cumulative air quality impacts due to the proposed action.

4.2.5.10 Noise

Direct, Indirect and Cumulative Impacts
See section 4.2.4.10.2

4.2.5.11 Hazardous, Toxic, and Radioactive Waste

Direct, Indirect and Cumulative Impacts
One REC, a natural-gas pipeline, crosses through Feature JL14A of the Jean Lafitte FS BLH-WET Restoration Project. No RECs exist in Feature JL14B of the same project. The area proposed for

mitigation is open water. The areas would be filled with borrow material from a government and/or contractor furnished borrow site to establish a platform and then planting with native BLH species. Precautions must be taken to prevent damage to or breakage of the pipeline in Feature JL14A. There is a low probability of encountering HTRW or petroleum products in Features JL14A and JL14B. No direct, indirect, or cumulative impacts are expected at this project site.

4.2.5.12 Socioeconomics/Land Use, Environmental Justice, Transportation, Navigation, and Commercial Fisheries

Direct, Indirect and Cumulative impacts would be similar to those described in section 4.2.4.12.3, except minimal indirect impacts may occur to traffic near the area as construction material is transported to the site. The project site itself is publically owned.

4.2.5.13 Prime and Unique Farmland

Direct, Indirect and Cumulative Impacts
No anticipated impacts as no prime and unique farmlands are located at this site.

4.2.5.14 Natural and Scenic Rivers

Direct, Indirect and Cumulative Impacts
See section 4.2.4.13.2

4.2.6 MITIGATION FOR PARK/404c FS SWAMP IMPACTS; JEAN LAFITTE FS SWAMP RESTORATION PROJECT (TSMP)

4.2.6.1 Wetlands and Other Surface Waters

Direct Impacts
There would be a beneficial impact to wetlands as approximately 20 acres of open water would be converted to swamp.

Indirect and Cumulative Impacts
See section 4.2.1.1.5

4.2.6.2 Wildlife

Direct, Indirect and Cumulative Impacts
See section 4.2.1.2.5

4.2.6.3 Threatened and Endangered Species

Direct Impacts
Of the animals and plants under USFWS and/or NMFS jurisdiction, only the Pallid sturgeon is expected to potentially occur within the project area. See section 4.2.1.3.5

Indirect and Cumulative Impacts
See section 4.2.1.3.3

4.2.6.4 Fisheries, Aquatic Resources, and Water Quality

Direct, Indirect and Cumulative Impacts
Impacts would be similar but much smaller to those discussed in section 4.2.1.4.3. Approximately 20 acres of shallow open water and early successional wetland plant species would be replaced with BLH-wet in an existing borrow pit. The impacts to the area where the borrow would be excavated are not known at this time since the offsite government and/or contractor furnished site has not been identified, but following the existing HSDRRS process material would not be taken from sites that have wetlands. The temporary water impacts from borrow placement are not anticipated to be substantial enough to cause water quality impairment under the standards of Louisiana Administrative Code, Title 33, Part IX, Chapter 11.

4.2.6.5 Essential Fish Habitat

Direct Impacts Indirect and Cumulative Impacts
There are not anticipated impact to EFH at the approximately 11 acres site JL7 since the areas is not presently designated as such. This project would directly and permanently convert approximately 9 acres of coastal migratory pelagic, red drum, and reef fish EFH (See table 3-2) to uplands. Compensatory mitigation for these losses of EFH would be required per the draft guidelines for when impacts to open water would require mitigation (Appendix D). These impacts would be mitigated as tidal FS marsh and would be disclosed in the TIER in which mitigation for that marsh type is a constructible feature.

4.2.6.6 Cultural Resources

Direct Impacts
It is not likely that activities associated with the proposed restoration project would have a direct impact on cultural resources site 16JE41, or other cultural resources that could exist in the project area and are yet to be identified. The stipulations of the Programmatic Agreement executed on June 18, 2013 would be followed. As individual project features are developed, the project would be assessed for its effect on historic properties, and survey strategies and the Area of Potential Effect would be coordinated with the LA SHPO, tribes, and other interested parties as required by the Programmatic Agreement. Identified cultural resources that are determined to be eligible for listing or are listed on the NRHP would be avoided. If avoidance is not possible, mitigation strategies would be developed in accordance with the stipulations of the Programmatic Agreement.

For restoration projects proposed on the JLNHHP, the NPS will conduct an independent assessment of potential impacts to cultural resources that are identified on NPS managed lands. The NPS will conduct consultation in accordance with Section 106 of the National Historic Preservation Act with the LA SHPO and federally recognized Indian Tribes for restoration projects that are located on NPS managed lands. In accordance with the stipulations of the Programmatic Agreement, the U.S. Army Corps of Engineers, New Orleans District will assess impacts to cultural resources that may result from proposed restoration projects located on NPS lands and will coordinate findings with the NPS to ensure that consistent information is being provided to the LA SHPO and federally recognized Indian Tribes.

Indirect and Cumulative Impacts
See Section 4.2.1.6.2.

4.2.6.7 Recreational Resources

Direct Impacts
Recreational users of the undesignated trail along the north side of mitigation feature JL7 would be permanently displaced. People bank fishing along the GIWW may be temporarily displaced. The impact is expected to be minimal.

Indirect and Cumulative Impacts
See section 4.2.5.7

4.2.6.8 Aesthetic Resources

Direct Indirect and Cumulative Impacts
See section 4.2.1.8.5
Impacts

4.2.6.9 Air Quality

Direct Impacts
During construction of this project, an increase in air emissions could be expected. These emissions could include exhaust emissions from operations of various types of non-road construction equipment such as a cutterhead dredge, backhoes, tractors, etc. and from vehicles used to access the project area. Fugitive dust emissions are not anticipated during construction.

Any site-specific construction effects to air quality would be temporary, and air quality would return to pre-construction conditions shortly after the completion of construction activities. Because the project area is in a parish in attainment of NAAQS, a conformity analysis is not required.

Indirect Impacts
There would be no adverse indirect impacts to air quality in the parish with construction of the proposed action.

Cumulative Impacts
Cumulative impacts to air quality in the project area due to construction of this project in addition to the other construction activities within the WBV basin that may be occurring concurrently would be temporary and would be very minimal. After the construction period, there would be no incremental contribution to cumulative air quality impacts due to the proposed action.

4.2.6.10 Noise

Direct, Indirect and Cumulative Impacts
See section 4.2.4.10.2

4.2.6.11 Hazardous, Toxic, and Radioactive Waste

Direct, Indirect and Cumulative Impacts
No RECs were found within Features JL7, JL8, and JL9 of the Jean Lafitte FS Swamp Restoration project areas. The areas proposed for mitigation are currently open water canals, although JL7 includes some disturbed upland. They would be filled with borrow material from the GIWW and borrow material from contractor and/or government furnished sites to establish a platform and then planted with native swamp species.

There is a low probability of encountering HTRW or petroleum products in Features JL7, JL8, and JL9 project area. No direct, indirect, or cumulative impacts are expected at this project site.

4.2.6.12 Socioeconomics/Land Use, Environmental Justice, Transportation, Navigation, and Commercial Fisheries

Direct, Indirect and Cumulative impacts
See section 4.2.5.12.

4.2.6.13 Prime and Unique Farmland

Direct, Indirect and Cumulative Impacts
No anticipated impacts as no prime and unique farmlands are located at this site.

4.2.6.14 Natural and Scenic Rivers

Direct, Indirect and Cumulative Impacts
See section 4.2.4.13.2

4.2.7 MITIGATION FOR PARK/404c FS MARSH IMPACTS; JLNHPP FS MARSH RESTORATION PROJECT (TSMP)

4.2.7.1 Wetlands and Other Surface Waters

Direct Impacts
Approximately 20 acres of open water habitat would be converted to fresh marsh.

Indirect and Cumulative Impacts
See section 4.2.1.1.3

4.2.7.2 Wildlife

Direct Impacts
Approximately 20 acres of shallow open water would be converted to fresh marsh habitat. The impacts would be similar to those discussed in section 4.2.4.2.1

Indirect and Cumulative Impacts
See section 4.2.4.2.1

4.2.7.3 Threatened and Endangered Species

Direct, Indirect and Cumulative Impacts
See section 4.2.1.3.5

4.2.7.4 Fisheries, Aquatic Resources, and Water Quality

Direct, Indirect and Cumulative Impacts
Impacts would be similar to but smaller than those described in section 4.2.4.4.1 for the approximately 20 acres of new marsh in Yankee Pond and approximately 10 acres of borrow in Lake Cataouatche. The temporary water impacts to Lake Salvador from borrow excavation are not

anticipated to be substantial enough to cause water quality impairment under the standards of Louisiana Administrative Code, Title 33, Part IX, Chapter 11.

4.2.7.5 Essential Fish Habitat

Direct, Indirect and Cumulative Impacts
Impacts would be similar to but smaller than those described in section 4.2.4.5.1 for the approximately 20 acres of new marsh in Yankee Pond and approximately 10 acres of borrow in Lake Cataouatche.

4.2.7.6 Cultural Resources

Direct Impacts
It is not likely that activities associated with the proposed restoration project would have a direct impact on cultural resources within the project area. Submerged cultural resources could exist within the borrow area located in Lake Cataouatche, and the removal of borrow could have a direct impact on those cultural resources. The stipulations of the Programmatic Agreement executed on June 18, 2013 would be followed. As individual project features are developed, the project would be assessed for its effect on historic properties, and survey strategies and the Area of Potential Effect would be coordinated with the LA SHPO, tribes, and other interested parties as required by the Programmatic Agreement. Identified cultural resources that are determined to be eligible for listing or are listed on the NRHP would be avoided. If avoidance is not possible, mitigation strategies would be developed in accordance with the stipulations of the Programmatic Agreement.

For restoration projects proposed on the JLNHPP, the NPS will conduct an independent assessment of potential impacts to cultural resources that are identified on NPS managed lands. The NPS will conduct consultation in accordance with Section 106 of the National Historic Preservation Act with the LA SHPO and federally recognized Indian Tribes for restoration projects that are located on NPS managed lands. In accordance with the stipulations of the Programmatic Agreement, the U.S. Army Corps of Engineers, New Orleans District will assess impacts to cultural resources that may result from proposed restoration projects located on NPS lands and will coordinate findings with the NPS to ensure that consistent information is being provided to the LA SHPO and federally recognized Indian Tribes.

Indirect and Cumulative Impacts
See discussion of indirect and cumulative impacts in Section 4.2.1.6.2.

4.2.7.7 Recreational Resources

Direct Impacts
See section 4.2.4.7.2

Indirect and Cumulative Impacts
See section 4.2.4.7.2

4.2.7.8 Aesthetic Resources

Direct Indirect and Cumulative Impacts
See section 4.2.1.8.5

4.2.7.9 Air Quality

Direct Impacts
During construction of this project, an increase in air emissions could be expected during construction. These emissions could include exhaust emissions from operations of various types of non-road construction equipment such as a cutterhead dredge, backhoes, tractors, etc. and from vehicles used to access the project area. Fugitive dust emissions are not anticipated during construction.

Any site-specific construction effects to air quality would be temporary, and air quality would return to pre-construction conditions shortly after the completion of construction activities. Because the project area is in a parish in attainment of NAAQS, a conformity analysis is not required.

Indirect Impacts
There would be no adverse indirect impacts to air quality in the parish with construction of the proposed action.

Cumulative Impacts
Cumulative impacts to air quality in the project area due to construction of this project in addition to the other construction activities within the WBV basin that may be occurring concurrently would be temporary and would be very minimal, especially considering that placement of dredged material would not create fugitive dust. After the construction period, there would be no incremental contribution to cumulative air quality impacts due to the proposed action.

4.2.7.10 Noise

Direct, Indirect and Cumulative Impacts
See section 4.2.4.10.2

4.2.7.11 Hazardous, Toxic, and Radioactive Waste

Direct, Indirect and Cumulative Impacts
No RECs were found within Feature JL1B4 of the Jean Lafitte FS Marsh Restoration project area. The area proposed for mitigation is currently open water. It would be filled with dredged material from a borrow site in Lake Cataouatche to establish a platform, which would allow native marsh plants to colonize. USACE Engineer Regulation, ER 1165-2-132, Hazardous, Toxic, and Radioactive Waste (HTRW) for Civil Works Projects, states that dredged material and sediments beneath navigable waters proposed for dredging qualify as HTRW only if they are within the boundaries of a site designated by the EPA or a state for a response action (either a removal or a remedial action) under CERCLA, or if they are a part of a National Priority List (NPL) site under CERCLA (NPL is also known as "Superfund"). None of the area proposed for dredging is included in the National Priority List or within the boundaries of a CERCLA site. There is a low probability of encountering HTRW or petroleum products in Feature JL1B4. No direct, indirect, or cumulative impacts are expected at this project site.

4.2.7.12 Socioeconomics/Land Use, Environmental Justice, Transportation, Navigation, and Commercial Fisheries

Direct, Indirect and Cumulative impacts would be similar to those described in section 4.2.4.12.2, except minimal indirect impacts may occur to traffic near the area as construction material is transported to the site. The project site itself is publically owned..

4.2.7.13 Prime and Unique Farmland

Direct, Indirect and Cumulative Impacts
No anticipated impacts as no prime and unique farmlands are located at this site.

4.2.7.14 Natural and Scenic Rivers

Direct, Indirect and Cumulative Impacts
See section 4.2.4.13.2

5. ENVIRONMENTAL CONSEQUENCES OF MITIGATION PLAN ALTERNATIVES

5.1 INTRODUCTION

This section describes the direct, indirect and cumulative effects of mitigation plans as they have been modified after the impacts of the HSDRRS construction were reassessed. For more details on how the projects were modified and the transition from multiple mitigation projects to mitigation plans see section 2.5.

Although this PIER is programmatic in nature, one of the individual mitigation projects that make up the mitigation plan alternatives has sufficiently detailed designs as to be fully assessed in this PIER and would not require additional NEPA documentation. This mitigation project, termed "Constructible Feature", is identified in the following action alternatives.

The Programmatic Features of the mitigation plan alternatives require further design at a feasibility level for which the details and impacts would be released in subsequent NEPA documents that would tier off of this programmatic NEPA document (TIER). These features would not be considered constructible until the TIER is complete.

5.2 ALTERNATIVES

5.2.1 NO ACTION ALTERNATIVE

Direct Impacts
Under the No Action alternative, the wetlands and other surface waters, wildlife, threatened and endangered species, fisheries, aquatic resources, water quality, EFH, cultural resources, recreational resources, aesthetic resources, air quality, noise, HTRW, socioeconomics/land use, environmental justice, transportation, navigation, commercial fisheries, and prime and unique farmlands within the basin would not be directly impacted from construction of any of the action alternatives. Without construction of an action alternative, there would be an overall loss of fresh marsh; BLH; and swamp habitat within the system. Intertidal marshes are designated EFH. Loss of marsh habitat in the basin would equate to a loss of EFH in the basin. CEMVN's legal obligation to compensate for habitat losses caused by construction of the HSDRRS would not be satisfied.

Indirect Impacts
There would be an overall loss of fresh marsh; BLH; and swamp within the system that once provided cover, resting, nesting and foraging habitat for wildlife, fisheries, and aquatic species, which would indirectly impact these resources. The loss of these habitats, and the effect such losses would have on wildlife and fish species, could cause recreational opportunities in the basin to also suffer loss. The loss of wetlands and the detritus and filtering function they provide would indirectly impact fisheries productivity and water quality.

Cumulative Impacts
The overall loss of fresh marsh, BLH, and swamp within the system combined with other habitat loss incurred from implementation of projects in the FWOP conditions could have cumulative adverse impacts to wildlife, fisheries, aquatic resources, water quality, EFH and recreational resources.

5.2.2 TENTATIVELY SELECTED MITIGATION PLAN ALTERNATIVE

The TSMPA (Table 5.1) is a combination of the TSMPs discussed in Section 4. Although this is a programmatic NEPA document, one of the TSMPs that make up the overall WBV TSMPA is fully

assessed in this PIER and is recommended for implementation. This TSMPs, termed "Constructible Feature" (or "constructible portion"), mitigates general (e.g. non-park/404c) BLH-Wet and BLH-Dry impacts and would consist of the purchase of BLH-Wet mitigation bank credits in the WBV basin. The TSMPs that comprise the remainder of the WBV HSDRRS TSMPA are termed "Programmatic Features". These programmatic features require further design at a feasibility level for which the details and impacts would be released in subsequent NEPA documents that would tier off of this programmatic NEPA document (TIER). These features would not be considered constructible until the TIER is complete.

Table 5.1 Projects within the TSMPA

Mitigation Projects in TSMPA	Constructible/Programmatic
General Mitigation Bank	Constructible
Lake Boeuf FS BLH-Wet Restoration	Programmatic
Lake Boeuf FS Swamp Restoration	Programmatic
Jean Lafitte FS Marsh Restoration (General)	Programmatic
Jean Lafitte FS BLH-Wet Restoration	Programmatic
Jean Lafitte FS Swamp Restoration	Programmatic
Jean Lafitte FS Fresh Marsh Restoration	Programmatic

5.2.2.1 Wetlands and other Surface Waters

5.2.2.1.1 Programmatic Features

Direct and Indirect Impacts
Approximately 222 acres of agricultural land would be converted to BLH-Wet at the Lake Boeuf project site. Approximately 12 acres of open water would be converted to BLH-Wet at the Jean Lafitte project sites. Approximately 320 acres of agricultural land would be converted to swamp at the Lake Boeuf project site. Approximately 20 acres of open water and scrub shrub habitat would be converted to swamp at the Jean Lafitte sites. Approximately 142 acres of open water would be converted to fresh marsh at the Jean Lafitte site. And Approximately 20 acres of open water would be converted to fresh marsh at the Jean Lafitte site. Impacts to SAVs would be mitigated along with the TSMPA mitigating for fresh marsh.

5.2.2.1.2 Constructible Feature

Direct and Indirect Impacts
As the proposed action, the CEMVN would purchase from a Mitigation Bank sufficient BLH-Wet credits from a bank within the WBV basin to mitigate 261.96 AAHUs. The particular bank to be utilized is unknown at this time. Since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect or cumulative impacts to wetlands and other surface waters would be incurred from the purchase of these credits for the HSDRRS mitigation.

5.2.2.2 Wildlife

5.2.2.2.1 Programmatic Features

Direct Impacts
Approximately 222 acres of agricultural land would be converted to BLH-Wet at the Lake Boeuf project site. Approximately 12 acres of open water would be converted to BLH-Wet at the Jean Lafitte project sites. Approximately 320 acres of agricultural land would be converted to swamp at the Lake Boeuf project site. Approximately 20 acres of open water and scrub shrub habitat would be converted to swamp at the Jean Lafitte sites. Approximately 142 acres of open water would be

converted to fresh marsh in the Jean Lafitte site. And Approximately 20 acres of open water would be converted to fresh marsh in the JEAN LAFITTE site. This conversion would eliminate wintering habitat for brown pelican, and increase habitat for wading birds, shorebirds, and raptors (LCWCRTF and WCRA, 1999) as well as muskrat, raccoon and river otter. Species that utilize transition zones (i.e. raccoon, bobcat, fox) would benefit from the BLH-W, swamp and fresh marsh habitat creation. The loss of open water habitat would not be expected to adversely affect species that utilize this habitat currently as there is ample open water habitat in the basin.

Indirect Impacts
Species that utilize shallow open water habitats may be displaced due to the habitat conversion. Some species that utilize the current agricultural lands may be forced into adjacent habitat. It is anticipated that species diversity would improve with the conversion of agricultural land to BLH and swamp habitat. Species utilizing the current habitat types would thrive with the improved foraging, cover and resting habitat the project would create. A rise in turbidity at the borrow sites could immediately reduce water quality in the area however those effects would be temporary and would be reduced by movement of the tides.

5.2.2.2.2 Constructible Feature

Direct and Indirect Impacts
Since the purchase of mitigation bank credits for BLH-W and BLH-D would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct or indirect impacts to wildlife would be incurred from the purchase of these credits for the HSDRRS mitigation.

5.2.2.3 Threatened and Endangered Species

5.2.2.3.1 Programmatic Features

Direct Impacts
No direct impacts to West Indian Manatee or Pallid sturgeon are anticipated from construction of these features.

The manatee or Pallid sturgeon have the potential to forage or swim in aquatic habitats where borrow dredging for the project is located. The presence of construction-related activity, machinery, and noise would be expected to cause these species to avoid the project area during the construction.

In order to minimize the potential for construction activities to cause adverse impacts to manatees and Pallid sturgeon, the following standard protection measures would be implemented when activities are proposed that would impact habitat where manatees or Pallid sturgeon could occur:

> **Manatees:** All contract personnel associated with the project would be informed of the potential presence of manatees and the need to avoid collisions with manatees. All construction personnel would be responsible for observing water-related activities for the presence of manatees. Temporary signs would be posted prior to and during all construction/dredging activities to remind personnel to be observant for manatees during active construction/dredging operations or within vessel movement zones (i.e., the work area), and at least one sign would be placed where it is visible to the vessel operator. Siltation barriers, if used, would be made of material in which manatees could not become entangled and would be properly secured and monitored. If a manatee is sighted within 100 yards of the active work zone, special

operating conditions would be implemented, including: moving equipment would not operate within 50 ft of a manatee; all vessels would operate at no wake/idle speeds within 100 yards of the work area; and siltation barriers, if used, would be re-secured and monitored. Once the manatee has left the 100-yard buffer zone around the work area of its own accord, special operating conditions would no longer be necessary, but careful observations would be resumed. Any manatee sighting would be immediately reported to the U.S. Fish and Wildlife Service (337/291-3100) and the Louisiana Department of Wildlife and Fisheries (LDWF), Natural Heritage Program (225/765-2821).

Pallid sturgeon: All contract personnel associated with the project would be informed of the potential presence of Pallid sturgeon. When lowering the ladder, the pumping rate should be reduced to the slowest speed feasible while the cutterhead is being lowered to the channel bottom. The cutterhead should remain completely buried in the channel bottom during dredging operations. If pumping water through the cutterhead is deemed necessary to dislodge material, or to clean the pumps, the pumping rate should be reduced to the lowest rate feasible while raising the ladder until the cutterhead is at least at mid-depth at which point the pumping rate can then be increased.

Indirect Impacts
Indirect impacts to endangered or threatened species are effects that could occur later in time than direct impacts but still are reasonably certain to occur (NMFS 2006). Potential indirect impacts from the proposed action would primarily consist of effects from dredging operations, increased turbidity and benthic species removal. However, although the rise in turbidity could immediately reduce water quality in the project area, those effects would be temporary and would be reduced by movement of the tides. Any manatees or Pallid sturgeon in the area would be free to relocate during construction. As such, no indirect impacts to manatees or Pallid sturgeon are anticipated.

5.2.2.3.2 Constructible Feature

Direct and Indirect Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect or cumulative impacts to threatened and endangered species would be incurred from the purchase of these credits for the HSDRRS mitigation.

5.2.2.4 Fisheries, Aquatic Resources and Water Quality

5.2.2.4.1 Programmatic Features

Direct and Indirect Impacts
There would be no negative direct, or indirect impacts to fisheries or aquatic resources due to the construction of the Lake Boeuf BLH-W, and Swamp projects since the area presently does not currently contain fisheries or aquatic resources. There would be minor temporary direct and indirect impacts to water quality during the clearing and grubbing; grading and tilling necessary to level the surface and prepare the area for planting and to achieve the required elevation. These impacts would be minimized via BMPs that would reduce any potential runoff from the site hence there should be no negative cumulative impacts on water quality. By taking this area out of agricultural production there could be a potential for a reduction in non point source pollution which would have a positive long term indirect and cumulative impact on water quality. In addition the Lake Boeuf FS Swamp project could have a positive indirect and cumulative impact on fisheries and aquatic

species if the area is connected to Theriot canal. The area could provide a new area for fresh water species to colonize and provide for the export of the nutrients (decaying plant material) from the new swamp to the surrounding marsh.

With implementation of the Jean Lafitte FS Marsh Restoration Project (General), there would be some direct and indirect impacts to fisheries in the form of physically altered open water bottom habitat, and temporary increases in turbidity during construction activities. Approximately 88 and 8 acres of new marsh would be created in Yankee Pond and at the geocrib respectively and would continue to be available for fishery and aquatic species. Approximately 42 acres of borrow in Lake Cataouatche water bottom would be deepened by an average of 12 feet. It is anticipated that anoxic conditions would be avoided with this depth of dredging and that mobile fishery species would avoid the proposed borrow site during construction, thereby minimizing direct and indirect impacts to those species. Sediment particles suspended due to construction activities may impact filter feeding benthic invertebrates by fouling feeding apparatus if the concentration of such particles is excessively high at the dredge site and adjacent to the placement site. Due to the lack of escape routes, some fish species in the placement area would be experience demise during borrow material placement. There would also be direct impact to the benthic community due to burial and conversion from open water to BLH habitat. These species are commonly found throughout the basin in similar shallow water environments that exist in abundance. As such, impacts to the overall population of these species in the basin from the borrow placement is expected to be negligible. Direct impacts caused by increases in suspended sediments during placement of stabilization materials would be minimal, localized, and short-lived. Approximately 50 acres of existing high “marsh platform” will degraded to be available for fisheries and aquatic resources. At the Jean Lafitte FS BLH-Wet Restoration Project site approximately 12.2 acres of shallow open water and early successional wetland plant species would be replaced with BLH-wet in an existing borrow pit the new BLH-W would not be accessible to fishery and aquatic species. While at the Jean Lafitte FS Swamp Restoration Project site approximately 20 acres of shallow open water and early successional wetland plant species would be replaced with swamp in an existing borrow pit and would continue to be accessible to fishery and aquatic species. Some of this borrow material would be bucket dredged from the Gulf Intracoastal Waterway (GIWW). There would be a short term direct impacts to the benthic communities at the borrow sites within open water areas. The animals that live on or in the material to be dredged would most likely be killed in either the removal, the transportation or the placement of the dredge material. The new bottoms of the borrow pits would be quickly re-colonized with species similar in composition to those existing before the dredge activity. Excavation depths would be minimized to avoid development of anoxic conditions. There would be no long term impacts at these borrow sites. The rest of the borrow would come from a government and/or contractor furnished pit and trucked in. The impacts at the borrow pit are not known at this time since the site has not been identified, but following the existing HSDRRS process, material would not be taken from sites that have wetlands.

5.2.2.4.2 Constructible Feature

Direct and Indirect Impacts

Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect or cumulative impacts to fisheries, aquatic resources and water quality would be incurred from the purchase of these credits for the HSDRRS mitigation.

5.2.2.5 Essential Fish Habitat

5.2.2.5.1 Programmatic Features

Direct and Indirect Impacts
There would be no direct, indirect or cumulative adverse impacts to EFH due to the construction of the Lake Boeuf PS BLH-Dry and BLH-Wet, Lake Boeuf FS BLH-Wet, Lake Boeuf FS Swamp, Jean Lafitte FS BLH-Wet, and feature the JL7 of Jean Lafitte FS Swamp Restoration projects since these areas presently do not contain EFH.

As part of the Jean Lafitte FS Marsh Restoration Project (General) approximately 88 and 8 acres of new marsh in Yankee Pond and at the geocrib respectively would be created and in the process several types of EFH associated with open water would be permanently replaced with estuarine emergent marsh and other associated EFH. Negative impacts to the existing EFH would be more than offset by the creation estuarine emergent wetlands since the support functions of the created marsh is greater than the support functions of the existing open water. Compensatory mitigation for this conversion of EFH would not be required per the draft guidelines for when impacts to open water would require mitigation (Appendix D). Excavation of borrow (approximately 42 acres) in Lake Cataouatche would deepen estuarine water column and may expose a different bottom substrate, which could impact managed species by reducing available cover and foraging habitat. Additionally approximately 50 acres of existing high "marsh platform" that presently is not considered EFH will be degraded to become EFH at the existing geocrib. The other two features of Jean Lafitte FS Swamp Project would directly and permanently convert approximately 9 acres of coastal migratory pelagic, red drum, and reef fish EFH (See table 3-4) to uplands. Compensatory mitigation for these losses of EFH would be required per the draft guidelines for when impacts to open water would require mitigation (Appendix D). These impacts would be mitigated as tidal fresh marsh and would be disclosed in the TIER in which mitigation for fresh marsh is a constructible feature.

5.2.2.5.2 Constructible Feature

Direct and Indirect Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect or cumulative impacts to EFH would be incurred from the purchase of these credits for the HSDRRS mitigation.

5.2.2.6 Cultural Resources

5.2.2.6.1 Programmatic Features

Direct Impacts
Activities associated with implementation of the Programmatic Features could have a direct impact on existing or as yet undiscovered cultural resources. Submerged cultural resources could exist within proposed borrow areas located in Lake Cataouatche and could be directly impacted. Additional analysis for impacts to cultural resources would be conducted and documented in supplemental NEPA documents for the Programmatic Features. The stipulations of the Programmatic Agreement executed on June 18, 2013 would be followed. As individual project features are developed for the Programmatic Features, survey strategies and the Area of Potential Effect will be coordinated with the LA SHPO, Federally recognized Tribes, and other interested parties as required by the Programmatic Agreement. Identified cultural resources that are determined to be eligible for listing or are listed on the NRHP would be avoided. If avoidance is not

possible, mitigation strategies would be developed in accordance with the stipulations of the Programmatic Agreement.

Indirect Impacts
The erosion and land loss caused by natural forces and human activity would continue to impact cultural resources in the WBV basin. The loss of land would continue to threaten the existence and integrity of cultural resources sites. The implementation of measures to restore ecosystems and habitat could work to reduce continued land loss and erosion, and prevent exposure and impact to significant cultural resources. The construction of the HSDRRS could similarly protect cultural resources within the system.

5.2.2.6.2 Constructible Feature

Direct and Indirect Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect or cumulative impacts to cultural resources would be incurred from the purchase of these credits for the HSDRRS mitigation.

5.2.2.7 Recreational Resources

5.2.2.7.1 Programmatic Features

Direct Impacts
Open water from Yankee Pond (87.6 acres) and Lake Salvador (50.4 acres) would be converted to marsh. The project area would not be available for recreation use such as hunting, fishing, and boating during construction (approximately 2 years.) Fishing in waters adjacent to Lake Cataouatche, Yankee Pond, and Lake Salvador may be impacted by increased turbidity caused by dredging and placement activities. Additionally, the floating pipeline in Bayou Segnette would block access temporarily during construction and may cause an inconvenience to boaters traveling in the area.

People bank fishing along the GIWW and recreational users of an undesignated trail would be temporarily displaced during construction activities.

Indirect Impacts
Recreational access to project areas would not be available approximately 8 years after construction until the habitat becomes established. Recreational uses of areas such as Yankee Pond and Lake Salvador would change (decrease in boating and fishing) with the potential of marsh creation to benefit adjacent areas with the improvement of fishery and waterfowl habitat and subsequently fishing and hunting.

Conversion of private land to public land may provide opportunities to the public for future recreational activities depending on the how the land is managed in the future.

5.2.2.7.2 Constructible Feature

Direct and Indirect Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect or cumulative impacts to recreational resources would be incurred from the purchase of these credits for the HSDRRS mitigation.

5.2.2.8 Aesthetic Resources

5.2.2.8.1 Programmatic Features

Direct and Indirect Impacts
The introduction of bottomland hardwoods, swamp and fresh marsh would greatly enhance the visual resources of the project region. Temporary impacts could potentially occur due to construction efforts in the area.

5.2.2.8.2 Constructible Feature

Direct and Indirect Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect or cumulative impacts to aesthetic resources would be incurred from the purchase of these credits for the HSDRRS mitigation.

5.2.2.9 Air Quality

5.2.2.9.1 Programmatic Features

Direct Impacts
During construction of the Jean Lafitte FS Marsh Restoration Project (General), Jean Lafitte FS BLH-Wet Restoration Project (Park/404c), Jean Lafitte FS Swamp Restoration Project (Park/404c), and Jean Lafitte FS Marsh Restoration Project (Park/404c) features, an increase in air emissions could be expected. These emissions could include exhaust emissions from operations of various types of non-road construction equipment such as a cutterhead dredge, back hoe, etc. and from vehicles used to access the project areas. Emission of fugitive dust near the construction areas is not anticipated to be a problem as the sites are relatively small and isolated from the nearby communities and/or by an existing hurricane protection levee.

During construction of the Lake Boeuf FS BLH-Wet Restoration and Lake Boeuf FS Swamp Restoration project features, an increase in air emissions could be expected. These emissions could include 1) exhaust emissions from operations of material delivery and removal/dump trucks and various types of non-road construction equipment such as loaders, excavators, etc. and 2) fugitive dust due to earth disturbance. The principal air quality concern associated with the proposed activities is emission of fugitive dust near demolition and construction areas. The on-road trucks and private autos used to access the work area would also contribute to construction phase air pollution in the project neighborhood when traveling along local roads. Emission of fugitive dust near the construction area is not anticipated to be a problem.

Any site-specific construction effects would be temporary and dust emissions, if any, would be controlled using standard BMPs. Air quality would return to pre-construction conditions shortly after the completion of construction activities. Because the project areas are in parishes in attainment of NAAQS, a conformity analysis is not required.

Indirect Impacts
There would be no adverse indirect impacts to air quality in the parishes with construction of the proposed actions.

5.2.2.9.2 Constructible Feature

Direct and Indirect Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect or cumulative air quality impacts would be incurred from the purchase of these credits for the HSDRRS mitigation.

5.2.2.10 Noise

5.2.2.10.1 Programmatic Features

Direct and Indirect Impacts
Cutterhead dredges and backhoes would be the primary pieces of equipment used for construction of most of the alternatives. Additional construction equipment includes hydro-axes, gyro-tracks, mulchers, dump trucks, slurry pumps, marsh tracked vehicles and barge mounted equipment. These pieces of equipment exceed noise levels above 55 dBA. See appendix B-17 for list of equipment and associated dBA. Noise levels may result in wildlife avoiding the project area during construction; however, movement of equipment during construction would result in the same avoidance behaviors from wildlife species. In addition, noise levels quickly drop off once a buffer is established between the noise source and the receptor (e.g. vegetation). As such, any wildlife in the adjacent habitats should be largely undisturbed by the additional noise from construction of these features.

Residences and commercial facilities near the Jean Lafitte FS BLH and FS Swamp Restoration Projects and the Lake Boeuf FS Swamp and FS BLH Restoration Projects could experience higher than ambient noise levels during construction. However, these levels would be temporary during the period of construction and would be limited to daylight hours. No impact to the human population from noise is anticipated at the Jean Lafitte FS Marsh Restoration Project (General) or the Jean Lafitte FS Marsh or FS Swamp Restoration Projects (Park/404c) as the sites are remote and uninhabited.

5.2.2.10.2 Constructible Feature

Direct and Indirect Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect or cumulative noise impacts would be incurred from the purchase of these credits for the HSDRRS mitigation.

5.2.2.11 Hazardous, Toxic, and Radioactive Waste

5.2.2.11.1 Programmatic Features

Direct, and Indirect
None of the projects sites identified a high probability of encountering HTRW. There are, however, natural-gas and crude-oil pipelines, an injection well, and one directionally-drilled oil well located in several features of the Lake Boeuf restoration sites that must be avoided during the mitigation work.

USACE Engineer Regulation, ER 1165-2-132, Hazardous, Toxic, and Radioactive Waste (HTRW) for Civil Works Projects, states that dredged material and sediments beneath navigable waters proposed for dredging qualify as HTRW only if they are within the boundaries of a site designated

by the EPA or a state for a response action (either a removal or a remedial action) under CERCLA, or if they are a part of a National Priority List (NPL) site under CERCLA. (NPL is also known as "Superfund.") None of the reaches proposed for dredging is included in the National Priority List or within the boundaries of a CERCLA site.

There is a very low probability that the proposed restoration of habitat would encounter HTRW or introduce toxic materials into the mitigation areas. The project may proceed without further investigation of HTRW. If the project location or methods change the probability of HTRW may need to be re-investigated.

5.2.2.11.2 Constructible Feature

Direct, and Indirect
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect or cumulative HTRW impacts would be incurred from the purchase of these credits for the HSDRRS mitigation.

5.2.2.12 Socioeconomics/Land Use, Environmental Justice, Transportation, Navigation, and Commercial Fisheries

5.2.2.12.1 Programmatic Features

Direct and Indirect Impacts
According to 2010 U.S. Census data, there are no residents living with the boundaries of any of the TSMPA projects. There are no anticipated impacts to population, housing, or minority or low-income areas. There is agricultural property within the constructive area, although there are no commercial/industrial properties, public facilities, or transportation infrastructure within the project boundaries therefore there will be no direct impacts to land use. There will be direct land use impacts when privately owned land is converted to public use.

There would be no direct and only minimal indirect impacts to transportation in nearby residential areas during construction activities from heavy vehicles traffic in the vicinity of the restoration site. It is expected that once the necessary construction equipment is on site that no additional transportation impacts would occur until the project construction is complete.

There would be some direct or indirect impacts to navigation as borrow material is obtained from the GIWW. There are no direct or indirect impacts to commercial fishing on any of the nearby waterways from implementation of the project.

5.2.2.12.2 Constructible Feature

Direct and Indirect Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect or cumulative impacts to socioeconomics/landuse, environmental justice, transportation, navigation and commercial fisheries would be incurred from the purchase of these credits for the HSDRRS mitigation.

5.2.2.13 Prime and Unique Farmland

5.2.2.13.1 Programmatic Features

Direct, and Indirect
Approximately 546.2 acres of Prime Farmland (NRCS, 2013) would be impacted by the TSMPA and the associated mitigation roadways including 160.8 acres of Cancienne silty clay loam, 86.7 acres of Cancienne sity loam, and 298.7 acres of Schriever clay. This total includes a reduction in 9.4 acres of impact (including reduction of 5.9 acres of Cancienne silty clay loam, reduction of 1.8 acres of Cancienne sity loam, and a reduction of 1.7 acres of Schriever clay) due to the overlap in required mitigation roadways between the Lake Boeuf FS BLH-Wet and Lake Boeuf FS Swamp projects.

If both of these projects are mitigated separately, the impacts are as follows: approximately 240.6 of these acres (NRCS, 2013) would be impacted by the Lake Boeuf FS BLH-Wet Restoration Project and the associated mitigation roadways including 79.7 acres of Cancienne silty clay loam, 51.5 acres of Cancienne sity loam, and 109.4 acres of Schriever clay. Approximately 315 acres (NRCS, 2013) would be impacted by the Lake Boeuf FS Swamp Restoration Project and the associated mitigation roadways including 87 acres of Cancienne silty clay loam, 37 acres of Cancienne silty loam, and 191 acres of Schriever clay.

Once these sites are developed for mitigation, these areas could not be used as productive farmland in the future.

The TSMPA would result in impacts to 160.8 acres of Cancienne silty clay loam, 86.7 acres of Cancienne sity loam, and 298.7 acres of Schriever clay, which is less than 0.6% of theses soils currently found in Lafourche Parish, being removed from future potential agricultural development. Since the majority of the 546.2 acres impacted is presently farmed, current agricultural production in the parish would be affected.

5.2.2.13.2 Constructible Feature

Direct and Indirect Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct, indirect or cumulative impacts to prime and unique farmland would be incurred from the purchase of these credits for the HSDRRS mitigation.

5.2.2.14 Natural & Scenic Rivers

5.2.2.14.1 Programmatic Features

Direct, and Indirect
There would be no impacts as there are no state or federally designated scenic streams in the vicinity of the programmatic features.

5.2.2.14.2 Constructible Feature

Direct and Indirect Impacts
Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, no new direct,

indirect or cumulative impacts to natural and scenic rivers would be incurred from the purchase of these credits for the HSDRRS mitigation.

5.2.3 MITIGATION PROJECT ALTERNATIVE 2

Mitigation Project Alternative 2 (table 5.2) is a combination of the TSMPs discussed in Section 5.2 with the exception of the constructible TSMPs identified for BLH-Dry and BLH-Wet general impacts (mitigation banks). These projects are replaced with the second ranked projects for the same habitat types. This document has identified the status of projects in this plan as constructible at this time and others that are programmatic and will need additional NEPA documentation during their detail design phase.

Table 5.2 Projects within the MPA2

Mitigation Projects in MPA2	Constructible/Programmatic
Lake Boeuf PS BLH-Dry & BLH-Wet Restoration	Constructible
Lake Boeuf FS BLH-Wet Restoration	Programmatic
Lake Boeuf FS Swamp Restoration	Programmatic
Jean Lafitte FS Marsh Restoration (General)	Programmatic
Jean Lafitte FS BLH-Wet Restoration	Programmatic
Jean Lafitte FS Swamp Restoration	Programmatic
Jean Lafitte FS Marsh Restoration	Programmatic

5.2.3.1 Wetlands and other Surface Waters

5.2.3.1.1 Programmatic Features

Direct and Indirect Impacts
Since the projects identified as programmatic features for this alternative are the same as the TSMPA, the impacts to this significant resource from their implementation are the same as identified under the TSMPA in section 5.2.2.1.1.

5.2.3.1.2 Constructible Features

Direct and Indirect Impacts
There would be a beneficial impact to wetlands as approximately 592 acres of Ag land would be converted to BLH habitat. There would be no indirect impacts to wetlands and other surface waters.

5.2.3.2 Wildlife

5.2.3.2.1 Programmatic Features

Direct and Indirect Impacts
Since the projects identified as programmatic features for this alternative are the same as the TSMPA, the impacts to this significant resource from their implementation are the same as identified under the TSMPA in section 5.2.2.2.1.

5.2.3.2.2 Constructible Features

Direct and Indirect Impacts
Any wildlife present at the time of construction would be temporarily displaced to adjacent habitat due to noise, movement and vibration. It is anticipated they would return once construction is

complete. With the creation of approximately 592 acres of BLH habitat, it is assumed that more species, in abundance and diversity, would utilize the area.

5.2.3.3 Threatened and Endangered Species

5.2.3.3.1 Programmatic Features

Direct and Indirect Impacts
Since the projects identified as programmatic features for this alternative are the same as the TSMPA, the impacts to this significant resource from their implementation are the same as identified under the TSMPA in section 5.2.2.3.1.

5.2.3.3.2 Constructible Features

Direct and Indirect Impacts
No impacts are anticipated as none of the animals under USFWS and/or NMFS jurisdiction are expected to be found in the project area.

5.2.3.4 Fisheries, Aquatic Resources, and Water Quality

5.2.3.4.1 Programmatic Features

Direct and Indirect Impacts
Since the projects identified as programmatic features for this alternative are the same as the TSMPA, the impacts to this significant resource from their implementation are the same as identified under the TSMPA in section 5.2.2.4.1.

5.2.3.4.2 Constructible Features

Direct and Indirect Impacts
There would be no direct, indirect or cumulative impacts to fisheries or aquatic resources due to the construction of this project since the area presently does not currently contain fisheries or aquatic resources. There would be minor temporary direct and indirect impacts to water quality during the clearing and grubbing; grading and tilling necessary to level the surface and prepare the area for planting and to achieve the required elevation. These impacts would be minimized via BMPs that would reduce any potential runoff from the site hence there should be no negative cumulative impacts on water quality. By taking this area out of agricultural production there could be a potential for a reduction in non point source pollution which would have a positive long term indirect and cumulative impact on water quality.

5.2.3.5 Essential Fish Habitat

5.2.3.5.1 Programmatic Features

Direct and Indirect Impacts
Since the projects identified as programmatic features for this alternative are the same as the TSMPA, the impacts to this significant resource from their implementation are the same as identified under the TSMPA in section 5.2.2.5.1.

5.2.3.5.2 Constructible Features

Direct and Indirect Impacts
There would be no direct, indirect or cumulative impacts to EFH due to the construction of this project since the area presently does not currently contain EFH and no new EFH would be created.

5.2.3.6 Cultural Resources

5.2.3.6.1 Programmatic Features

Direct and Indirect Impacts
Since the projects identified as programmatic features for this alternative are the same as the TSMPA, the impacts to this significant resource from their implementation are the same as identified under the TSMPA in section 5.2.2.6.1.

5.2.3.6.2 Constructible Features

Direct Impacts
Constructible features under this alternative include the Lake Boeuf protected side bottomland hardwood-wet and bottomland hardwood-dry restoration projects. Activities associated with these restoration projects have the ability to directly impact cultural resources. The stipulations of the Programmatic Agreement executed on June 18, 2013 would be followed. As individual project features are developed for these Constructible Features, the project would be assessed for its effect on historic properties and survey strategies and the Area of Potential Effect will be coordinated with the LA SHPO, Federally recognized Tribes, and other interested parties as required by the Programmatic Agreement. Identified cultural resources that are determined to be eligible for listing or are listed on the NRHP would be avoided. If avoidance is not possible, mitigation strategies would be developed in accordance with the stipulations of the Programmatic Agreement.

Indirect Impacts
The erosion and land loss caused by natural forces and human activity would continue to impact cultural resources in the WBV basin. The loss of land would continue to threaten the existence and integrity of cultural resources sites. The implementation of measures to restore ecosystems and habitat could work to reduce continued land loss and erosion, and prevent exposure and impact to significant cultural resources. At present the Lake Boeuf project area is primarily used for agriculture. Removing these lands from agricultural use, and associated activities such as plowing, and restoring the areas to bottomland hardwoods could prevent future impacts to cultural resources.

5.2.3.7 Recreation Resources

5.2.3.7.1 Programmatic Features

Direct and Indirect Impacts
Since the projects identified as programmatic features for this alternative are the same as the TSMPA, the impacts to this significant resource from their implementation are the same as identified under the TSMPA in section 5.2.2.7.1.

5.2.3.7.2 Constructible Features

Direct and Indirect Impacts
There would be no direct impacts. Conversion of private land to public land may provide the public future opportunities for recreational activities depending on the how the land is managed in the future.

5.2.3.8 Aesthetic Resources

5.2.3.8.1 Programmatic Features

Direct and Indirect Impacts
Since the projects identified as programmatic features for this alternative are the same as the TSMPA, the impacts to this significant resource from their implementation are the same as identified under the TSMPA in section 5.2.2.8.1.

5.2.3.8.2 Constructible Features

Direct and Indirect Impacts
The introduction of bottomland hardwoods would greatly enhance the visual resources of the Lake Boeuf project area. Temporary impacts could potentially occur due to construction efforts in the area.

5.2.3.9 Air Quality

5.2.3.9.1 Programmatic Features

Direct and Indirect Impacts
Since the projects identified as programmatic features for this alternative are the same as the TSMPA, the impacts to this significant resource from their implementation are the same as identified under the TSMPA in section 5.2.2.9.1.

5.2.3.9.2 Constructible Features

Direct Impacts
During construction of the Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project, an increase in air emissions could be expected. These emissions could include 1) exhaust emissions from operations of material delivery and removal/dump trucks and various types of non-road construction equipment such as loaders, excavators, etc. and 2) fugitive dust due to earth disturbance. The principal air quality concern associated with the proposed activities is emission of fugitive dust near demolition and construction areas. The on-road trucks and private autos used to access the work area would also contribute to construction phase air pollution in the project neighborhood when traveling along local roads.

Any site-specific construction effects would be temporary and dust emissions, if any, would be controlled using standard BMPs. Air quality would return to pre-construction conditions shortly after the completion of construction activities. Construction activities related to the proposed action would not occur all at once, but would occur in increments through the estimated construction period. Because the project areas are in a parish in attainment of NAAQS, a conformity analysis is not required.

Indirect Impacts
There would be no adverse indirect impacts to air quality in the parish with construction of the proposed actions.

5.2.3.10 Noise

5.2.3.10.1 Programmatic Features

Direct and Indirect Impacts
Since the projects identified as programmatic features for this alternative are the same as the TSMPA, the impacts to this significant resource from their implementation are the same as identified under the TSMPA in section 5.2.2.10.1.

5.2.3.10.2 Constructible Features

Direct and Indirect Impacts
Construction equipment necessary for the initial project construction phase would include dump trucks, bulldozers, tractors, graders, and similar equipment. These pieces of equipment exceed noise levels above 55 dBA. Noise levels may result in wildlife avoiding the project area during construction; however, movement of equipment during construction would result in the same avoidance behaviors from wildlife species. Residences could experience higher than ambient noise levels during construction, however these levels would be temporary during the period of construction and would be limited to daylight hours.

5.2.3.11 Hazardous, Toxic, and Radioactive Waste

5.2.3.11.1 Programmatic Features

Direct and Indirect Impacts
Since the projects identified as programmatic features for this alternative are the same as the TSMPA, the impacts to this significant resource from their implementation are the same as identified under the TSMPA in section 5.2.2.11.1.

5.2.3.11.2 Constructible Features

Direct and Indirect Impacts
One REC, a natural gas pipeline, exists in Features BWP1 and BDP2 of the constructible Lake Boeuf PS BLH-Dry & BLH-Wet Restoration. One plugged and abandoned dry hole oil well exists in Feature BDP3. There are no wells or pipelines in BDP1. There is a low probability of encountering HTRW or petroleum products in Features BDP1 and BDP3. Caution must be taken to avoid damage to or breakage of the pipeline in Feature BWP1.

5.2.3.12 Socioeconomics/Land Use, Environmental Justice, Transportation, Navigation, and Commercial Fisheries

5.2.3.12.1 Programmatic Features

Direct and Indirect Impacts
Since the projects identified as programmatic features for this alternative are the same as the TSMPA, the impacts to this significant resource from their implementation are the same as identified under the TSMPA in section 5.2.2.12.1.

5.2.3.12.2 Constructible Features

Direct and Indirect Impacts
Impacts would be similar to those discussed in section 5.2.2.12.1. No disproportionately high or adverse effects on minority or low-income populations would occur.

5.2.3.13 Prime and Unique Farmland

5.2.3.13.1 Programmatic Features

Direct and Indirect Impacts
Since the projects identified as programmatic features for this alternative are the same as the TSMPA, the impacts to this significant resource from their implementation are the same as identified under the TSMPA in section 5.2.2.13.1.

5.2.3.13.2 Constructible Features

Direct and Indirect Impacts
Approximately 601.3 acres of Prime Farmland (NRCS, 2013) would be impacted by the Lake Boeuf PS BLH-Dry and BLH-Wet Restoration Project (591.6 acres) and the associated existing mitigation roadways (9.7 acres) including 376.3 acres of Cancienne silty clay loam, 142 acres of Cancienne sity loam, and 83 acres of Schriever clay. Once the site is developed for mitigation, this area could not be used as productive farmland in the future. The project would result in impacts to 376.3 acres of Cancienne silty clay loam, 142 acres of Cancienne sity loam, and 83 acres of Schriever clay, which is less than 0.6% of the soils currently found in Lafourche Parish, being removed from future potential agricultural development. Since the majority of the project area is presently farmed, current agricultural production in the parish would be affected.

The TSMPA for mitigating general impacts to swamp habitats and the TSMPA for mitigating general impacts to BLH-Wet FS habitats are also located at Lake Boeuf. If these TSMPAs were built, they would require a total of approximately 10.2 miles of roadways encompassing 37.0 acres. Since some of these roadways are coincident with the roadways needed for the BLH-Dry PS & BLH-Wet PS mitigation features, if the cited TSMPAs were built along with the PS mitigation features then the three projects combined would also require a total of approximately 10.2 miles of roadways encompassing 37.0 acres. As a result of all implementation of all three projects, the total impact of 1,137.8 acres to Prime Farmland would include, 532 acres of Cancienne silty clay loam, 224.8 acres of Cancienne sity loam, 381 acres of Schriever clay) with removal of all overlapping mitigation roadways or 19.1 acres (NRCS, 2013). Therefore, the total impact to Prime Farmland would be less than 1.1% of the soils currently found in Lafourche Parish, being removed from future potential agricultural development. Since the majority of the 1,137.8 acres impacted is presently farmed, current agricultural production in the parish would be affected.

5.2.3.14 Natural and Scenic Rivers

5.2.3.14.1 Programmatic Features

Direct and Indirect Impacts
Since the projects identified as programmatic features for this alternative are the same as the TSMPA, the impacts to this significant resource from their implementation are the same as identified under the TSMPA in section 5.2.2.14.1.

5.2.3.14.2 Constructible Features

Direct and Indirect Impacts
There would be no impacts as there are no state or federally designated scenic streams in the vicinity of the constructible features.

6.0 CUMULATIVE IMPACTS

NEPA requires a Federal agency to consider not only the direct and indirect impacts of a proposed action, but also the cumulative impacts of the action. Cumulative impact is defined 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 (40 CFR 1508.7)." Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Cumulative impacts were addressed for each project and resource in the preceding sections and include both beneficial and adverse impacts depending on the resource. This section provides an overview of other actions, projects, and occurrences that may contribute to the cumulative impacts previously discussed.

Appendix B-20 shows the impact of the other past, present and reasonably foreseeable projects in the WBV basin on the significant resources documented in this PIER. The ecosystem restoration type projects in the basin work to enhance and restore historic ecosystem processes within the basin. Although these projects may result in temporal impacts and tradeoffs among the species within the significant resources, their overall effects on the system from a human and natural environmental perspective would be wholly positive. The structural projects, to a large degree, produce socioeconomic benefits (primarily in the form of navigation or flood control) that are the impetus for their construction. Though impacts to the natural environment from construction of these projects have been avoided to the maximum extent practicable, remaining unavoidable impacts would require mitigation. Environmental Justice impacts have been avoided during design of these projects however, these projects have resulted in impacts to the aesthetics and recreational opportunities within the system. Some of these projects have had impacts to cultural resources in the basin; however, those impacts have been mitigated by excavating the site, removing the cultural pieces, and documenting the site. In the same vein, construction of many of the structural features (e.g. levee systems) in the FWOP has resulted in the protection of cultural sites found within the protection of the levee system. Ecosystem restoration plans in the WBV basin and in the region that improve estuarine habitat also provide benefits to the commercial fishing industry.

Overall cumulative impacts from implementation of all features in the TSMPA will be presented in the phase of the CED completed after all TIERs for WBV HSDRRS mitigation are complete.

6.1 NO ACTION

The overall loss of fresh marsh, BLH, and swamp within the system combined with other habitat loss incurred from implementation of projects in the FWOP conditions could have cumulative adverse impacts to wildlife, fisheries, aquatic resources, water quality, EFH and recreational resources.

6.2 TSMPA

6.2.1 CONSTRUCTIBLE FEATURE

No new cumulative impacts to any resource would be incurred from the purchase of credits from a previously approved mitigation bank for the HSDRRS mitigation under the TSMPA. Since the purchase of mitigation bank credits would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions, the constructible feature would only have new potential impacts on the availability of mitigation bank credits for BLH-Wet in the basin. In the event sufficient credits are not available for these habitat types to offset impacts associated with a

proposed permit, the district engineer would determine appropriate compensatory mitigation based on the factors described in 33 CFR Part 332.3(b).

Implementation of the proposed action in consideration of the impacts of all other past, present, and reasonably foreseeable projects have on the significant resources in the basin would be cumulatively neutral as it would offset the loss of 261.96 AAHUs of BLH habitat within the WBV basin without incurring any new adverse impacts.

6.2.2 PROGRAMMATIC FEATURES

The TSMPA would prevent an overall loss in the basin of fresh marsh as well as BLH-Wet, BLH-Dry and swamp habitat. This project, when added to other past, present, and reasonably foreseeable ecosystem restoration and mitigation projects in the basin would help retard the loss of wetlands and combat the current trend of conversion of marsh to open water. There would be an overall loss of open water habitat in the WBV basin, but no permanent adverse impacts are anticipated because this habitat is prevalent throughout the basin. Impacts to SAVs would be mitigated along with the TSMPA mitigating for fresh marsh.

6.2.2.1 Wetlands and other Surface Waters

The TSMPA would prevent an overall loss in the basin of fresh marsh as well as BLH-Wet, BLH-Dry and swamp habitat. This project, when added to other past, present, and reasonably foreseeable ecosystem restoration and mitigation projects in the basin would help retard the loss of wetlands and combat the current trend of conversion of marsh to open water. There would be an overall loss of open water habitat in the WBV basin, but no permanent adverse impacts are anticipated because this habitat is prevalent throughout the basin. Impacts to SAVs would be mitigated along with the TSMPA mitigating for fresh marsh.

6.2.2.2 Wildlife

The TSMPA would prevent an overall loss in the basin of wetland habitat necessary for many wildlife species. This project, in conjunction with other past, present, and reasonably foreseeable ecosystem restoration and mitigation projects in the basin would help retard the overall decline of wildlife species within the basin and would be beneficial in preserving species bio-diversity.

6.2.2.3 Threatened and Endangered Species

Potential cumulative impacts to the threatened or endangered species (manatee and Pallid sturgeon) that could occur in the vicinity of the project area from construction of the TSMPA would involve the combined adverse effects on each species from the other projects within the WBV basin. Due to the large size of the lakes, the relatively small size of the borrow areas, the temporary nature of the borrow activities, the sediments in the borrow area, the depth of excavation, the use of cutterhead dredges for borrow procurement, the duration of dredging, the ability of benthic species to quickly re-colonize the borrow areas, the ability of T&E species to avoid the project area during the construction period, and the use of protection measures the TSMPA would add very little and only temporary impacts to any other impacts resulting from past, present and reasonably foreseeable projects in the basin and would not contribute significantly to cumulative impacts to threatened and endangered species or their habitat in the basin.

6.2.2.4 Fisheries, Aquatic Resources, and Water Quality

Although there would be a loss of open water from construction of this project, these habitats are found in abundance throughout the WBV basin. The resulting marsh would be cumulatively neutral in the form of additional spawning, nursery, forage and cover habitat for important fish species in the WBV basin because this off setting losses due to construction of the WBV HSDRRS. Though construction of these projects would result in the loss of fisheries habitat, some fish, and temporary impacts to water quality and benthic habitat; this habitat is abundant throughout the basin, impacts to existing fisheries are minimal, and water quality and benthic species would rebound once project construction is complete. As such, construction of this project would result in minimal loss to fisheries, aquatic resources, and water quality experienced in the basin from the past, present and reasonably foreseeable projects in the basin. The reinstitution of BLH, fresh marsh and swamp in areas that are currently open water could provide indirect benefits to fisheries in the future by providing nutrients to the system in the form of detritus. As a result of borrow placement and the type of containment utilized for this project, land adjacent to the mitigation project may receive material suspended in the dredge effluent. This would nourish adjacent marsh habitat and may cause adjacent shallow open water to become shallower or be filled; encouraging the existing habitat to move through early successional phases faster.

These temporary impacts to water quality would add incrementally to similar cumulative impacts throughout the WBV basin as other projects listed in the FWOP conditions are constructed, causing temporary decreases in water quality throughout the basin. However, those projects in the FWOP conditions which include marsh restoration as well as the proposed action for HSDRRS Mitigation could have the long-term beneficial impact of increased dissolved oxygen and increased filtration which helps control local turbidity. The temporary water impacts from placement and borrow excavation are not anticipated to be substantial enough to cause water quality impairment under the standards of Louisiana Administrative Code, Title 33, Part IX, Chapter 11. Although there would be a loss of open water from construction of the TSMPA, open water is found in abundance throughout the WBV basin. Turbidity impacts in the borrow excavation areas would temporarily add to the water quality impairment of the associated hydrologic unit through increased turbidity which could cause localized dissolved oxygen depletion, but these impacts would be minimized through BMPs and would cease after construction.

6.2.2.5 Essential Fish Habitat

This project would cause one type of EFH in the WBV basin to be replaced by another type of EFH. The switching of EFH types from construction of the proposed project is not anticipated to have a significant impact to the overall EFH in the WBV basin. Impacts to cover and foraging for managed species are not anticipated to contribute significant increases in cumulative impacts to managed species as the borrow areas are small in size compared to the available EFH habitat in the basin providing similar habitat. The conversion of EFH to non EFH would be mitigated and as such not contribute to a net adverse cumulative impact.

6.2.2.6 Cultural Resources

Cumulative impacts to cultural resources would be the additive combination of impacts by this and other Federal, state, local, and private restoration efforts, and would be further developed on a project-by-project basis as required by the NHPA. Any additional evaluations would include examination of records of known sites and an intensive cultural resources inventory in areas determined to have a high probability of historic and cultural resources. Mitigation, usually in the form of avoidance, would be necessary if a determination was made that significant cultural resources would be impacted by a

proposed action. Cultural resources in the region would continue to be impacted by construction and development as well as by the evolution of the landscape due to natural processes.

6.2.2.7 Recreational Resources

Restoration/enhancement of fish and wildlife habitat would increase use of the project sites by desirable species which would consequently provide a better recreational experience. Recreational impacts could be considered cumulatively beneficial when added to the recreational opportunities provided at adjacent refuges and other existing recreational areas in the basin. However, since this is mitigation, which replaces impacted habitats, recreational resources dependant on these habitats would merely shift from the area of impact to the area of mitigation, preventing the loss of recreational resources in the basin. The impacts associated with utilization of the borrow sites for construction of the mitigation projects would be short term and not result in a significant increase in cumulative impacts to recreational resources in the basin.

6.2.2.8 Aesthetic Resources

Approximately 170 acres of water would be converted to fresh marsh, BLH-Wet, and swamp thus increasing the types of land mass, vegetation and wildlife that is viewable. Overall, this impact is expected to be minor since there are approximately 124,000 acres of water in the WBV Basin. Additionally, restoration/enhancement of fish and wildlife habitat would increase use of the project sites by desirable species which would consequently provide a better viewing experience at adjacent recreational areas, major roadways, and private lands. The impacts associated with utilization of the borrow sites for construction of the mitigation projects would be short term and not result in a significant increase in cumulative impacts to visual resources in the basin. Aesthetic resources in the region would continue to be impacted by construction and development as well as by the evolution of the landscape due to natural processes.

6.2.2.9 Air Quality

Cumulative impacts to air quality in the project area due to construction of TSMPA in addition to the other construction activities within the WBV basin that may be occurring concurrently would be temporary and would be very minimal, especially considering that placement of dredged material would not create fugitive dust. After the construction period, there would be no incremental contribution to cumulative air quality impacts due to the proposed action. All project areas are located in parishes in attainment of NAAQS.

6.2.2.10 Noise

Construction of the TSMPA is not anticipated to add significantly to the cumulative effect of noise in the WPV basin as the construction activities would be temporary and restricted to daylight hours. Most of the projects are situated in remote areas and noise from construction activities buffered by vegetation.

6.2.2.11 Hazardous, Toxic, and Radioactive Waste

No cumulative impacts are anticipated.

6.2.2.12 Socioeconomics/Land Use, Environmental Justice, Transportation, Navigation, and Commercial Fisheries

The cumulative impacts of the projects, when added to other past, present, and reasonably foreseeable ecosystem restoration, mitigation or other type projects in the basin would minimally and temporarily affect socio-economic resources. Due to the relatively small number of mitigation bank credits to be purchased, the remote and generally unpopulated areas where the projects would be constructed, the temporary nature of the project construction activities and the duration of enhancement projects, the TSMPA would add very little and only temporary impacts to any other impacts resulting from past, present and reasonably foreseeable projects in the region and would not contribute significantly to cumulative impacts to socio-economic resources in the basin.

Impacts from restoration projects can temporarily disrupt transportation, navigation and commercial fishing in project areas during construction activities including dredging and material placement in the restoration areas. Land use impacts, such as impacts to commercial/industrial properties and public facilities impacts are not anticipated as TSMPs are typically located in unpopulated areas. However, agricultural land in the Lake Boeuf Restoration area will be directly impacted as it is converted from private to public use.

6.2.2.13 Prime and Unique Farmland

Since the majority of the Lake Boeuf PS BLH-Wet and Swamp project areas are presently farmed, a loss of agricultural production in the parish would occur. However, the cumulative impacts to prime and unique farmland in the project area due to construction of TSMPA would affect such a small amount of prime farmland as to have a negligible effect on agricultural production in the parish.

6.2.2.14 Natural and Scenic Rivers

No scenic streams are located in the project area.

6.3 MPA2

6.3.1 CONSTRUCTIBLE FEATURES

Constructible features of MPA2 consist of the construction of the Lake Boeuf projects mitigating for general impacts to PS BLH-Wet and BLH-Dry.

6.3.1.1 Wetlands and other Surface Waters

The MPA2 would prevent an overall loss in the basin of BLH-Wet and BLH-Dry habitat. This project, when added to other past, present, and reasonably foreseeable ecosystem restoration and mitigation projects in the basin would help retard the loss of wetlands by converting agricultural land to wetland habitat. However, as this mitigation plan would serve as compensatory mitigation for habitat losses caused by construction of the HSDRRS, the net gain would be zero.

6.3.1.2 Wildlife

This project, in conjunction with other past, present, and reasonably foreseeable ecosystem restoration and mitigation projects in the basin would help retard the overall decline of wildlife species within the basin and would be beneficial in preserving species bio-diversity.

6.3.1.3 Threatened and Endangered Species

No anticipated impacts as no threatened and endangered species are believed to occur in the MPA2 area.

6.3.1.4 Fisheries, Aquatic Resources, and Water Quality

No anticipated impacts as the project is land based.

6.3.1.5 Essential Fish Habitat

No anticipated impacts as there is no essential fish habitat in the MPA2 area.

6.3.1.6 Cultural Resources

Cumulative impacts to cultural resources would be the additive combination of impacts by this and other Federal, state, local, and private restoration efforts, and would be further developed on a project-by-project basis as required by the NHPA. Any additional evaluations would include examination of records of known sites and an intensive cultural resources inventory in areas determined to have a high probability of historic and cultural resources. Mitigation, usually in the form of avoidance, would be necessary if a determination was made that significant cultural resources would be impacted by a proposed action. Cultural resources in the region would continue to be impacted by construction and development as well as by the evolution of the landscape due to natural processes.

6.3.1.7 Recreational Resources

Restoration of wildlife habitat would increase use of the project site by desirable species which would consequently provide a better recreational experience. Recreational impacts could be considered cumulatively beneficial when added to the recreational opportunities provided at adjacent refuges and other existing recreational areas in the basin. However, since this is mitigation, which replaces impacted habitats, recreational resources dependant on these habitats would merely shift from the area of impact to the area of mitigation, preventing the loss of recreational resources in the basin.

6.3.1.8 Aesthetic Resources

Restoration of wildlife habitat would increase use of the project sites by desirable species which would consequently provide a better viewing experience at adjacent recreational areas, major roadways, and private lands.

6.3.1.9 Air Quality

Cumulative impacts to air quality in the project area due to construction of MPA2 in addition to the other construction activities within the WBV basin that may be occurring concurrently would be temporary and would be very minimal. After the construction period, there would be no incremental contribution to cumulative air quality impacts due to the proposed action. The project area is located in a parish in attainment of NAAQS.

6.3.1.10 Noise

Construction of the MPA2 is not anticipated to add significantly to the cumulative effect of noise.

6.3.1.11 Hazardous, Toxic, and Radioactive Waste

No cumulative impacts are anticipated.

6.3.1.12 Socioeconomics/Land Use, Environmental Justice, Transportation, Navigation, and Commercial Fisheries

The cumulative impacts of the projects, when added to other past, present, and reasonably foreseeable ecosystem restoration, mitigation or other type projects in the basin would minimally and temporarily affect socio-economic resources. Agricultural land in the Lake Boeuf Restoration area will be directly impacted as it is converted from private to public use.

6.3.1.13 Prime and Unique Farmland

Since the majority of the Lake Boeuf BLH-Wet and BLH-Dry project areas are presently farmed, a loss of agricultural production in the parish would occur. However, the cumulative impacts to prime and unique farmland in the project area due to construction of MPA2 would affect such a small amount of prime farmland as to have a negligible effect on agricultural production in the parish.

6.*3.1.*14 Natural and Scenic Rivers

No scenic rivers are located in the project area.

6.3.2 PROGRAMMATIC FEATURES

Since the MPA2 utilizes the same programmatic features as the TSMPA, cumulative impacts for the programmatic features of MPA2 would be the same as those for the TSMPA as found in section 6.1.2.

7. MITIGATION SUCCESS CRITERIA, MITIGATION MONITORING AND REPORTING, AND ADAPTIVE MANAGEMENT

General success criteria and monitoring including planting guidelines for the mitigation projects can be found in appendix L. Specific success criteria and monitoring for the Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project can be found in appendix M.

The purpose of adaptive management activities in the life-cycle of the project is to address ecological and other uncertainties that could prevent successful implementation of a project. Adaptive management (AM) also establishes a framework for decision making that utilizes monitoring results and other information, as it becomes available, to update project knowledge and adjust management/mitigation actions. Hence, early implementation of AM and monitoring allows for a project that can succeed under a wide range of conditions and can be adjusted as necessary. Furthermore, careful monitoring of project outcomes both advances scientific understanding and helps adjust operations changes as part of an iterative learning process. See appendix N for the AM Plan.

Each Corps constructed TSMP would have a contingency plan for taking corrective actions in cases where monitoring demonstrates that the mitigation feature is not achieving ecological success in accordance with its success criteria. For the TSMP project where credits would be purchased from a mitigation bank, the mitigation bank must be in compliance with the requirements of the USACE Regulatory Program and its MBI, which specifies the management, monitoring, and reporting required to be performed by the bank. Purchase of mitigation bank credits relieves the CEMVN and NFS of the responsibility for monitoring and of demonstrating mitigation success.

An effective monitoring program is required (WRDA 2007, Section 2036) to determine if the project outcomes are consistent with the identified success criteria. A Monitoring Plan has been developed for each habitat type within the TSMP. See appendix L for the Monitoring Plan. The plan identifies success criteria and targets, a general schedule for the monitoring events and the specific content for the monitoring reports that measure progress towards meeting the success criteria. A detailed monitoring plan including the transect, sampling plot and gage locations, and monitoring frequency would be developed for the TSMP projects in coordination with the local Sponsor and the Interagency Mitigation Team following completion of the design of the TSMP projects. In the case that the constructible feature of the TSMPA (purchase of mitigation bank credits for general PS BLH impacts) is not implemented, a detailed monitoring plan for the constructible features of MPA2 (Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project for general PS BLH impacts) has been developed and can be found in appendix M. The AM Plan for the Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project can be found in appendix N.

The proposed mitigation action could include construction, with the NFS responsible for operation and maintenance of functional portions of work as they are completed. On a cost shared basis, USACE will monitor completed mitigation to determine whether additional construction, invasive species control and/or planting are necessary to achieve mitigation success. USACE will undertake additional actions necessary to achieve mitigation success in accordance with cost sharing applicable to the project and subject to the availability of funds. Once USACE determines that the mitigation has achieved initial success criteria, monitoring will be performed by the NFS as part of its OMRR&R obligations. If, after meeting initial success criteria, the mitigation fails to meet its intermediate and/or long-term ecological success criteria, USACE will consult with other agencies and the NFS to determine whether operational changes would be sufficient to achieve ecological success criteria. If, instead, structural changes are deemed necessary to achieve ecological success, USACE will implement appropriate adaptive

management measures in accordance with the contingency plan and subject to cost sharing requirements, availability of funding, and current budgetary and other guidance.

8. COORDINATION AND CONSULTATION

8.1 PUBLIC INVOLVEMENT

Extensive public involvement has been sought in planning the mitigation for HSDRRS impacts. A public notice of the NEPA Alternative Arrangements was published in the Federal Register on 13 March 2007 (Federal Register Volume 72, No. 48) which included a commitment to analyze alternatives to determine appropriate mitigation. The notice is also available on the website www.nolaenvironmental.gov.

The following public meetings were held to obtain public input on the planning process for WBV HSDRRS mitigation, to obtain any suggestions on potential projects to mitigate WBV HSDRRS impacts, and to update the public on the project status:

1. 31 August 2009 at U.S. Army Corps of Engineers Office in New Orleans, LA
2. 13 May 2010 at Delgado Community College Westbank in Algiers, LA
3. 17 May 2010 at Westwego Tassin Senior Center in Westwego, LA
4. 19 May 2010 at NP Trist Middle School in Meraux, LA
5. 9 December 2010 at Westwego Tassin Senior Center in Westwego, LA
6. 31 July 2012 at Westwego Tassin Senior Center in Westwego, LA
7. 21 May 2014 at Mathews Government Complex in Mathews, LA

Public notices for each meeting ran in local newspapers and press releases were disseminated to the media in advance of each meeting. The public was able to provide verbal comments during the meetings, written comments after each meeting in person, by mail, and via www.nolaenvironmental.gov. Additional, public comments are accepted anytime during the IER process via www.nolaenvironmental.gov. The presentations given at all of these meetings can be found at www.nolaenvironmental.gov.

The Draft PIER was distributed for a 30-day public review and comment period beginning April 4, 2014 and ending May 5, 2014. A public meeting was held in Lafourche Parish on May 21, 2014. Additional public comments were accepted through May 23, 2014.

8.2 AGENCY COORDINATION

Preparation of this PIER has been coordinated with appropriate Congressional, Federal, state, and local interests, as well as environmental groups and other interested parties. An interagency environmental team was established for this project in which Federal and state agency staff played an integral part in the project planning and alternative project analysis phases of the project (members of this team are listed in appendix O). This interagency environmental team was integrated with the CEMVN PDT to assist in the planning of this project and to complete a determination of the potential direct and indirect impacts of the proposed action. Monthly meetings with resource agencies were also held concerning this and other CEMVN IER projects. The following agencies, as well as other interested parties, are receiving copies of this draft IER:

U.S. Department of the Interior, Fish and Wildlife Service
U.S. Department of the Interior, National Park Service
U.S. Environmental Protection Agency, Region VI
U.S. Department of Commerce, National Oceanic and Atmospheric Administration, NMFS

U.S. Natural Resources Conservation Service
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
Coastal Protection and Restoration Authority Board

Since the purchase of mitigation bank BLH-Wet credits for general PS BLH impacts (constructible feature of the TSMPA) would occur at an existing approved bank and since permitted banks exist as reasonably foreseeable projects in the FWOP conditions; no new direct, indirect or cumulative impacts to threatened and endangered species or their critical habitat would occur that would require coordination with USFWS or NOAA, NMFS. In addition, a Water Quality Certificate from the State of Louisiana; public review of a Section 404(b)(1) Public Notice and signature of a Section 404(b)(1) Evaluation; receipt and acceptance or resolution of LDEQ comments on the air quality impact analysis; and receipt and acceptance or resolution of EFH recommendations would not be necessary for implementation of the constructible feature of the TSMPA. However, if acceptable bids for the sale of bank credits are not received and the USACE determines that MPA2 containing the Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project for general PS BLH impacts as constructible features would be implemented instead of the TSMPA, the aforementioned coordination with the resource agencies and evaluations, including consistency with the Louisiana Coastal Resources Program (LCRP) and completion of Section 106 consultation, would occur for those projects at that time.

Coordination with resource agencies will be on going as CEMVN develops the TIERs for each programmatic feature.

The LDNR reviewed the proposed action for consistency with the LCRP, established under section 307 of the Coastal Zone Management Act of 1972 (16 USC 1451). The proposed action was found to be consistent with the LCRP, as per a letter dated 25 February 2014 (Appendix Q).

Section 106 of the NHPA, as amended, requires consultation with the LA SHPO and Native American tribes. Eleven Federally-recognized tribes that have an interest in the region have been given the opportunity to review the proposed action. A programmatic agreement has been developed through coordination with the LA SHPO, Advisory Council on Historic Preservation, Federally recognized Indian tribes and other interested parties for the HSDRRS Mitigation. The programmatic agreement was executed 18 June 2013 (Appendix Q) and CEMVN will comply with stipulations agreed to in the programmatic agreement. As a result, Section 106 consultation is complete for the current constructible TSMP.

Coordination with the USFWS on the Alternative Arrangements process was initiated by letter on 13 March 2007, and concluded on 6 August 2007. A draft Fish and Wildlife Coordination Act Report (CAR) for the PIER was provided by the USFWS on 21 February 2014. The final Fish and Wildlife CAR was provided by USFWS on May 27, 2014. The CAR concluded that the USFWS does not object to the construction of the proposed project provided that fish and wildlife conservation recommendations are implemented concurrently with project implementation. A copy of the final report is provided in appendix Q. The USFWS project-specific recommendations for the PIER #37 proposed action are listed below:

Recommendation 1: Impacts to Essential Fish Habitat (EFH) should be avoided and minimized to the greatest extent possible. Because impacts to designated EFH habitat may need to be mitigated the Corps should coordination with the NMFS regarding this need.

CEMVN Response 1: Concur. The USACE would seek to avoid impacts to EFH and would coordinate with NMFS on any unavoidable impacts.

Recommendation 2: Impacts to wetland habitat (including SAV habitat) and non-wet BLH associated with the construction of the mitigation features should be avoided and minimized to the greatest extent possible. The Corps shall fully compensate for any unavoidable losses of wetland habitat or non-wet BLH caused by mitigation features preferably through resizing of the mitigation features in close coordination with the natural resource agencies.

CEMVN Response 2: Concur.

Recommendation 3: Sediment borrow sites for the marsh creation areas should be designed to avoid and minimize impacts to water quality. The general guidelines for borrow design found in Appendix B should be incorporated into project design, and close coordination with the natural resource agencies should continue since borrow design can be case specific and influenced by a number of factors.

CEMVN Response 3: Concur. Best management practices would be employed to minimize impacts to water quality from borrow dredging activities. The general guidelines for borrow pit design would be incorporated into the design to the maximum extent practicable. Close coordination with the natural resource agencies would continue on the mitigation project designs.

Recommendation 4: Prior to beginning work on IERs tiered off of this PIER the Corps should coordinate with the natural resource agencies to ensure that necessary information to conduct detailed project planning/design and finalize the WVA analysis is developed and available. Final sizing of mitigation must be based on revised WVAs conducted on advanced project designs.

CEMVN Response 4: Concur. Coordination with the natural resource agencies to ensure that necessary information to conduct detailed project planning/design and finalize the WVA analysis will occur as early in the process as possible. Final sizing of mitigation projects would be based on revised WVAs conducted on advanced project designs.

Recommendation 5: Further detailed planning of project features (e.g., Design Documentation Report, Engineering Documentation Report, Plans and Specifications, Water Control Plans, or other similar documents) should be coordinated with the Service, NMFS, LDWF, EPA and Louisiana Department of Natural Resources (LDNR). The Service shall be provided an opportunity to review and submit recommendations on the all work addressed in those reports.

CEMVN Response 5: The USFWS and other resource agencies would be provided an opportunity to review and comment on the proposed HSDRRS mitigation plans during the project feasibility study and Pre-Construction Engineering and Design.

Recommendation 6: If applicable, a General Plan should be developed by the Corps, the Service, and the managing natural resource agency in accordance with Section 3(b) of the FWCA for mitigation lands.

CEMVN Response 6: Concur

Recommendation 7: A fully defined mitigation plan should be included in the authorizing report and Decision Record. The mitigation plan should be developed including locations and AAHUs vetted through the natural resource agencies. Only existing mitigation banks and existing credits released by Corps Regulatory Branch may be considered.

CEMVN Response 7: The USACE will comply with the Water Resources Development Act of 2007, Sections 2036(a) and 2036(c) and relevant USACE regulations and guidance in its development of mitigation plans and will coordinate with the natural resource agencies in the development of such plans.

Recommendation 8: We recommend that the Corps consider the availability of credits at a bank and within a hydrologic unit when evaluating the mitigation bank alternative to avoid exhausting credits available for individual landowners/permittees within a particular hydrologic unit.

CEMVN Response 8: Acknowledged.

Recommendation 9: If mitigation lands are purchased for inclusion within publicly managed lands, those lands may need to meet certain requirements. Land-managing natural resource agencies may have requirements that must be met prior to accepting mitigation lands; therefore, if they are proposed as a manager of a mitigation site they should be contacted early in the planning phase regarding such requirements. The local sponsor should also be made aware of the above requirements should it be their responsibility to transfer mitigation lands to the land-managing agency.

CEMVN Response 9: If mitigation lands are purchased for inclusion within publicly managed lands, the CEMVN would work to meet the basic mitigation land requirements to the maximum extent possible. The Non-Federal Sponsor is responsible for operation and maintenance of the HSDRRS project, including the mitigation features. Where mitigation features are located on Federal lands, the appropriate agency and the Non-Federal Sponsor would need to coordinate management of the mitigation project. Where mitigation projects are to be constructed on lands within a Federal agency's jurisdiction, that agency will be consulted regarding any requirements that will be applicable to those lands.

Recommendation 10: The Corps should continue to coordinate with land managing agencies during planning of mitigation features that may be built on their lands or lands to be turned over to them for management. Coordination should continue until construction of the projects are complete and prior to any subsequent maintenance. Points of contacts National Park Service (NPS) lands within the area please contact Superintendent Lance Hatten, (504) 589-3882 extension 108, (lance_hatten@nps.gov) or Chief of Resource Management Guy Hughes (504) 589-3882 extension 128, (guy_hughes@nps.gov). Please contact Mr. John Lavin at 1-888-677-1400 regarding work on the Bayou Segnette State Park which is operated by the Louisiana Department of Culture, Recreation and Tourism, Office of State Parks areas.

CEMVN Response 10: Concur.

Recommendation 11: Because of the uncertainty regarding total impacts to the JLNHPP, the Service recommends that the Corps delay any final design work and continue to coordinate with the JLNHPP staff prior to finalizing mitigation features that may be affected by the final determination of on park impacts.

CEMVN Response 11: The USACE does not concur that there is uncertainty regarding the total impacts to the JLNHPP. The USACE will continue to consult with JLNHPP staff regarding mitigation projects on JLNHPP lands.

Recommendation 12: If the local project-sponsor is unable to fulfill the financial mitigation requirements for operation and/or maintenance of mitigation lands, then the Corps should provide the necessary funding to ensure mitigation obligations are met on behalf of the public interest.

CEMVN Response 12: Project Partnership Agreements (PPAs) between the Federal government and the Non-Federal Sponsor (CPRA in this case) have been executed for the LPV and WBV HSDRRS projects, and these PPAs provide the requisite high level of confidence that the Non-Federal Sponsor will fulfill its obligations to operate and to maintain the HSDRRS mitigation projects. In the event that the Non-Federal Sponsor fails to perform, CEMVN has the right to complete, operate, maintain, repair, rehabilitate, or replace any project feature, including mitigation features. However, such an action would not relieve the Non-Federal Sponsor of its responsibility to meet its obligations and would not preclude the Federal government from pursuing any remedy at law or equity to ensure the Non-Federal sponsor's performance.

Recommendation 13: Any proposed change in mitigation features or plans should be coordinated in advance with the Service, NMFS, LDWF, EPA and LDNR.

CEMVN Response 13: Concur

Recommendation 14: The Service encourages the Corps to finalize mitigation plans and proceed to mitigation construction so that it will be concurrent with project construction. If construction is not concurrent with mitigation implementation then revising the impact and mitigation period-of-analysis to reflect additional temporal losses will be required

CEMVN Response 14: The USACE shares your goal of implementing mitigation as quickly as possible. If delays are experienced such that mitigation project implementation takes longer than what was previously estimated, the USACE would work with the resource agencies to determine whether such delays could necessitate extending the current period of analysis associated with the habitat impacts and whether additional temporal loss to the habitats in question would result in a larger mitigation requirement.

Recommendation 15: The Service recommends that the Corps immediately finalize selection and approval of mitigation and augmentation features in coordination with federal and state natural resource agencies and with required approval from EPA. All necessary studies for the mitigation and augmentation features have been completed and agencies have reached agreement on those features. Further, the Service recommends that all such mitigation and augmentation features be implemented as soon as possible. All terms and conditions specified in the EPA 2009 Modification to the Bayou aux Carpes CWA Section 404(c) Final Determination should be followed with regard to mitigation and augmentation requirements.

CEMVN Response 15: The CEMVN continues to work in coordination with the IET to finalize selection of the augmentation features. The CEMVN is working to include the augmentation features in the TIER addressing WBV HSDRRS impacts to the JLNHPP and 404(c) area. The USACE will comply with the terms and conditions of the EPA Bayou aux Carpes 404(c) modification and will fulfill its obligations under that modification as quickly as possible given agency resource constraints.

Recommendation 16: The Corps should immediately develop a long-term monitoring plan for the Bayou aux Carpes 404(c) area, as required under the EPA 2009 Modification to the Bayou aux Carpes CWA Section 404(c) Final Determination. The plan should be coordinated with the natural resources agencies and approved by EPA. All terms and conditions specified in the EPA 2009 Modification to the Bayou aux Carpes CWA Section 404(c) Final Determination with regard to the long-term monitoring and operation plan should be followed. Once approved, that plan should be implemented as soon as possible.

CEMVN Response 16: Development of long-term monitoring plan for the Bayou aux Carpes 404(c) area, as required under the EPA 2009 Modification to the Bayou aux Carpes CWA Section 404(c) Final Determination will proceed as quickly as possible and will be coordinated with coordinated with the natural resources agencies and approval sought by EPA.

Recommendation 17: The Service recommends that all of the terms and conditions outlined in the EPA Bayou aux Carpes 404(c) 2009 modification be implemented without delay. The Corps is responsible for funding all mitigation and augmentation features in this agreement. A link to the 2009 final modified determination may be found at www.nolaenvironmental.gov under the EPA heading for IER 12.

CEMVN Response 17: The USACE will comply with the terms and conditions of the EPA Bayou aux Carpes 404(c) modification and will fulfill its obligations under that modification as quickly as possible given agency resource constraints.

Recommendation 18: The Service recommends that the Corps work with the natural resource agencies to incorporate proposed modifications (Appendix G) and finalize the "GUIDELINES – WET BLH HABITAT ENHANCEMENT, SWAMP HABITAT RESTORATION, AND SWAMP HABITAT ENHANCEMENT" and incorporate all changes in the Mitigation Success Criteria and Mitigation Monitoring: Marsh Mitigation Features from the LPV PIER 36.

CEMVN Response 18: The guidelines cited by USFWS, which actually now include guidelines for fresh marsh and intermediate marsh mitigation, were originally developed as very generalized guidelines for use in developing and evaluating potential LPV and WBV HSDRRS mitigation projects that would be Corps-constructed. The main objective for these guidelines was to help ensure consistency between LPV and WBV mitigation projects as regards things such as future with project WVA models, mitigation design concepts, and estimated mitigation costs (construction, implementation, maintenance, monitoring and reporting, etc.).

Programmatic Individual Environmental Reports (PIERs) and Tiered Individual Environmental Reports (TIERs) are being prepared for the LPV HSDRRS mitigation and for the WBV HSDRRS mitigation. In cases involving Corps-constructed mitigation projects, these documents (PIERs or TIERs) would contain project-specific information pertaining to the proposed mitigation work plan, mitigation success criteria, mitigation monitoring and reporting, mitigation management/maintenance, and, if necessary, proposed adaptive management plan for each TSMP. In cases where the TSMP is to purchase credits from a mitigation bank, the PIERs or TIERs would also provide similar project-specific information for the highest ranked Corps-constructed mitigation project that would likely be used if it were ultimately determined that purchase of mitigation bank credits is no longer the best project to mitigate for that habitat type. The project-specific mitigation information developed would supersede the cited general guidelines. The USACE would continue to coordinate with USFWS, other resource agencies, and other members of the PDT in preparing components of the project-specific mitigation programs.

Recommendation 19: The Service recommends that the Corps maintain full responsibility for any BLH mitigation project for a minimum of 4-years post planting. The Corps should maintain full responsibility

for all marsh mitigation projects until monitoring guidelines to be developed are completed and demonstrate the projects are fully compliant with success and performance requirements. Documentation should be provided and referenced to demonstrate funding obligation for the Corps to fulfill initial success criteria at a minimum.

CEMVN Response 19: Presently, the USACE intends to issue a Notice of Construction Completion (NCC) for authorized Corps-constructed mitigation projects to the Non-Federal Sponsor (NFS) for functional portions of the mitigation as they are complete (e.g. project would shift from the "construction" phase to the "operation, maintenance, repair, replacement, and rehabilitation" or OMRR&R phase at this point). However, the USACE would retain the primary responsibility for the completion of certain mitigation activities necessary to meet the project's initial success criteria. These activities would vary depending on the specifics of the mitigation plan and its associated success criteria. Note that while the USACE would be responsible for completion of mitigation construction and certain activities after the project is transferred to the NFS, all these activities would be subject to standard cost-sharing provisions and the availability of funds.

Recommendation 20: The Service recommends that all mitigation planning documents should describe in detail actions needed by the Corps and/or the local sponsor if mitigation is not succeeding as planned.

CEMVN Response 20: Future specific mitigation plans, such as the one found in appendix M, would include relatively detailed adaptive management plans (AM) in cases where an AM is anticipated. Mitigation plans would incorporate language regarding the general approach to developing action plans should unanticipated problems arise.

Recommendation 21: The Corps should avoid adverse impacts to bald eagle and osprey nesting locations and wading bird colonies through careful design project features and timing of construction. Forest clearing associated with project features should be conducted during the fall or winter to minimize impacts to nesting migratory birds, when practicable.

CEMVN Response 21: The clearing of forested wetlands would be conducted in the fall or winter, if practicable, to avoid and minimize impacts to nesting migratory birds. If colonial-nesting wading birds (CNWBs) are anticipated to nest in forested areas slated for clearing during the nesting season, the USACE would likely employ other measures to avoid impacts to active CNWB nests, viable eggs in such nests, and nesting young, such as implementation of a CNWB nesting prevention/abatement plan. Any such plan would first be coordinated with USFWS.

Recommendation 22: We recommend that the Corps re-initiate ESA consultation with this office to ensure that the proposed project would not adversely affect any federally listed threatened or endangered species or their habitat. Subsequently, ESA consultation should be reinitiated should the proposed project features change significantly or are not implemented within one year of the last ESA consultation with this office to ensure that the proposed project does not adversely affect any federally listed threatened or endangered species or their habitat.

CEMVN Response 22: Concur. The USACE would fulfill its consultation responsibilities as required under the ESA.

9. COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

Construction of the proposed action would not commence until the proposed action achieves environmental compliance with all applicable laws and regulations, as described in this section. Environmental compliance for the proposed action would be achieved upon coordination of this PIER with appropriate agencies, organizations, and individuals for their review and comments; resolution of all Fish and Wildlife Coordination Act recommendations and LDNR concurrence with the determination that the proposed action is consistent, to the maximum extent practicable, with the LCRP established under section 307 of the Coastal Zone Management Act of 1972 (16 USC 1451). Since the proposed action consists of purchasing mitigation bank credits no new direct, indirect or cumulative impacts to any significant resources would require further coordination. Further coordination will be completed to achieve environmental compliance for each programmatic feature as the TIERs are being developed.

If the purchase of mitigation bank BLH-Wet credits for General PS BLH impacts (constructible feature of the TSMPA) is determined not appropriate, not cost effective, or for other reasons not feasible (including lack of satisfactory bids), then Mitigation Plan Alternative 2 containing the Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project as the constructible feature would likely be implemented instead of the TSMPA. If this occurs then the following coordination and analysis would be necessary: USFWS and NMFS concurrence that the Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project would not be likely to adversely affect any endangered or threatened species or completion of ESA section 7 consultation; LDNR concurrence with the determination that the Lake Boeuf PS BLH-Dry & BLH-Wet Restoration Project is consistent, to the maximum extent practicable, with the LCRP; receipt of a Water Quality Certificate from the State of Louisiana; public review of the Section 404(b)(1) Public Notice and signature of the Section 404(b)(1) Evaluation; receipt and acceptance or resolution of all LDEQ comments on the air quality impact analysis as documented in the IER; and receipt and acceptance or resolution of all EFH recommendations. A programmatic agreement has been developed through coordination with the LA SHPO, Advisory Council on Historic Preservation, Federally recognized Indian tribes and other interested parties for the HSDRRS Mitigation. The programmatic agreement was executed 18 June 2013 and CEMVN will comply with stipulations agreed to in the programmatic agreement. As a result, Section 106 consultation is complete for the current constructible TSMP.

10. FUTURE MITIGATION NEEDS

As plans and specifications are completed for the marsh mitigation TSMPs, an assessment of open water impacts from construction of any forested TSMP would be completed per the draft guidelines for when impacts to open water would require mitigation (Appendix D). Open water impacts are automatically assessed in the marsh WVA model, but not automatically assessed in the forested WVA model. If open water impacts from construction of the forested TSMPs are discovered that would require mitigation, those impacts would be mitigated along with the marsh TSMP similar in type to the closest marsh type in the vicinity of the forested mitigation project incurring the impacts. At this time, as part of the TSMPA, two features of Jean Lafitte FS Swamp Restoration Project would permanently convert approximately 9 acres of EFH to uplands. Compensatory mitigation for these losses of EFH would be required. These impacts would be mitigated as tidal fresh marsh and would be disclosed in the TIER in which mitigation for fresh marsh is a constructible feature.

Once As-Builts (final plans documenting what was actually built) for all HSDRRS contracts are complete, the mitigation PDT, along with the resource agencies, would once again revisit the impacts to all habitat types from the HSDRRS construction (including open water). Completion of this effort would result in a final computation of impacts and may necessitate the expansion of the proposed HSDRRS mitigation projects in order to fully mitigate all HSDRRS impacts. For any habitat type where mitigation has already been constructed, an expansion of that mitigation project would be considered. Other options to that expansion providing adequate compensatory mitigation would also be analyzed. Any expansion and option to that expansion would be presented to the public in an additional NEPA document.

11. CONCLUSION

11.1 RECOMMENDED DECISION

Recommend approval of the constructible portion of the WBV HSDRRS Mitigation TSMPA: the purchase of mitigation bank credits to fulfill the General protected side BLH-Wet/Dry mitigation requirements.

Additionally, CEMVN recommends further evaluation and agency coordination for the programmatic features of the TSMPA. Future TIER(s) will be produced to complete the evaluation of those features.

11.2 PREPARED BY

The point of contact for this PIER is Tammy Gilmore, USACE New Orleans District CEMVN-PDN-CEP. Table 11-1 lists the preparers of relevant sections of this report. Ms. Gilmore can be reached at the U.S. Army Corps of Engineers, New Orleans District; Coastal Environmental Planning Section, P.O. Box P.O. Box 60267, 7400 Leake Avenue; New Orleans, LA 70118.

Table 11-1
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Mitigation Plan, Success Criteria, Planting Plan	Clay Carithers, USACE
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