FINDING OF NO SIGNIFICANT IMPACT (FONSI)

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT BAYOU SAUVAGE, TURTLE BAYOU & NEW ZYDECO RIDGE RESTORATION PROJECT SAINT TAMMANY AND ORLEANS PARISHES, LOUISIANA

SEA # 546

Description of the Action. The U.S. Army Corps of Engineers (USACE), New Orleans District (CEMVN), prepared Supplemental Environmental Assessment #546 (SEA #546) to present changes to the design of some of the projects in the recommended mitigation plan described in the Programmatic Individual Environmental Report 36, Supplement 1 (SIER 1) titled "Bayou Sauvage, Turtle Bayou and New Zydeco Ridge Restoration Projects, Saint Tammany and Orleans Parishes, LA". The Decision Record for SIER 1 was approved by the CEMVN Commander on October 20, 2015. This supplemental EA evaluates the potential impacts associated with implementation of the proposed changes to the Bayou Sauvage Flood Side Brackish Marsh (BSFS) and New Zydeco Ridge (NZR) restoration projects mitigating Lake Pontchartrain and Vicinity Hurricane Storm Damage Risk Reduction System (LPV HSDRRS) impacts to National Wildlife Refuge (NWR) lands and portions of the general impacts that did not occur on NWR lands.

The BSFS project approved in SIER 1 originally consisted of brackish marsh restoration at two sites, BSFS4 and BSFS5. The BSFS4 site, approximately 60 acres in size (18.4 AAHUs), has been removed from this project alternative since the site is no longer available for purchase and only the BSFS5 site would be constructed.

The proposed action would take the 18.4 AAHUs of outstanding mitigation that can no longer be accomplished at the BSFS4 site and expand the NZR Brackish Marsh restoration project approved in SIER 1 by approximately 60 acres. The NZR projects are located on the north shore of Lake Pontchartrain in the north east quadrant of the lake, northwest of U.S. Highway 90, and approximately 5 miles east of Slidell, Louisiana on the Big Branch NWR. The project area is bounded on the east by U.S Highway 90, on the North by U.S. Highway 190, on the west by Interstate 10, and on the south by Lake Pontchartrain. The NZR projects approved in SIER 1 consist of creating approximately 159 acres of BLH-Wet habitat and 160 acres of intermediate/brackish marsh habitat.

The proposed expansion of the NZR Brackish Marsh restoration project could be accomplished in two possible ways.

Design 1 expands the current design of the NZR Brackish Marsh restoration project by approximately 60 acres, making the total acreage for that project approximately 220 acres; it moves the approved NZR BLH-Wet footprint northward. This project alternative minimizes the increase in linear footage of retention dike required by maintaining the original outer perimeter dike and cross dike between

the two habitat types. As such, the perimeter retention dike for the brackish marsh project would only increase by 2,460 linear feet from the 10,165 linear feet of perimeter retention dike originally identified in SIER 1.

Design 2 maintains the alignment of the NZR BLH-Wet and Brackish Marsh layouts approved in SIER 1 and adds a 60 acre brackish marsh cell to the north of the BLH-Wet footprint. This design option would require an additional 4,500 linear feet of brackish marsh retention dike.

The earthen perimeter dike(s) around the marsh creation area(s) would be constructed to an elevation +4.0 feet NAVD88 with a five foot crown and 1V on 3H side slopes. The retention dike around the BLH-Wet creation area would be constructed to elevation +7.0 feet NAVD88 with a 5 foot crown and 1V on 3H side slopes. This varies from the original NZR design in which the retention dikes were to be constructed with a 1V on 4H side slope. Cross dikes between the marsh creation cell(s) and the BLH creation cell would be constructed to elevation +5.5 feet NAVD88 to allow effluent from the BLH cell to spill into the marsh creation cell(s). Spill boxes or weirs would be constructed at pre-determined locations within the retention dike to allow for effluent water release from within the marsh creation area(s). Borrow for dike construction would be obtained from the interior of the marsh/BLH creation footprints. Specifics on the interior borrow ditch design can be found in SIER 1. The marsh creation area(s) will initially be filled to an elevation of approximately +3.0 feet NAVD88 to ultimately reach a target marsh elevation ranging from +1.0 feet to +1.5 feet NAVD88.

The impacts associated with both Design 1 and Design 2 would be the same for each resource evaluated and therefore the impacts analyses does not distinguish between the two designs. The decision to use Design 1 or Design 2 will be based upon which stage of construction the NZR project approved in SIER 1 is in at the time the decision whether to proceed with a modified design is made. If a decision is made to implement the modified design at an earlier stage of construction, Design 1 would be chosen. If a decision is made to implement the modified design at a later stage of construction Design 2 would be chosen.

Borrow Site and Access Corridor

The original borrow site for NZR measured 289 acres and was broken into 2 primary (sites #1) and 2 secondary (sites #2) borrow areas due to differential lake bottom elevations. The primary and secondary borrow sites #1 are in deeper water (7 to 18 feet deep), thus a dredging depth of -20 feet NAVD88 is being used to obtain a suitable quantity of material. Primary and secondary borrow sites #2 are in shallower water (4 to 9 feet deep), therefore dredge depths vary with primary borrow site # 2 having a dredge depth of -18' NAVD88 and secondary borrow site #2 having a dredge depth of -16' NAVD88. The total anticipated amount of fill material being dredged from all 4 borrow sites was 3,600,000 cubic yards.

Due to the elimination of one of the Bayou Sauvage Flood Side Brackish Marsh features approved in SIER 1, the borrow site for the Bayou Sauvage/Turtle Bayou restoration areas would be downsized by 41 acres, shrinking that borrow area from its original size of 459 acres down to 418 acres. At the same time, the borrow site for NZR will expand by 41 acres to ensure sufficient borrow for the NZR brackish marsh expansion. Together, the two borrow areas for the revised restoration actions would total 748 acres, the same total size as evaluated in SIER 1. Although the New Zydeco borrow site

would expand by 41 acres, the design of the borrow site (depth, shape, slopes) would otherwise remain unchanged.

A different access corridor than what was approved in SIER 1 for the NZR projects, would be used from the lake to the NZR projects. Fill material for the creation of the BLH-Wet and marsh creation areas would still come from the same borrow site identified in SIER 1 located in Lake Pontchartrain approximately 2,700 feet offshore from Treasure Island, LA. Dredging of borrow would still be conducted via hydraulic dredging, however a floating/submerged pipeline would be placed for approximately 6,900 feet from the borrow site to the shallow area near the shoreline north of the Rigolets channel. The submerged line would then continue east for approximately 4,600 feet within the shallow offshore waters along the lake shoreline to within close proximity of the Hwy 90 bridge structure. The access corridor width for all open water reaches is 500 feet and the Contractor would be required to maintain navigation access in this open water reach of access channel for recreational boaters. The access corridor would then turn north, following the west side of Hwy 90 for approximately 14,000 feet from Lake Pontchartrain to the project site. This reach of access corridor is confined to a 50 foot width as measured from the outer limit of the highway shoulder, except in the immediate vicinity of the Hwy 433 junction. From the junction, the access corridor diverts west for approximately 125 feet to avoid the highway intersection, where a 36 inch steel culvert would be installed to pass beneath Hwy 433 for the pipeline to pass under the road.

From the new culvert, the access corridor would transition back to within the 50 foot access corridor paralleling Hwy 90. The northern terminus of this portion of the access corridor is defined by an approximate 100 foot by 100 foot existing gravel parking area, which would be used for parking, pipeline unloading, staging of equipment, and a potential booster pump location. At this point, the pipeline access corridor turns west, widens to 100 feet, and runs over existing marsh for approximately 1,700 feet. A timber board road would be constructed along this reach of the access corridor to minimize damage to the existing marsh. Sand fill would be placed in the low areas of this portion of the access corridor prior to board road installation. The board road would be removed upon completion of the project. Upon board road removal, dressing and additional fill as required to ensure restoration of the area to pre-construction marsh elevations would occur. At the location where the timber board road ends at open water, the access corridor widens to 200 feet and continues for the final 1,500 feet to the marsh and BLH-Wet creation areas. The entire access corridor, from borrow pit to perimeter retention dike is approximately 29,000 feet in length. No additional access corridor is needed for the expansion. Should the northern expansion proceed as proposed, the pipeline would be routed through the current project footprint.

Mitigation Banks and the State in Lieu Fee Program

Following guidelines established in the Water Resources Development Act (WRDA) of 2007 Section 2036(c)(1) in carrying out a water resources project involving wetlands mitigation and impacts that occur within the service area of a mitigation bank, USACE, where appropriate, would first consider the use of the mitigation bank if the bank contains sufficient available credits to offset the impact and the bank is approved in accordance with the Federal guidance for the establishment, use, and operation of mitigation banks. However, due to USFWS policy requiring that Refuge habitat impacts be mitigated on refuge property or within the authorized Refuge acquisition boundary on lands that would be transferred to Refuge ownership, mitigation bank credits may not be used to compensate for Refuge impacts.

If the USACE is unable to implement the expansion of the NZR marsh project to account for general brackish marsh impacts that cannot be mitigated at the BSFBM (18.4 AAHUs), then the purchase of mitigation bank or ILF credits would be an option the USACE may pursue to complete the mitigation of the LPV HSDRRS general brackish marsh impacts.

Factors Considered in Determination. This office has assessed the impacts of no action and the proposed action alternatives on important resources, including wildlife, threatened and endangered (T&E) species, aquatic resources/fisheries, water and sediment quality, essential fish habitat (EFH), recreational resources, cultural resources, wetlands, and air quality. For the proposed action, no significant adverse impacts were identified for any of these important resources. There would be a low probability of encountering HTRW in the proposed mitigation areas and borrow areas. The proposed action is the environmentally preferable alternative and all practicable means to avoid and minimize adverse effects have been incorporated into it.

The proposed action may affect, but is not likely to adversely affect the Gulf Sturgeon (now called the Atlantic sturgeon), the West Indian manatee, and the green, Kemp's Ridley, and loggerhead sea turtles and may affect, but is not likely to adversely affect Gulf Sturgeon Critical Habitat and is not likely to destroy or adversely modify it. Temporary impacts to aquatic resources, fisheries and water quality are anticipated.

The adverse impacts to EFH that would result from the proposed actions may affect, but should not adversely affect, managed species considering the small acreage utilized for borrow activities relative to the size of Lake Pontchartrain, plus the project would provide long-term benefit to the managed species by providing intertidal wetlands, a valuable type of essential fish habitat. The proposed modifications to the NZR Brackish Marsh project would convert an additional approximately 60 acres of shallow open water habitat and submerged aquatic vegetation to brackish marsh habitat. However, shallow open water is found in abundance throughout the LPV basin and this conversion would be offset by the creation of brackish marsh adjacent to the BLH-Wet creation area.

No adverse effects on historic properties are anticipated. Recreational opportunities would be temporarily impacted during construction but are expected to improve in some areas once construction is complete. The overall habitat quality of the wetlands within the project area would be enhanced by the proposed creation of brackish marsh. There would be a low probability of encountering hazardous substances in the proposed mitigation area and borrow area.

In a letter dated May 26, 2016, the U.S. Fish and Wildlife Service (USFWS) confirmed that the proposed action is not likely to adversely affect the West Indian manatee. In a letter dated August 19, 2015, the National Marine Fisheries Service (NMFS) concurred that the action approved in SIER 1 is not likely to affect the Gulf Sturgeon and its designated critical habitat, and the green, Kemp's Ridley and loggerhead sea turtles. Because the effects of the proposed action have not changed (i.e., because the total brackish marsh restoration area acreage and total borrow area acreage remains the same), re-initiation of consultation is not necessary. In a letter dated June 21, 2016, the LDNR concurred with the determination that the proposed action is consistent, to the maximum extent practicable, with the Louisiana Coastal Resources Program. LDEQ issued a State Water Quality Certification on November 12, 2014 and recertified on June 22, 2016. The Section 404(b)(1) evaluation was signed on July 1, 2016. In a letter dated October 6, 2014, the Louisiana State Historic

Preservation Officer concurred with a recommendation of no effect on historic properties. This office has concurred with, or resolved, all Fish and Wildlife Coordination Act recommendations contained in a letter from the U.S. Fish and Wildlife Service dated June 29, 2016. CEMVN has concurred with, or resolved, all comments addressing essential fish habitat contained in a letter from the National Marine Fisheries Service dated June 28, 2016.

Environmental Design Commitments. The following commitments are an integral part of the proposed action:

1. Water quality monitoring within the borrow areas would be conducted at least during March through November for a minimum of three years post dredging to verify the conductance, temperature, dissolved oxygen, and pH from the bottom to surface in five feet profiles. Samples should be collected at least monthly during March, April. September, October, November. During the hotter months of May, June, July and August, sampling would be conducted once every two weeks.

2. If the proposed features change significantly or are not implemented within one year of the last Endangered Species Act (ESA) consultation, CEMVN will reinitiate coordination with the USFWS to ensure that the proposed project would not adversely affect any Federally-listed threatened or endangered species, or their critical habitat. Additonally, if the proposed project features change to such an extent that additional impacts are identified that could adversely affect ESA species or their critical habitat under NMFS perview, the CEMVN would reinitate ESA consultation with that agency.

3. If any unrecorded cultural resources are determined to exist within the proposed project site, then work will not proceed in the area containing these cultural resources until a CEMVN staff archeologist has been notified and final coordination with the Louisiana State Historic Preservation Officer (SHPO) and Tribal Historic Preservation Officer has been completed.

4. Standard Manatee Protection Measures will be included in and required by all project contracts. All contract personnel associated with the project will be informed of the potential presence of the West Indian manatees and the need to avoid collisions with manatees. Standard manatee protection measures, found in section 3.4.2 of SEA #546 will be implemented when construction activities take place in areas where manatees could occur.

5. In order to minimize the potential for impacts to Gulf sturgeon during construction of retention dikes, the bucket drop procedure would be employed to encourage Gulf sturgeon in the vicinity of the construction activities to leave.

6. If construction of the mitigation project does not commence during 2016, the USACE agrees to reassess the LPV HSDRRS brackish marsh impacts to determine if the delay in mitigation implementation has incurred additive temporal losses requiring mitigation.

Based on CEMVN's evaluation of the projects as set forth in SEA #546 to compensate for impacts to brackish marsh caused by construction of the LPV HSDRRS, CEMVN has determined that the above-described project adequately compensates for LPV HSDRRS brackish marsh impacts while avoiding and minimizing additional impacts to the extent practicable.

Public Involvement. The proposed action has been coordinated with appropriate federal, state, and local agencies and businesses, organizations, and individuals through distribution of SEA #546 on May 27, 2016 for a 30-day review and comment period. The SEA #546 is attached hereto, incorporated herein by reference and made a part of this FONSI.

1. Public Comments

    a. One comment letter was received from a member of the public.

In its comment letter, Ecosystem Investment Partners (EIP) made 13 separate comments. The majority of these comments concerned EIP's effort to sell mitigation bank credits to satisfy the brackish marsh mitigation requirement and involved EIP's interpretation of Section 2036(c)(1) of WRDA 2007 and its assessment of its Chef Menteur Mitigation Bank's mitigation potential relative to the proposed action.

2. Agency Comments and Responses

    a. National Marine Fisheries Service (NMFS) - Comment letter dated June 29, 2016
        6 EFH recommendations.
    b. Coastal Protection and Restoration Authority Board (CPRAB) – Comment letter dated June 27, 2016
        19 specific comments

There were 25 separate comments made by the Federal and State agencies. The majority of the comments from CPRA were grammatical. The majority of NMFS EFH recommendations pertained to the future degradation/gapping of retention dikes, involvement in future monitoring of the mitigation sites, and appropriate use of In Lieu Fee or mitigation bank credits.

CEMVN responses to public and agency comments are included in Appendix B of the Final SEA #546.

Decision. The CEMVN Environmental Planning Branch has assessed the potential environmental impacts of the proposed action described in the Final SEA #546 and has reviewed the comments received during the public review period for the Draft SEA #546.

In accordance with the environmental considerations discussed above, the public interest will be best served by implementing the proposed action mitigating LPV HSDRRS construction impacts as evaluated in the SEA #546, namely the expansion of the brackish marsh project at New Zydeco Ridge by approximately 60 acres to mitigate the 18.4 AAHUs of outstanding mitigation that can no longer be accomplished at the BSFS4 site.

I have reviewed the SEA #546 and have considered public and agency comments and recommendations. I find the proposed mitigation plan will allow CEMVN to fully offset the habitat losses caused by the construction of the LPV HSDRRS to brackish marsh as directed by the Water Resources Development Acts of 1986, 2007, and 2014 (Public Law 99-662 §906, 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 implement the recommended project in the SEA #546.

19 JUL 16
Date

MICHAEL N. CLANCY
Colonel, EN
Commanding

ENVIRONMENTAL ASSESSMENT

PREPARED TO SUPPLEMENT:
PROGRAMMATIC INDIVIDUAL ENVIRONMENTAL REPORT 36, SUPPLEMENT 1
BAYOU SAUVAGE, TURTLE BAYOU & NEW ZYDECO RIDGE RESTORATION PROJECTS
SAINT TAMMANY & ORLEANS PARISHES, LOUISIANA

SEA #546

2016

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

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SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT #546

BAYOU SAUVAGE, TURTLE BAYOU & NEW ZYDECO RIDGE RESTORATION PROJECTS
SAINT TAMMANY & ORLEANS PARISHES, LOUISIANA

1. INTRODUCTION

The U.S. Army Corps of Engineers (USACE), Mississippi Valley Division, New Orleans District (CEMVN), has prepared this supplement environmental assessment (EA) to present changes to the design of some of the projects in the recommended mitigation plan described in the Programmatic Individual Environmental Report 36, Supplement 1 (SIER 1) titled "Bayou Sauvage, Turtle Bayou and New Zydeco Ridge Restoration Projects, Saint Tammany and Orleans Parishes, LA". The Decision Record for SIER 1 was approved by the CEMVN Commander on October 20, 2015. This supplemental EA evaluates the potential impacts associated with implementation of the proposed changes to the Bayou Sauvage Flood Side Brackish Marsh and New Zydeco Ridge restoration projects mitigating Lake Pontchartrain and Vicinity Hurricane Storm Damage Risk Reduction System (LPV HSDRRS) impacts to National Wildlife Refuge (NWR) lands and portions of the general impacts that did not occur on NWR lands. Both the PIER 36 and PIER 36, SIER 1 documents and their decision records are hereby incorporated by reference.

This supplemental EA (SEA) has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) and the Council on Environmental Quality's Regulations (40 CFR 1500-1508), as reflected in the USACE Engineering Regulation ER 200-2-2. This EA provides sufficient information on the potential adverse and beneficial environmental effects to allow the District Commander to make an informed decision on the appropriateness of an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).

PIER 36 LPV HSDRRS Approved Mitigation Plan

The approved LPV HSDRRS mitigation plan set forth in PIER 36 was comprised of both constructible and programmatic features (Table 1). The constructible features of the selected plan were approved for implementation while the programmatic features were recommended for further evaluation and design. Annual Average Habitat Units (AAHUs) translate the quality and quantity of the habitat impacted into units of measurement that also can be used to measure the habitat needed to compensate for those impacts. The same methodology used to assess the AAHU's of impacted habitat is used to assess AAHU's of replacement habitat.

Table 1: PIER 36 Mitigation Plan Features

	LPV Mitigation Plan	Design
Constructible Features	Mitigation Bank (BLH-Wet/Dry	Mitigation bank credits from one or more banks to satisfy 93.85 AAHUs for BLH-wet/dry
	Mitigation Bank (Swamp)	Mitigation bank credits from one or more banks to satisfy 108.01 AAHUs for swamp
Programmatic Features	Milton Island Marsh Restoration (Non-Refuge Intermediate Marsh)	115 acres intermediate marsh; borrow – 55 acres, 800,000cy

	Bayou Sauvage Marsh Restoration (Non-Refuge/Refuge Brackish Marsh)	302 acres BLH-wet; 141.9 acres Intermediate Marsh; borrow – 300 acres, 2.6Mcy
	Bayou Sauvage Protected Side Refuge BLH-Wet/Intermediate Marsh Restoration	155.3 acres BLH-wet; 141.9 acres Intermediate Marsh; borrow – 300 acres, 2.6Mcy
	Fritchie Flood Side Refuge BLH-Wet Enhancement	51 acres of BLH-wet

In April of 2014, the CEMVN purchased sufficient mitigation bank credits to fully satisfy the general BLH and swamp mitigation requirements. On September 19, 2014, a tiered IER or TIER was approved recommending the construction of the Milton Island Marsh Restoration project, which is currently under construction.

SIER 1, Modification to the PIER 36 Approved Mitigation Plan

Subsequent investigations after approval of the mitigation plan in PIER 36 revealed that several of the projects previously selected as the programmatic mitigation features for general and refuge impacts were not feasible due to high construction costs and/or real estate issues. Specifically, the following projects were originally considered feasible:

- Bayou Sauvage Protected Side Refuge BLH-Wet/Intermediate Marsh Restoration Project - Advanced engineering and design analysis produced significantly higher construction cost estimates than anticipated in earlier planning efforts.

- Bayou Sauvage Refuge Flood Side Marsh Restoration Project - Portions of the site as originally planned had poor soils and deep water conditions that resulted in significantly higher estimated construction costs.

- Fritchie Flood Side Bottomland Hardwood-Wet Project - This mitigation feature was intended to compensate for flood side BLH-wet impacts that occurred within the Bayou Sauvage NWR. The project would be located on private property and would require condemnation for use as a mitigation site. The U.S. Fish and Wildlife Service (USFWS), which operates the Bayou Sauvage NWR, expressed an unwillingness to accept property into the Refuge that was acquired by condemnation. As this mitigation feature would have been incorporated into the Refuge, the Service's position rendered this option non-viable.

When the above projects were deemed infeasible in their original form, the CEMVN, in coordination with the interagency team and the non-federal sponsor (NFS) developed a total of eight additional options to consider as alternatives to provide the required mitigation (one of which, Bayou Sauvage, was a redesign of the original project). Analysis of these options occurred in SIER 1. The decision document for SIER 1 approved the following alternative projects for construction that would replace the projects listed above in the LPV HSDRRS Mitigation Plan:

- New Zydeco Ridge (NZR) BLH-Wet and Brackish Marsh – a 159 acre flood-side BLH restoration project with a 160 acre brackish marsh restoration component (to address SAV impacts from the BLH restoration and brackish marsh mitigation that can't be completed at Bayou Sauvage) in the Fritchie Marsh area of the Big Branch NWR;
- Turtle Bayou Protected Side (TBPS) Intermediate Marsh – a 126 acre protected-side intermediate marsh restoration project at Turtle Bayou, north of the Bayou Sauvage NWR;

- Bayou Sauvage Flood Side Brackish Marsh (BSFS) – redesigned to be a 338 acre brackish marsh restoration and nourishment project on more interior land at Bayou Sauvage NWR. (58 acres in the northern portion identified as BSFS4 and 280 acres in the southern portion identified as BSFS5).

During the acquisition of lands necessary for implementation of the BSFS project, USACE determined that the obstacles to land acquisition for the BSFS4 parcel were too high. As a result, implementation of this feature is considered infeasible. Analysis of potential options to satisfy the mitigation requirement that can no longer be achieved at BSFS4, namely 18.4 AAHUs of brackish marsh impacts, is the subject of this supplement.

1.1 Purpose and Need for the Proposed Action

The purpose of the proposed action is to compensate for 18.4 AAHUs of impacts to general brackish marsh habitat incurred during construction of the LPV HSDRRS improvements that could not be mitigated at the BSFS mitigation site. The proposed mitigation would replace the lost functions and services of the impacted habitat through restoration activities designed to create, increase, and/or improve the functions and services of brackish marsh at the planned mitigation site.

1.2 Authority for the Proposed Action

The Flood Control Act of 1965 (P.L. [Public Law] 89-298, Title II, Sec. 204) authorized the LPV project stating "project for hurricane protection on Lake Pontchartrain, Louisiana ... substantially in accordance with the recommendations of the Chief of Engineers in House Document 231, Eighty-ninth Congress." The original authorization for the LPV Project was amended by the Water Resources Development Acts (WRDA) of 1974 (P.L. 93-251, Title I, Sec. 92), 1986 (P.L. 99-662, Title VIII, Sec. 805), 1990 (P.L. 101-640, Sec. 116); 1992 (P.L. 102-580, Sec. 102), 1996 (P.L. 104-303, Sec. 325), 1999 (P.L. 106-53, Sec. 324), and 2000 (P.L. 106-541, Sec. 432); and Energy and Water Development Appropriations Acts of 1992 (PL 102-104, Title I, Construction, General), 1993 (PL 102-377, Title I, Construction, General), and 1994 (PL 103-126, Title I, Construction, General).

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, Title II and Chapter 3, Title III of Public Law 110-252,) the Secretary of the Army was authorized to accelerate completion of the LPV project and restoration of project features to design elevations at 100 percent Federal cost.

Under the Flood Control and Coastal Emergencies (FC&CE) heading, of 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) and 6th Supplemental, Public Law 110-252, Title III, the Secretary of the Army was authorized to reinforce or replace existing floodwalls, where necessary, and armor critical elements.

Under the Construction heading of PL 109-234, Chapter 3, Title II, and PL 110-252, Chapter 3, Title III, the Secretary of the Army was authorized to raise levee heights where necessary and otherwise enhance LPV and other authorized projects in southeast Louisiana to provide the level of protection necessary to achieve the certification required for participation in the National Flood Insurance Program.

1.3 Prior Reports

A number of studies and reports on water resources development in the proposed project areas have been prepared by the USACE, other Federal, state, and local agencies, universities, research institutes, and individuals. The most relevant report to the proposed action is SIER 1. It lists all pertinent previous reports and studies; that list is incorporated by reference.

1.4 Public Concerns

The foremost public concerns are reducing risk of hurricane and storm damage for businesses and residences, and enhancing public safety during major storm events in the New Orleans metropolitan area. Compensatory mitigation for the impacts caused by construction of the HSDRRS is an integral feature of the HSDRRS. In the Lake Pontchartrain basin, the public has expressed a desire for sufficient funding to be allocated for the HSDRRS mitigation efforts and that the mitigation be completed in a timely manner.

1.5 Data Gaps and Uncertainties

Because natural systems are complex and consist of an intricate web of variables that influence the existence and condition of other variables within the system, all restoration projects contain certain inherent uncertainties. The effects of tropical storms, increased sea level rise, and climate change on each project's performance are uncertain and are addressed through future projections based on existing information. All models used for this study rely on mathematical representations of current and future conditions to quantify and predict the future success and benefits of these mitigation projects. No model can account for all relevant variables in an evolving coastal system. Additionally, there is inherent risk in reducing complex natural systems to mathematic expressions driven by simplified interactions of key variables. As such, how the proposed projects will actually perform and the benefits that will result from their creation are a 'best guess' based on what we presently know about existing ecosystems and the results of already constructed restoration projects. Please see Section 2.7 of PIER 36 and Section 1.5 of SIER 1 for more information on data gaps and uncertainties that have the potential to affect these projects.

2. ALTERNATIVES

2.1 Alternatives Development

In order to ensure that HSDRRS impacts are adequately mitigated, a functional assessment model titled the Wetland Value Assessment Model (WVA) was utilized to predict the AAHUs lost from the HSDRRS construction impact against the AAHUs generated by the proposed mitigation projects. WVA model assumptions for the NZR Brackish Marsh project can be found in Appendix B of SIER 1.

This supplemental EA discusses design changes to the BSFS Brackish Marsh project approved in SIER 1 and evaluates the potential of satisfying the 18.4 AAHUs mitigation requirement that can no longer be accomplished by that project through expansion of the NZR Brackish Marsh project (also approved in SIER 1) or through the purchase of in-kind mitigation bank credits. Detailed descriptions of the currently approved BSFS Brackish Marsh and the NZR Brackish Marsh projects and the associated borrow for these projects can be found in Section 2.3 of the SIER 1. (Figure 1) Information detailing the proposed changes to these projects to address the loss of the BSFS4 portion of the BSFS Brackish Marsh project in SIER 1 are as follows:

Changes to the Approved BSFS Brackish Marsh Project

The BSFS Brackish Marsh Project originally consisted of two sites, BSFS4 and BSFS5. The BSFS4 site, approximately 60 acres in size, has been removed from this project alternative since the site is no longer available for purchase. As such, only the BSFS5 site would be constructed. With the removal of the BSFS4 site, the needed borrow for this project alternative and the Turtle Bayou project alternative (to be constructed in concert with the BSFS5 site, see SIER 1) would be reduced by 41 acres (from 459 acres to 418 acres).

Expansion of NZR Brackish Marsh Restoration Alternative

The 18.4 AAHUs of outstanding mitigation that can no longer be accomplished at BSFS4 would be moved to become a part of the NZR Brackish Marsh restoration project. The 18.4 AAHUs would require the expansion of the NZR Brackish Marsh project by approximately 60 acres, and could be accomplished in two possible ways.

Design 1: Expansion of the NZR Brackish Marsh Project by approximately 60 acres. (Figure 2),

or

Design 2: The addition of approximately 60 acres of brackish marsh north of the NZR BLH-Wet Project. (Figure 3)

Borrow for either of these design options would require the expansion of the approved NZR borrow site by approximately 41 acres (from 289 acres to 330 acres).

Completion of Mitigation at a Mitigation Bank

Under this alternative, in-kind, in watershed, mitigation bank credits would be purchased to satisfy the outstanding 18.4 AAHUs of brackish marsh impacts unable to be satisfied at the BSFS4 site.

2.2 Proposed Action

Of the alterntives considered, the expansion of the NZR project was selected as the proposed action based on it's performance under cost effectiveness and other cost considerations criteria. The purchase of mitigation bank credits based on cost estimates provided by the bank in the watershed show the purchase of mitigation bank credits would be many times more expensive than the expansion of the existing NZR project. Additionally, the expansion would be built on public lands and provide benefits to the general public in the form of additional recreational opportunities.

2.2.1 New Zydeco Ridge

The NZR restoration expansion options are located on the north shore of Lake Pontchartrain in the north east quadrant of the lake, northwest of U.S. Highway 90, and approximately 5 miles east of Slidell, Louisiana on the Big Branch National Wildlife Refuge. The project area is bounded on the east by U.S Highway 90, on the North by U.S. Highway 190, on the west by Interstate 10, and on the south by Lake Pontchartrain. The approved NZR projects in SIER 1 consist of creating approximately 159 acres of BLH-Wet habitat and 160 acres of intermediate/brackish marsh habitat.

Potential Project Expansion Layouts

Two designs were considered for satisfying the outstanding 18.4 AAHUs of brackish marsh impacts at the NZR location.

Design 1 expands the current design of the NZR Brackish Marsh restoration project by approximately 60 acres, making the total acreage for that project approximately 220 acres; it moves the approved NZR BLH-Wet footprint northward. This project alternative minimizes the increase in linear footage of retention dike required by maintaining the original outer perimeter dike and cross dike between the two habitat types. As such, the perimeter retention dike for the brackish marsh project would only increase by 2,460 linear feet from the 10,165 linear feet of perimeter retention dike originally identified in SIER 1.

Design 2 maintains the alignment of the NZR BLH-Wet and Brackish Marsh layouts approved in SIER 1 and adds a 60 acre brackish marsh cell to the north of the BLH-Wet footprint. This design option would require an additional 4,500 linear feet of brackish marsh retention dike.

The earthen perimeter dike(s) around the marsh creation area(s) would be constructed to an elevation +4.0 feet NAVD88 with a five foot crown and 1V on 3H side slopes. (Figure 4) The retention dike around the BLH-Wet creation area would be constructed to elevation +7.0 feet NAVD88 with a 5 foot crown and 1V on 3H side slopes. This varies from the original NZR design in which the retention dikes were to be constructed with a 1V on 4H side slope. Cross dikes between the marsh creation cell(s) and the BLH creation cell would be constructed to elevation +5.5 feet NAVD88 to allow effluent from the BLH cell to spill into the marsh creation cell(s). Spill boxes or weirs would be constructed at pre-determined locations within the retention dike to allow for effluent water release from within the marsh creation area(s). Borrow for dike construction would be obtained from the interior of the marsh/BLH creation footprints. Specifics on the interior borrow ditch design can be found in SIER 1. The marsh creation area(s) will initially be filled to an elevation of approximately +3.0 feet NAVD88 to ultimately reach a target marsh elevation ranging from +1.0 feet to +1.5 feet NAVD88.

The impacts associated with both Design 1 and Design 2 would be the same for each resource evaluated and therefore the impacts analyses will not distinguish between the two designs. The decision to use Design 1 or Design 2 will be based upon which stage of construction the NZR project approved in SIER 1 is in at the time the decision whether to proceed with a modified design is made. If a decision is made to implement the modified design at an earlier stage of construction, Design 1 would be chosen. If a decision is made to implement the modified design at a later stage of construction Design 2 would be chosen.

2.2.2 Borrow Site and Access Corridor

The original borrow site for NZR measured 289 acres and was broken into 2 primary (sites #1) and 2 secondary (sites #2) borrow areas due to differential lake bottom elevations. (Figure 5) The primary and secondary borrow sites #1 are in deeper water (7 to 18 feet deep), thus a dredging depth of -20 feet NAVD88 is being used to obtain a suitable quantity of material. Primary and secondary borrow sites #2 are in shallower water (4 to 9 feet deep), therefore dredge depths vary with primary borrow site # 2 having a dredge depth of -18' NAVD88 and secondary borrow site #2 having a dredge depth of -16' NAVD88. The total anticipated amount of fill material being dredged from all 4 borrow sites was 3,600,000 cubic yards.

The proposed 60 acres expansion of the brackish marsh creation footprint would require approximately 500,000 additional cubic yards of dredged material to construct. Applying a 30% oversize factor and converting to acres, this results in a need for approximately 41 additional acres of borrow footprint. The oversize factor is to assure adequate borrow amounts in case of contract overruns, and to account for unsuitable materials, unknown utilities, unidentified anomalies, and/or unsighted cultural finds within the borrow footprint. This factor matches that used to size the originally proposed borrow footprint. To provide this needed additional borrow material, the

proposed borrow site would be expanded 200 feet in width along the south boundary and 300 feet along the west boundary resulting in a total increase in the borrow footprint to 3,000 feet by 4,800 feet (330 acres), which is an increase of 41 acres. The borrow footprint would remain divided into primary and secondary dredging regions; maintaining the restricting depths as previously described. Due to the elimination of the BSFS4 feature, the borrow site for the Bayou Sauvage/Turtle Bayou restoration areas (Figure 1) would be downsized by 41 acres, shrinking that borrow area from its original size of 459 acres down to 418 acres. Together, the two borrow areas for the revised restoration actions would total 748 acres, the same total size as evaluated in SIER 1. Although the New Zydeco borrow site would expand by 41 acres (Figure 5), the design of the borrow site (depth, shape, slopes) would otherwise remain unchanged.

A different access corridor than what was approved in SIER 1 for the NZR projects, would be used from the lake to the NZR projects. (Compare Figure 1 to Figure 5.) Fill material for the creation of the BLH-Wet and marsh creation areas would still come from the same borrow site identified in SIER 1 located in Lake Pontchartrain approximately 2,700 feet offshore from Treasure Island, LA. Dredging of borrow would still be conducted via hydraulic dredging, however a floating/submerged pipeline would be placed for approximately 6,900 feet from the borrow site to the shallow area near the shoreline north of the Rigolets channel. The submerged line would then continue east for approximately 4,600 feet within the shallow offshore waters along the lake shoreline to within close proximity of the Hwy 90 bridge structure. The access corridor width for all open water reaches is 500 feet and the Contractor would be required to maintain navigation access in this open water reach of access channel for recreational boaters. The access corridor would then turn north, following the west side of Hwy 90 for approximately 14,000 feet from Lake Pontchartrain to the project site. This reach of access corridor is confined to a 50 foot width as measured from the outer limit of the highway shoulder, except in the immediate vicinity of the Hwy 433 junction. From the junction, the access corridor diverts west for approximately 125 feet to avoid the highway intersection, where a 36 inch steel culvert would be installed to pass beneath Hwy 433 for the pipeline to pass under the road.

From the new culvert, the access corridor would transition back to within the 50 foot access corridor paralleling Hwy 90. The northern terminus of this portion of the access corridor is defined by an approximate 100 foot by 100 foot existing gravel parking area, which would be used for parking, pipeline unloading, staging of equipment, and a potential booster pump location. At this point, the pipeline access corridor turns west, widens to 100 feet, and runs over existing marsh for approximately 1,700 feet. A timber board road would be constructed along this reach of the access corridor to minimize damage to the existing marsh. Sand fill would be placed in the low areas of this portion of the access corridor prior to board road installation. The board road would be removed upon completion of the project. Upon board road removal, dressing and additional fill as required to ensure restoration of the area to pre-construction marsh elevations would occur. At the location where the timber board road ends at open water, the access corridor widens to 200 feet and continues for the final 1,500 feet to the marsh and BLH-Wet creation areas. The entire access corridor, from borrow pit to perimeter retention dike is approximately 29,000 feet in length. No additional access corridor is needed for the expansion. Should the northern expansion proceed as proposed, the pipeline would be routed through the current project footprint.

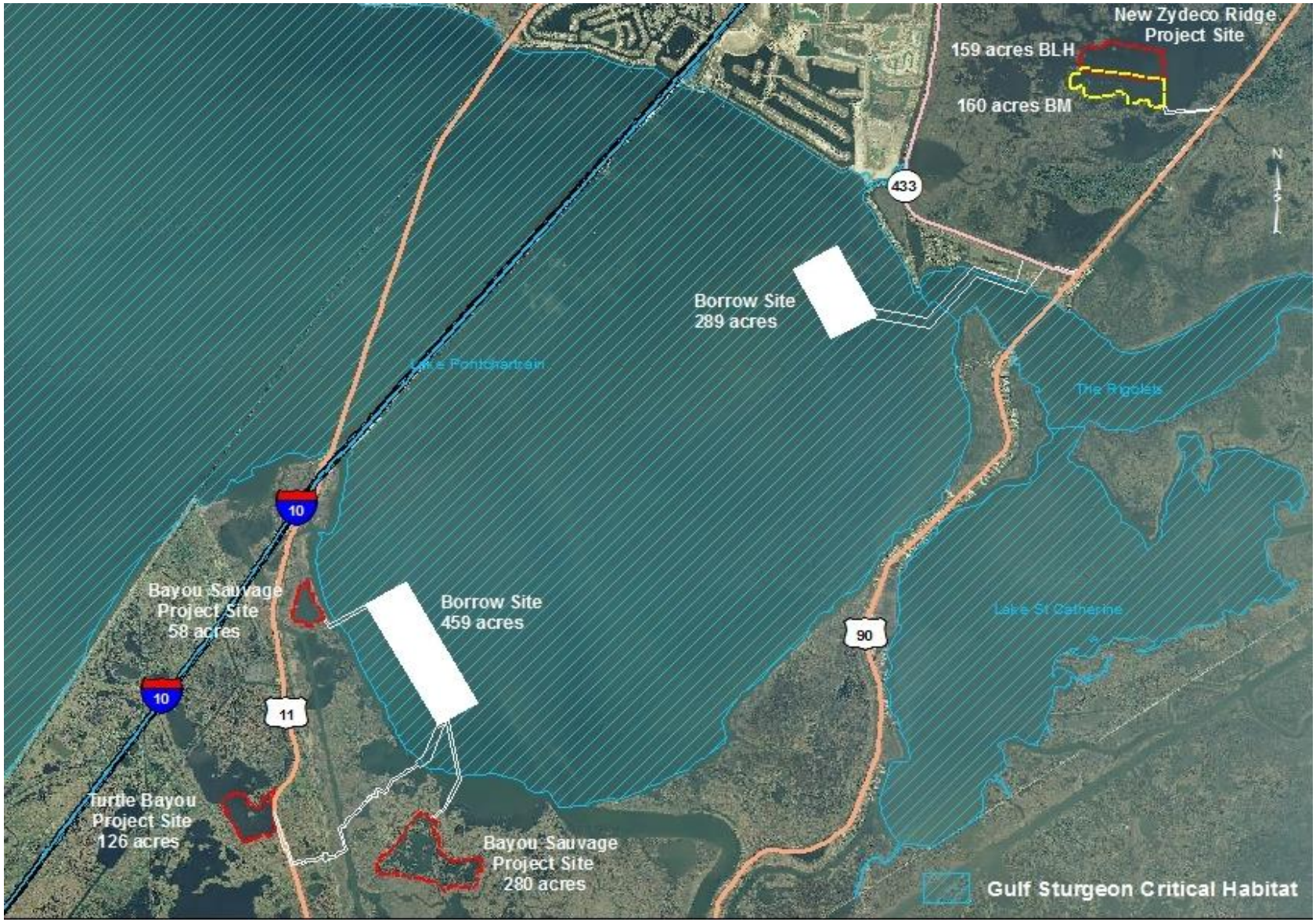

Figure 1: SIER 1 - Bayou Sauvage, Turtle Bayou and New Zydeco Ridge Project Features

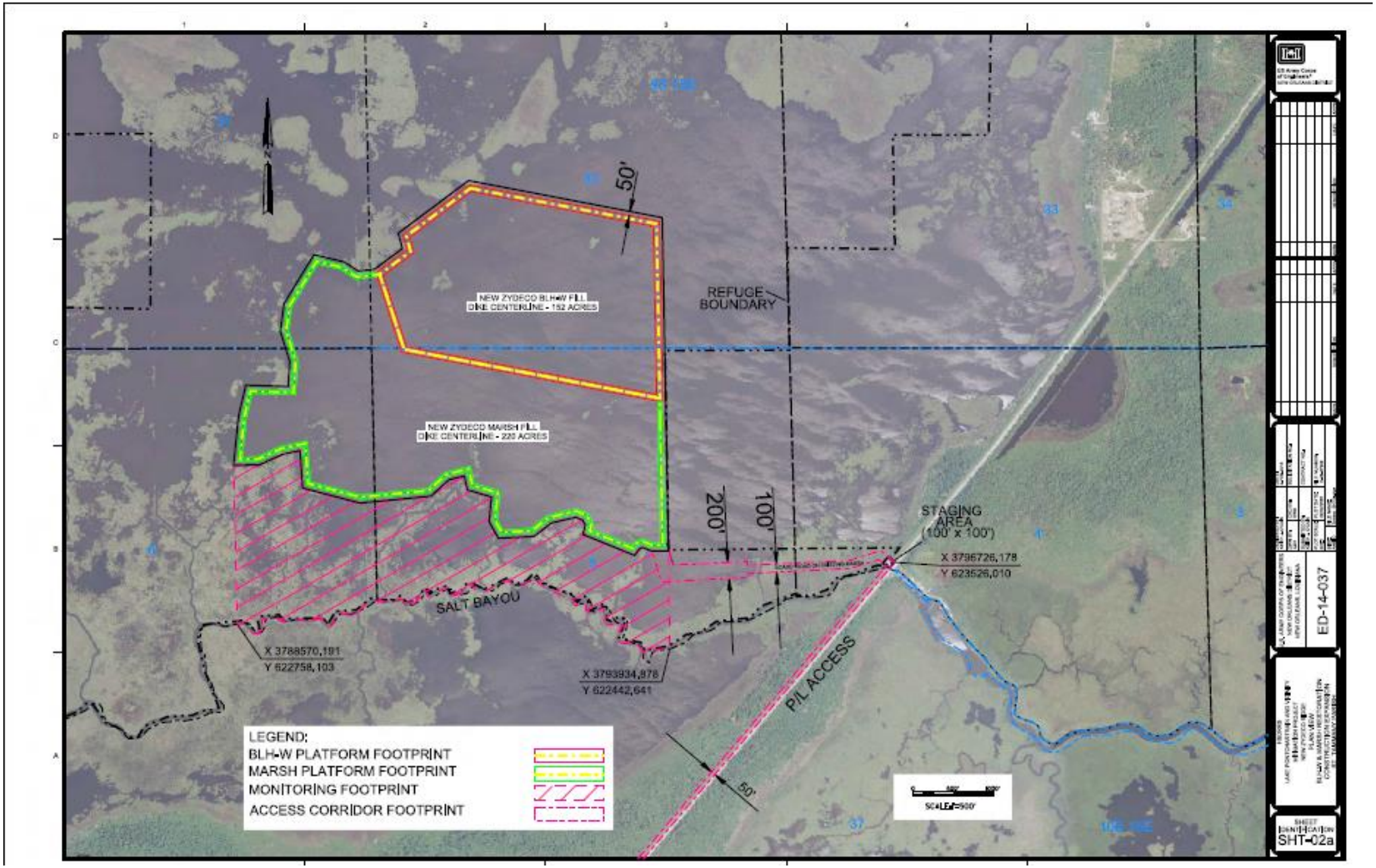

Figure 2: Design 1 Option

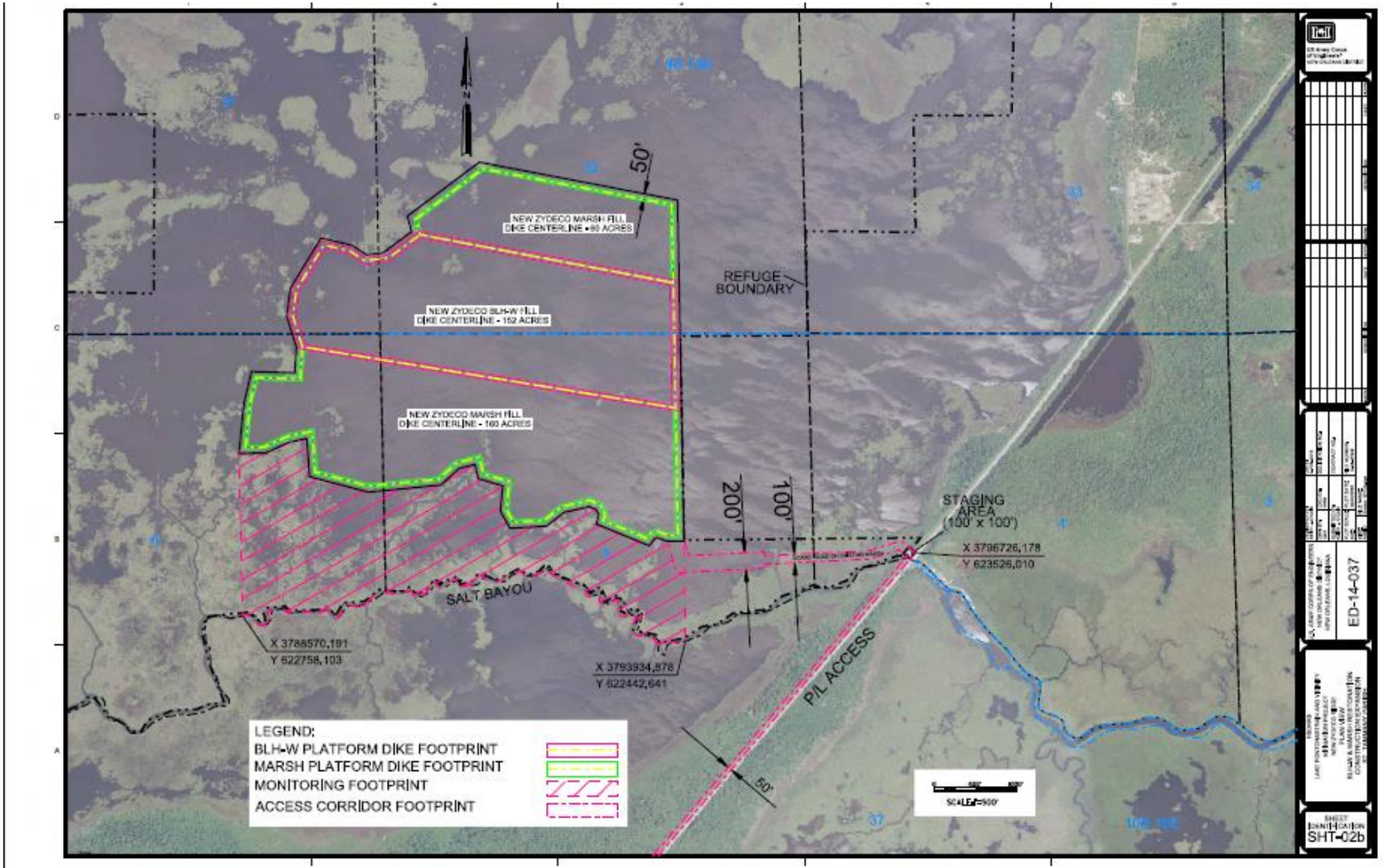

Figure 3: Design 2 Option

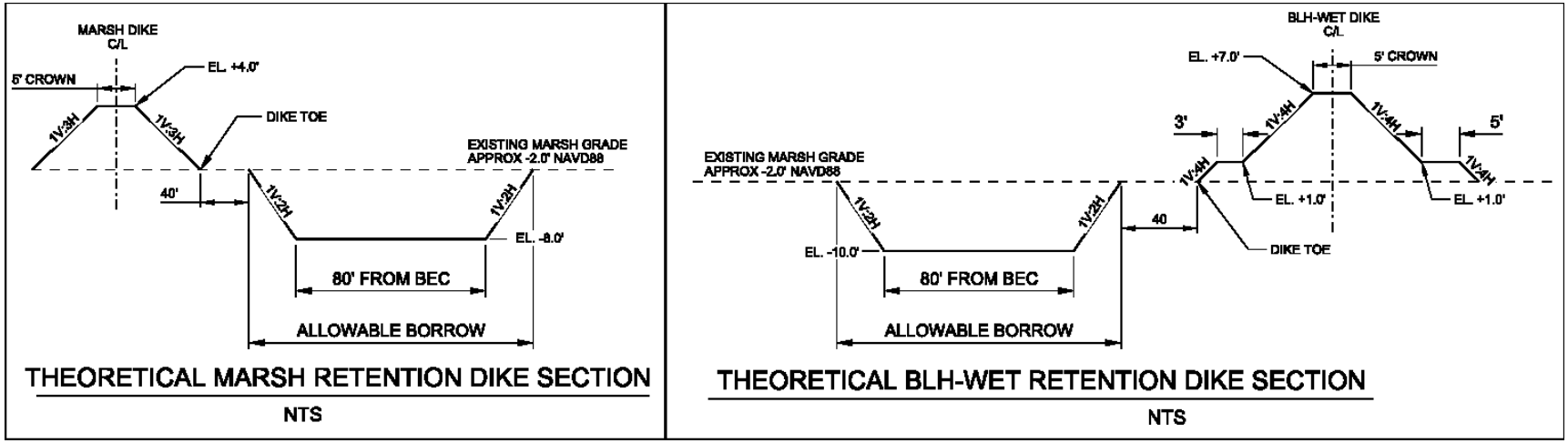

Figure 4: Retention Dike Cross Section

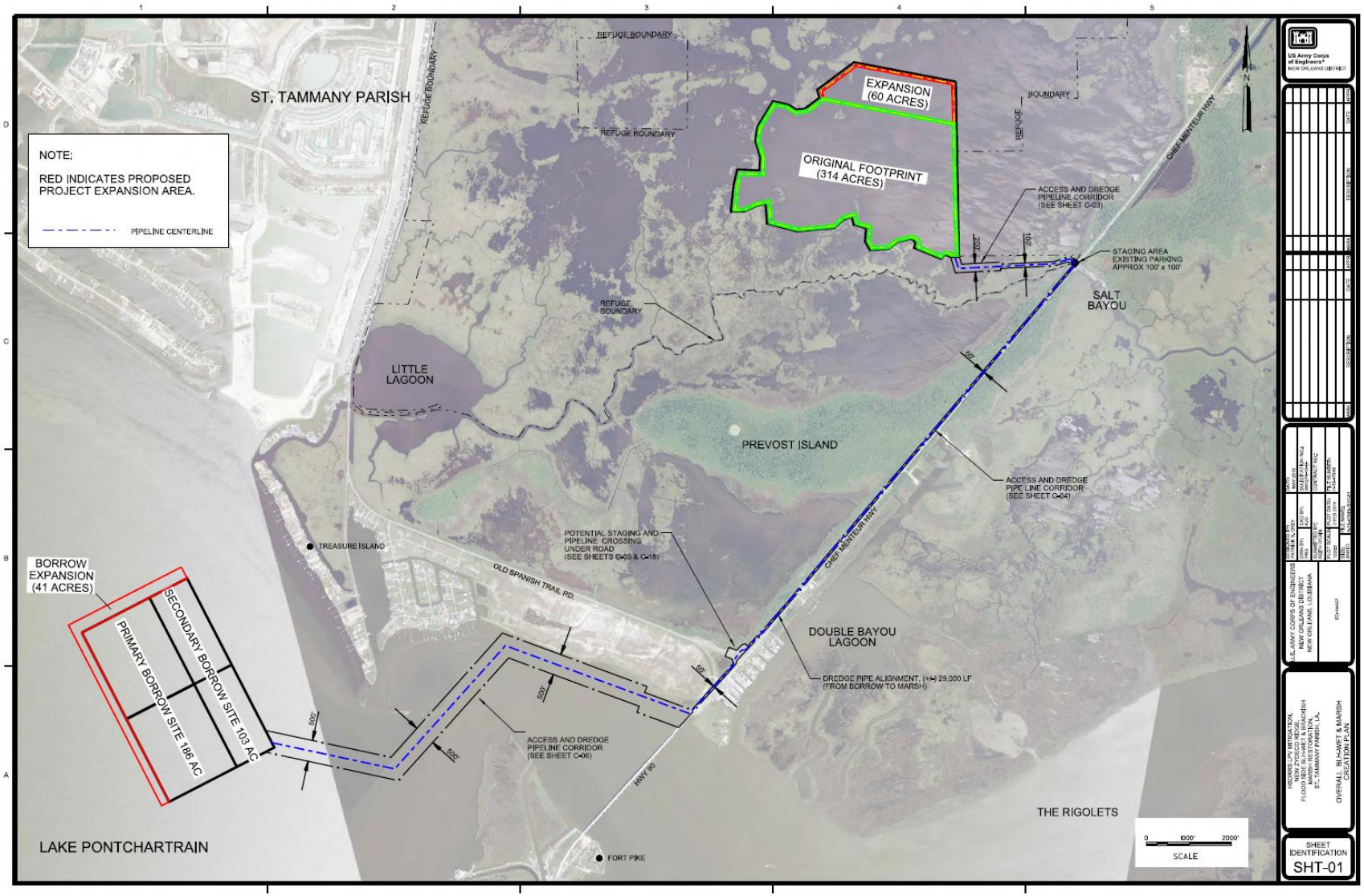

Figure 5: Borrow Location Expansion

2.3 Alternatives to the Proposed Action

2.3.1 No Action Alternative

NEPA requires that in analyzing alternatives to a proposed action, a Federal agency to consider an alternative of "No Action." The No Action alternative evaluates the impacts associated with not implementing the proposed action and represents the Future without Project (FWOP) condition against which alternatives considered in detail are compared. The FWOP provides a baseline essential for impact assessment and alternative analysis. The No Action Alternative evaluated in this document is framed as the approved action in SIER 1; namely, under the No Action scenario, the BSFS4 portion of the Bayou Sauvage Marsh Restoration Project would be implemented. Because USACE has determined that the obstacles to acquisition of that site are too high, the BSFS4 feature is considered not implementable and therefore is not a reasonable alternative that should be selected. USACE is statutorily required to compensate for habitats impacted by construction of the HSDRRS. Consequently, for the purposes of this analysis, it is assumed that the USACE would comply with the laws requiring mitigation and if the mitigation cannot be completed at the BSFS4 site, that the mitigation requirement would be satisfied elsewhere in the watershed.

The No Action Alternative framed as USACE not undertaking the required mitigation for impacts caused by construction of the HSDRRS was evaluated in PIER 36. That analysis is incorporated by reference into this document.

The analysis for the No Action alternative considers previous, current, and reasonably foreseeable future projects, which could impact the resources evaluated herein and in the SIER. A discussion of and the location of these projects can be found in PIER 36, section 2.9.1, Appendix A, Figure 33, and Appendix B, tables 10-12.

2.3.2 Mitigation Banks and the State in Lieu Fee Program

Following guidelines established in the Water Resources Development Act (WRDA) of 2007 Section 2036(c)(1) in carrying out a water resources project involving wetlands mitigation and impacts that occur within the service area of a mitigation bank, USACE, where appropriate, would first consider the use of the mitigation bank if the bank contains sufficient available credits to offset the impact and the bank is approved in accordance with the Federal guidance for the establishment, use, and operation of mitigation banks.

Mitigation banking instruments and the state In Lieu Fee Program Instrument (ILF) are binding agreements in which the mitigation bank or ILF is obligated to achieve and to monitor ecological success, to adaptively manage the site to ensure ecological success, and to provide financial assurances for such actions.

According to Implementation Guidance for WRDA 2007, Section 2036(c), Wetlands Mitigation, the purchase of mitigation credits for a water resources project relieves the Corps from responsibility for monitoring the mitigation measure and demonstrating that the mitigation measure is successful. Such activities would be conducted by the owner or operator of the mitigation bank or ILF Program.

If the USACE is unable to implement the expansion of the NZR Brackish Marsh project to account for brackish marsh impacts that cannot be mitigated at the Bayou Sauvage Flood Side Brackish Marsh restoration project (18.4 AAHUs), then the purchase of mitigation bank or ILF credits would be an option the USACE may pursue to complete the mitigation of the LPV HSDRRS general brackish marsh impacts. If that option is utilized, the same version of the WVA model as was used to assess the impacts from constructing the HSDRRS would be run on the mitigation bank/ILF project

to ensure that the assessment of the functions and services provided by the mitigation bank/ILF project matches the assessment of the lost functions and services at the impacted site.

3. AFFECTED ENVIRONMENT

3.1 Environmental Setting

The LPV HSDRRS mitigation planning basin is bounded to the north by Interstate 12 from the Louisiana/Mississippi state line to the Mississippi River at Baton Rouge. From Baton Rouge, the boundary then proceeds south utilizing the centerline of the Mississippi River. The southern boundary is situated to exclude the barrier islands since the HSDRRS work did not impact the barrier islands.

Major features in the LPV Mitigation basin include: Lake Maurepas and its adjacent wetlands and swamps; Lake Pontchartrain and Lake Borgne, separated from one another by the East Orleans Landbridge but hydrologically linked through tidal passes at the Rigolets, Chef Menteur Pass, and the manmade IHNC; the Mississippi River; and the de-authorized Mississippi River Gulf Outlet.

The three restoration areas are located in the Lake Pontchartrain Basin. Bayou Sauvage Brackish Marsh and Turtle Bayou Protected Side Intermediate Marsh are located on the southern lobe and NZR projects are located on the Northshore. The lake is slightly brackish, with a silty to sandy bottom, and approximately 15 feet deep. Historically, the shorelines of the lake were bordered by cypress/tupelo gum swamps, fresh to intermediate marshes, and bands of bottomland hardwood forests bordering natural drainages and the lake rim in some areas. Currently, much of the lake's southern and northeastern shoreline is composed of urban and suburban development. The lake shoreline near the project areas is a mixture of low-density residential development and undeveloped wetlands, including second-growth swamp and bottomland hardwood forest, scrub/shrub wetlands and intermediate to brackish marshes. The general project area supports a wide variety of fish and wildlife resources, many of which are important to recreational and commercial fishermen and hunters.

Based on a site visit on April 9, 2014, the area is very shallow open water. The water bottoms at the project site appeared to be fairly firm, after penetrating a foot or so of softer materials. Design surveys of the project site verified that the shallow bottom water elevations range from approximately -1.25 feet to -2.5 feet NAVD88.

Based on boring and map data in the vicinity, it is estimated that the surface and shallow subsurface of the proposed site contains marsh deposits from 2 feet to 8 feet thick. Marsh deposits are characterized by very soft organic clays and clay with peat. Marsh deposits are thinner near the Pleistocene terraces and Prevost Island and thicken towards Lake Pontchartrain. Pleistocene deposits composed of stiff clays, silty clay, silt, and sands underlie the marsh deposits.

3.2 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 LPV Mitigation Basin lies within the Mississippi Delta Region comprised of three geomorphic regions, which are further divided into multiple smaller geomorphic areas.

The Pleistocene Terrace Region is the area north of Lakes Maurepas, Pontchartrain, and Borgne. This region is defined as the area north of the Mississippi River Deltaic Plain and the lowlands surrounding Lakes Pontchartrain and Maurepas.

The Marginal Deltaic Basin is comprised of the estuarine marshes and forested wetlands of Lakes Pontchartrain and Maurepas. This region includes some of the largest remaining tracts of forested wetlands in the Lower Mississippi River Valley. The Marginal Deltaic Basin is divided into the following eight geographic areas: Maurepas Swamp, Manchac Landbridge, Southwest Pontchartrain, Lake Pontchartrain, North Shore Marsh, Bayou Sauvage, East Orleans Landbridge, and Pearl River Mouth.

The Marginal Deltaic Basin lies within the LA Coastal Zone and is influenced by wetland loss, subsidence, saltwater intrusion, and shoreline erosion. USACE data indicates relative sea level rise in the region of less than 0.5 feet per century, but in many localized areas, the rate is greater. Shoreline erosion is taking place around the entire perimeter of Lakes Pontchartrain, Maurepas, and Borgne, except for sections where shoreline protection has been installed.

The Mississippi River Deltaic Plain lies south of the lakes. The salinity gradient within this region decreases from east (saltwater of the Gulf of Mexico) to west (fresher waters in the coastal plain) through the Pontchartrain Basin.

3.3 Climate

The Lake Pontchartrain 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.

3.4 Significant Resources

This section contains a list of the significant resources located in and near the proposed action, and describes in detail those resources that would be impacted, directly or indirectly. 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)). A cumulative impact is defined as the “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).

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. (Table 2) Table 3 shows those significant resources found in and near the project area, and notes whether they would be impacted by the proposed alternative.

Resources that would not be impacted, or only negligibly impacted are not discussed in this document. Aesthetics is not addressed since the project locations are only visible from a small number of residences, and because the undeveloped nature of the project area would be preserved. Noise is not addressed due to the undeveloped nature of the project areas and the distances between the project areas and the closest sensitive receptors, which in the case of the NZR project, are the residences located further than 1,000 feet to the north.

The potential for impacts to socioeconomic resources including environmental justice were also considered. There are no anticipated impacts to population, housing, or minority or low-income populated areas since the project area and surrounding lands are uninhabited, remote, and to a large degree occurs on a National Wildlife Refuge. Environmental justice concerns are not present due to the undeveloped nature of the area. Additionally, the only residences in the vicinity are indicative of high property values and are not primarily occupied by minorities or low income groups. There are no commercial/industrial properties, or public facilities within the project boundaries or in adjacent areas, and therefore no impacts to employment, businesses, industry, public facilities and services, community and regional growth, community cohesion, or property values are anticipated to occur with construction of this project. The proposed project does not require any agricultural or forestry land to be impacted or converted; therefore the requirements of the Farmland Protection Policy Act, Section 1541(b), do not apply. Most construction equipment and personnel would access the project areas via aquatic access resulting in no impacts to land-based transportation; although there would be minimal impact from the pipeline that would move dredge material from Lake Pontchartrain to the proposed project locations.

Table 2: Relevant Resources and Their Institutional, Technical, and Public Importance

Resource	Institutionally Important	Technically Important	Publicly Important
Wildlife	Fish and Wildlife Coordination Act of 1958, as amended and the Migratory Bird Treaty Act of 1918	Wildlife is a critical element of many valuable aquatic and terrestrial habitats; they are an indicator of the health of various aquatic and terrestrial habitats; and many species are important commercial resources.	The high priority that the public places on their esthetic, recreational, and commercial value of wildlife.
Threatened and Endangered Species	The Endangered Species Act of 1973, as amended; the Marine Mammal Protection Act of 1972; and the Bald Eagle Protection Act of 1940.	USACE, USFWS, NMFS, NRCS, EPA, LDWF, and LDNR cooperate to protect these species. The status of such species provides an indication of the overall health of an ecosystem.	The public supports the preservation of rare or declining species and their habitats.
Aquatic Resources/ Fisheries	Fish and Wildlife Coordination Act of 1958, as amended; Clean Water Act of 1977, as amended; Coastal Zone Management Act of 1972, as amended; and the Estuary Protection Act of 1968.	Aquatic Resources/Fisheries are a critical element of many valuable freshwater and marine habitats; they are an indicator of the health of the various freshwater and marine habitats; and many species are important commercial resources.	The high priority that the public places on their esthetic, recreational, and commercial value of aquatic resources/fisheries.
Water Quality	Clean Water Act of 1977, Fish and Wildlife Coordination Act, Coastal Zone Mgt Act of 1972, and Louisiana State & Local Coastal Resources Act of 1978.	USACE, USFWS, NMFS, NRCS, EPA, and State DNR and wildlife/fishery offices recognize value of fisheries and good water quality and the national and state standards established to assess water quality.	Environmental organizations and the public support the preservation of water quality and fishery resources and the desire for clean drinking water.
Essential Fish Habitat (EFH)	Magnuson-Stevens Fishery Conservation and Management Act of 1996, Public Law 104-297	Federal and state agencies recognize the value of EFH. The Act states, EFH is "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity."	Public places a high value on seafood and the recreational and commercial opportunities EFH provides.
Recreation Resources	Federal Water Project Recreation Act of 1965 as amended and Land and Water Conservation Fund Act of 1965 as amended	Provide high economic value of the local, state, and national economies.	Public makes high demands on recreational areas. There is a high value that the public places on fishing, hunting, and boating, as measured by the large number of fishing and hunting licenses sold in Louisiana; and the large per-capita number of recreational boat registrations in Louisiana.
Cultural Resources	National Historic Preservation Act of 1966, as amended; the Native American Graves Protection and Repatriation Act of 1990; and the Archeological Resources Protection Act of 1979	State and Federal agencies document and protect sites Based on their association or linkage to past events, to historically important persons, and to design and construction values; and for their ability to yield important information about prehistory and history.	Preservation groups and private individuals support protection and enhancement of historical resources.

Resource	Institutionally Important	Technically Important	Publicly Important
Wetlands	Clean Water Act of 1977, as amended; Executive Order 11990 of 1977, Protection of Wetlands; Coastal Zone Management Act of 1972, as amended; and the Estuary Protection Act of 1968., EO 11988, and Fish and Wildlife Coordination Act.	Wetlands provide necessary habitat for various species of plants, fish, and wildlife; they serve as ground water recharge areas; they provide storage areas for storm and flood waters; they serve as natural water filtration areas; they provide protection from wave action, erosion, and storm damage; and they provide various consumptive and non-consumptive recreational opportunities.	The high value the public places on the functions and values that wetlands provide. Environmental organizations and the public support the preservation of marshes.
Air Quality	Clean Air Act of 1963, Louisiana Environmental Quality Act of 1983.	State and Federal agencies recognize the status of ambient air quality in relation to the NAAQS.	Virtually all citizens express a desire for clean air.

Table 3: Significant Resources In and Near the Project Area

Significant Resource	Impacted	Not Impacted
Wildlife	X	
Threatened & Endangered Species	X	
Aquatic Resources	X	
Water Quality	X	
Essential Fish Habitat	X	
Recreation	X	
Cultural Resources[1]		X
Air Quality	X	
Noise		X
Aesthetics		X
Environmental Justice		X
Socioeconomic Resources		X
HTRW[2]		X
Wetlands	X	

[1]Although not impacted, cultural resources are addressed to comply with the National Historic Preservation Act.
[2]Hazardous, Toxic, and Radioactive Waste. Although the area has been determined to have a low probability of containing HTRW, it is assessed in this document to comply with USACE policy.

3.4.1 Wildlife

Existing Conditions

The coastal wetlands in the Pontchartrain Basin provide important and essential fish and wildlife habitats, especially transitional habitat between estuarine and marine environments, which are used for shelter, nesting, feeding, roosting, cover, nursery, and other life requirements. Emergent 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 (LCWCRTF & WCRA 1999). All of these species are likely to be found in or near the projects areas.

Open water habitats such as Lake Pontchartrain provide wintering and multiple use functions for brown pelicans, various seabirds, and other open water residents such as laughing gulls and least terns, and migrants such as lesser scaup and double crested cormorants (LCWCRTF & WCRA, 1999). Open water in the project areas provide suitable habitat for many of these species, especially dabbling ducks, coots, and gallinules, which feed primarily on submerged aquatic vegetation.

Bottlenose dolphins are protected under the Marine Mammal Protection Act of 1972, and are found in temperate and tropical waters around the world including Lake Pontchartrain. The lake appears to have a semi-resident population of dolphins that generally are found in the eastern side of the lake which has the higher salinity level. Bottlenose dolphins feed on a wide variety of fish, squid, and crustaceans. It is highly unlikely that dolphins would be found in the marsh creation area due to the existing shallow water and submerged aquatic vegetation.

3.4.2 Threatened, Endangered and Protected Species

Existing Conditions

Within St. Tammany Parish there are ten documented animal and one plant species under the jurisdiction of the USFWS and/or the National Marine Fisheries Service (NMFS), presently classified as endangered or threatened (Table 4). Designated critical habitat for one of the animal species (Gulf sturgeon) is located within St. Tammany Parish. The USFWS and the NMFS share jurisdictional responsibility for sea turtles and Gulf sturgeon. Other species that were listed on the Endangered Species List, but have since then been de-listed because population levels have improved, are bald eagle and 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 requirements.

Of the listed animal and plant species occurring in St. Tammany Parish, only the West Indian manatee; Gulf sturgeon; and Kemp's ridley, loggerhead, and green sea turtles are expected to potentially be found in the proposed borrow area in Lake Pontchartrain. It would be highly unlikely that any of the listed marine species would be found in the proposed marsh or BLH-Wet mitigation project areas due to very shallow water. All of these species are typically found in deeper water where they are able to maneuver and forage effectively.

Table 4: Threatened and Endangered Species in St. Tammany Parish

Species	Potentially in Project Areas	Status	Jurisdiction	
			USFWS	NFMS
West Indian Manatee (*Trichechus manatus*)	X	E	X	
Red Cockaded Woodpecker (*Picoides borealis*)		E	X	
Gopher Tortoise (*Gopherus polyphemus*)		T	X	
Ringed Map Turtle (*Graptemys oculifera*)		T	X	
Kemp's Ridley Sea Turtle (*Lepidochelys kempii*)	X	E	X	X
Green Sea Turtle (*Chelonia mydas*)	X	T	X	X
Loggerhead Sea Turtle (*Caretta caretta*)	X	T	X	X
Pallid Sturgeon (*Scaphirhynchus albus*)		E	X	
Gulf Sturgeon (*Acipenser oxyrinchus desotoi*)	X	T	X	X
Alabama Heelsplitter Mussel (*Potamilus inflatus*)		T	X	
Louisiana Quillwort (*Isoetes louisianensis*)		E	X	

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 been designated in Florida, but not in Louisiana (USFWS 1977).

The manatee is a large gray or brown aquatic mammal that may reach a length of 13 feet and a weight of over 2,200 pounds. It occurs in both freshwater and saltwater habitats within tropical and subtropical regions. The manatee is not a year-round resident in Louisiana, but it may migrate there during warmer months. The primary human-related threats to the manatee include watercraft-related strikes (impacts and/or propeller strikes), crushing and/or entrapment in water control structures (flood gates, navigation locks), and entanglement in fishing gear, such as discarded fishing line or crab traps (USFWS 2007).

The West Indian manatee is known to regularly occur in Lake Pontchartrain and Maurepas and their associated coastal waters and streams and is likely to occur within the project area. It also can be found less regularly in other Louisiana coastal areas, most likely while the average water temperature is warm. Based on data maintained by the Louisiana Natural Heritage Program (LNHP), over 80 percent of reported manatee sightings (1999-2011) in Louisiana have occurred from the months of June through December. Manatee occurrences in Louisiana appear to be increasing. 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). Cold weather and outbreaks of red tide may adversely affect these animals. However, human activities is the primary cause for declines in species number due to collisions with boats and barges, entrapment in flood control structures, poaching, habitat loss and pollution.

The West Indian manatee is known to regularly occur in Lake Pontchartrain where the borrow area is proposed and may occasionally occur within the marsh mitigation project area. To minimize the potential for construction activities to cause adverse impacts to manatees, the following standard manatee protection measures, developed by the USFWS, Lafayette, Louisiana Field Office, would be implemented when activities are proposed that would impact habitat where manatees could occur:

- During in-water activities in areas that potentially support manatees, all personnel associated with the project would be instructed about the potential presence of manatees, manatee speed zones, and the need to avoid collisions with and injury to manatees.
- All construction personnel would be responsible for observing water-related activities for the presence of manatees.
- All personnel would be advised that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act of 1972 and the Endangered Species Act of 1973.
- Personnel would be instructed not to attempt to feed or otherwise interact with the animal, although passively taking pictures or video would be acceptable.
- Temporary signs concerning manatees should be posted prior to and during all in-water project activities and removed upon completion, Each vessel involved in construction activities should display at the vessel control station or in a prominent location, visible to all employees operating the vessel, 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.
- If a manatee is sighted within 100 yards of the active work zone, special operating conditions would be implemented, including: all work, equipment and vessel operation should cease if a manatee is spotted within a 50-foot radius (buffer zone) of the active work area. Once the manatee has left the buffer zone on its own accord, (manatees must not be herded or

harassed into leaving), or after 30 minutes have passed without additional sightings of manatee(s) in the buffer zone, in-water work can resume under careful observation for manatee(s).

- If a manatee(s) is sighted in or near the project area, all vessel associated with the project should operate at "no wake/idle" speeds within the construction area and at all times while the waters where the draft of the vessel provides less than four-foot clearance from the bottom. Vessels should follow routes of deep water whenever possible.
- If used, siltation or turbidity barriers should be properly secured, made of material in which manatees cannot become entangled, and be monitored to avoid manatee entrapment or impeding their movement.
- 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.
- To ensure manatees are not trapped due to construction of containment or water control structures, Louisiana Department of Wildlife and Fisheries recommends that the project area be surveyed prior to commencement of work activities. Collision with, injury to, or sighing of manatees should be immediately reported to the Service's Louisiana Ecological Services Office (337/291-3100) and the Louisiana Department of Wildlife and Fisheries (LDWF), Natural Heritage Program (225/765-2821)

Gulf Sturgeon

The Gulf sturgeon was listed as threatened throughout its range on September 30, 1991. The Gulf sturgeon is an anadromous fish that migrates from salt water into coastal rivers to spawn and spend the warm summer months. Subadults and adults typically spend the three to four coolest months of the year in estuaries or Gulf of Mexico waters foraging before migrating into the rivers. This migration typically occurs from mid-February through April. Most adults arrive in the rivers when temperatures reach 70 degrees Fahrenheit and spend eight to nine months each year in the rivers before returning to estuaries or the Gulf of Mexico by the beginning of October.

Critical habitat identifies specific areas that have been designated as essential to the conservation of a listed species. Critical habitat units (areas) designated for the Gulf sturgeon in Louisiana include Lake Pontchartrain east of the Causeway, Lake Catherine, Lake Borgne, out into the Mississippi Sound (USACE 2006a). Studies by the LDWF have shown the presence of Gulf sturgeon in Lake Pontchartrain during the winter and during periods of migration between marine and riverine environments. Records indicate that Gulf sturgeon have been located in Lake Pontchartrain east of the Causeway, particularly on the eastern Northshore. Gulf sturgeon have been documented west of the causeway, typically near the mouths of small rivers (USFWS and NMFS 2003).

Kemp's Ridley, Loggerhead, and Green Sea Turtles

Sea turtles inhabit tropical and subtropical marine and estuarine waters around the world. Of the seven species in the world, six occur in U.S. waters, and all are listed as threatened or endangered. The three species potentially occurring in Lake Pontchartrain and Lake Borgne in the vicinity of the mitigation projects have a similar appearance, though they differ in maximum size and coloration. The Kemp's ridley is the smallest sea turtle – adults average about 100 pounds with a carapace length of 24 to 28 inches and a shell color that varies from gray in young individuals to olive green in adults. The loggerhead sea turtle is the next largest of these three species – adults average about 250 pounds with a carapace length of 36 inches and a reddish brown shell color. The green sea turtle is the largest of these three species – adults average 300 to 350 pounds with a length of more than 3 feet and a brown coloration (its name comes from its greenish colored fat). The Kemp's Ridley has a carnivorous diet that includes fish, jellyfish, and mollusks. The loggerhead has an omnivorous diet that includes fish, jellyfish, mollusks, crustaceans, and aquatic plants. The green sea turtle has

an herbivorous diet of aquatic plants, mainly sea grasses and algae, which is unique among sea turtles. All three species nest on sandy beaches, which are not present near Lake Pontchartrain. The life stages that may occur in Lake Pontchartrain range from older juveniles to adults.

3.4.3 Fisheries/Aquatic Resources/Water Quality

Existing Conditions

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.

The NMFS has determined that Lake Pontchartrain and adjacent wetlands provide nursery and foraging habitats which support varieties of economically important marine fishery species, including 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 existing submerged aquatic vegetation and shallow open water within the project area, and adjacent wetlands, provide important estuarine fisheries habitat, 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 opportunities that include a wide variety of finfish and shellfish (Rounsefell, 1964; Penland et al., 2002).

The assemblage of species in the proposed project area is largely dictated by salinity levels and season. During low-salinity periods, species such as Gulf menhaden, blue crab, white shrimp, blue catfish, largemouth bass and striped mullet are present in the project area. During high-salinity periods, more salt-tolerant species such as sand seatrout, spotted seatrout, black drum, red drum, Atlantic croaker, sheepshead, southern flounder, Spanish mackerel, and brown shrimp may move into the project area, especially the borrow area in Lake Pontchartrain. Wetlands throughout the project area also support small resident fishes and shellfish such as least killifish, sheepshead minnow, sailfin molly, grass shrimp, and others. Those species are typically found along marsh edges or among submerged aquatic vegetation, and provide forage for a variety of fish and wildlife.

The water quality in the hydrologic units in which these projects are located does not fully support two of their designated uses: (1) Primary Contact Recreation. The suspected source of this impairment, fecal coliform, is from on-site treatment systems, such as septic systems and similar decentralized systems. (2) Fish and Wildlife Propagation. The suspected sources of this impairment, low dissolved oxygen, includes on-site treatment systems such as septic systems and similar decentralized systems, and permitted discharges in the area. Lake Pontchartrain, the project borrow source, is considered to fully support its designated uses.

3.4.4 Essential Fish Habitat

Existing Conditions

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, regional Fishery Management Councils (FMC), and other Federal agencies to identify and protect EFH of economically important marine and estuarine fish. 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), subtidal vegetation (seagrasses and algae), and adjacent intertidal vegetation (marshes and mangroves). Table 5 shows the categories of EFH and the managed species that occur in the project area.

Table 5: EFH Species in the Project Area

Life Stage	Brown Shrimp	White Shrimp	Red Drum
Adults		R	R
Eggs			
Juveniles	C to HA	C to A	C
Larvae			
Spawners			

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

Life Stage	Essential Fish Habitat
Brown Shrimp - Adults	Silt, sand, muddy sand
Brown Shrimp - Juveniles	Marsh edge, submerged aquatic vegetation, tidal creeks, inner marsh
White Shrimp - Adults	Silt, soft mud
White Shrimp - Juveniles	Marsh edge, submerged aquatic vegetation, ponds, inner marsh, oyster reefs
Red Drum – Adults	Estuarine mud substrate
Red Drum - Juveniles	Submerged aquatic vegetation, estuarine mud substrate, marsh/water interface

The project is located within an area identified as essential fish habitat for postlarval/juvenile brown shrimp; postlarval/juvenile white shrimp; and postlarval/juvenile and adult red drum. The 2005 generic amendment of the FMP for the Gulf of Mexico, prepared by the Gulf of Mexico FMC, identifies EFH in the project area to be estuarine emergent wetlands, submerged aquatic vegetation, estuarine water column, and mud substrates.

3.4.5 Cultural Resources

Existing Conditions

A review of the Louisiana Division of Archaeology, Cultural Resources Map indicates that two surveys for cultural resources have been previously carried out in portions of the proposed project area. In 1983, Coastal Environments, Inc. conducted a Level I survey of the Rigolets Estates Property for a proposed residential development (Gagliano 1982). During this survey no sites were identified in the survey area. A portion of the proposed projects access corridor would extend through the area surveyed by Coastal in 1983. In 1999, Historic Preservation Associates conducted a survey to identify cultural resources along a proposed fiber optic line extending from New Orleans, Louisiana to Pensacola, Florida. A portion of this survey was located along Highway 90 adjacent to the currently proposed project area, and a single cultural resource was identified. The site was identified as a very thin scatter of Rangia shell and three flakes of unknown prehistoric affiliation. The site record indicates that the site is not eligible for listing to the National Register of Historic Places.

3.4.6 Air Quality

Existing Conditions

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, and particulate matter less than 10 microns in diameter (PM10), particulate matter less than 2.5 microns in diameter (PM2.5), 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 6.

Table 6: National Ambient Air Quality Standards (NAAQS)

Pollutant and Averaging Time	Primary Standard		Secondary Standard	
	µg/m3	Parts per million (ppm)	µg/m3	ppm
Carbon Monoxide 8-hour concentration 1-hour concentration	 10,000[1] 40,000[1]	 9[1] 35[1]	 - -	
Nitrogen Dioxide Annual Arithmetic Mean	100	0.053	Same as primary	
Ozone 8-hour concentration	157	0.08[2]	Same as primary	
Particulate Matter PM2.5: Annual Arithmetic Mean 24-hour Maximum PM10: 24-hour concentration	 15[3] 35[4] 150[1]	 - - -	Same as primary	
Lead Quarterly Arithmetic Mean	1.5	-	Same as primary	
Sulfur Dioxide Annual Arithmetic Mean 24-hour concentration 3-hour concentration	80 365[1] -	0.03 0.14[1] -	- - 1300[1]	- - 0.50[1]

Notes:
[1] Not to be exceeded more than once per year
[2] 3- year average of the 4th highest daily maximum 8-hour concentration may not exceed 0.08ppm
[3] Based on a 3-year average of annual averages
[4] Based on a 3-year average of annual 98th percentile values
Source: *40 CFR 50*

This project is in St. Tammany Parish which is currently in attainment of NAAQS.

3.4.7 Recreational Resources

Existing Conditions

Recreational resources in the project area are affected by loss of wetlands/marshes and habitat diversity. Many recreation activities are based on aquatic resources and are directly related to the habitat and species in an area. Habitat changes affect fish and wildlife populations, thereby affecting many recreational resources. Changes in habitat types can be a result of increased salinities and other factors affecting estuarine dependent fish. Loss of marshland and an increase in open water

is expected to have impacts on recreational fishing and hunting over the next 50 years. Fishery habitats would decline as spawning places in the marsh are destroyed. Larger open water areas are forming resulting in less shallow waters available as nursery habitat for spawning areas of fish. A decline in the game fish population would also affect hunting opportunities. Populations of migratory birds and other animals directly dependent on the marsh and swamp would decrease dramatically as would bird viewing, an impact that would be felt in much of North America, where some of these species spend part of their life cycle.

Another major impact of land loss is the possible loss of facilities and infrastructure that support or are supported by recreational activities. Land loss can literally result in the loss of boat launches, parking areas, access roads, as well as marinas and supply shops. The loss of access features, such as roads and boat launches, directly impacts the public's ability to recreate in particular areas. Marinas and other shops may lose business as access diminishes or may lose their facilities altogether. Alternatively, demand for goods and services may change. Habitat change and resulting changing recreation opportunities (i.e. fresh to marine) may for example severely impact a marina specializing in services to particularly types of recreation (i.e. loss of freshwater opportunities).

Recreation areas in the Pontchartrain Basin include two NWR, four LA Wildlife Management Areas, four state parks, and one state historic site, as well as other significant areas. These areas alone represent approximately 214,000 acres that are visited annually nearly 450,000 times for recreational purposes. The recreation areas include 46 miles of trails for hiking and biking, 38 boat ramps, 2 fishing piers, 4 classroom spaces, 3 visitor centers or museums, 4 picnic shelters, and 2 historic sites. The recreation areas provide opportunities for hunting, hiking, biking, boating, bird watching, fishing and crabbing, crawfishing, shrimping, education, camping, picnicking, and playing.

Waterfowl hunting is the most popular activity at the New Zydeco Ridge location. According to the BBNWR Manager, the Salt Bayou parking lot is full during waterfowl season as hunters launch pirogues and paddle to the nearest site, New Zydeco Ridge. About 5-10 hunters use the site per day during the season, according to the NWR Manager.

3.4.8 Wetlands

Existing Conditions

Project area wetlands within the terrace field transitioned from predominantly fresh marsh in 1956 and 1978 to brackish marsh in 1988. The 2000 data shows an almost even split within the terrace field between intermediate and brackish marsh. In the 2007 Operations, Maintenance, and Monitoring Report for the Fritchie Marsh Restoration Project (PO-06), salinity data was collected throughout the project area pre-construction, from 1997-2000, and from 2001-2005. The summary statistics showed that during the monitoring period, salinity averaged about 3 ppt post construction. This average was considerably higher pre-construction at about 6 ppt. Measurements taken during the WVA trip in June 2009 showed salinities around 3 ppt as well. The 2007 report discussion on vegetative composition indicated that portions of the vegetative communities were trending brackish, with the predominant vegetation being *Spartina patens* and *Schoenoplectus americanus*; however, there are several areas that are trending intermediate. As such, the area is suitable for both intermediate and brackish marsh mitigation.

Existing emergent wetlands and shallow open water within the project areas provide important habitat and 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. 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.

Open water habitats such as Lake Pontchartrain provide wintering and multiple use functions for brown pelicans, seabirds, and other open water residents and migrants. Open water habitats in the project area 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.

4. ENVIRONMENTAL CONSEQUENCES

This section describes the direct, indirect and cumulative effects of mitigation projects on significant resources found within the LPV mitigation basin, and notes whether they would be impacted by implementation of the proposed project. The period of impact analysis begins when project construction is completed and generally extends 50 years for USACE projects. No natural and scenic rivers or upland resources would be impacted with implementation of any of the projects in the final array.

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.

4.1 Wildlife

Future Conditions with No-Action

The approved project in PIER 36 and SIER 1 for mitigating the LPV HSDRRS brackish marsh impacts was the BSFS Brackish Marsh Project. Under the no action alternative, this project would be constructed as discussed in SIER 1 and impacts to this resource would be the same as those presented for the brackish marsh portion of the proposed action in SIER 1.

Future Conditions with the Proposed Action *(the Expansion of NZR)*

Impacts to this resource would not be different than those identified in SIER 1 in that the project area for BSFS4 and the expansion at NZR are the same habitat, namely shallow open water surrounded by marsh. Species present would be similar as these two projects occur in the vicinity of each other.

Direct impacts to wildlife would result from the conversion of approximately 60 acres of shallow open water to emergent marsh habitat. This conversion would reduce use and function of these areas for brown pelicans, seabirds, dabbling and diving ducks, coots, and gallinules and other species that feed in the shallow open water in this location, but it is anticipated they would utilize adjacent areas of open water habitat that are abundant in close proximity to the proposed features. It is anticipated that the project areas would experience improved overall wetland habitat functions once construction and establishment of the proposed marsh is achieved.

These actions would create or enhance emergent marsh habitat for terrestrial and semi-aquatic species such as nutria, muskrat, mink, river otter, and raccoon. Reptiles including the American alligator, western cottonmouth, water snakes, speckled kingsnake, rat snake, and eastern mud turtle are likely to utilize and populate the proposed marsh areas as well. Amphibians expected to colonize the area include the bullfrog, southern leopard frog, and Gulf coast toad. The edges and small areas

of open water that would form over time would also provide feeding habitat for common wading bird species including great blue heron, green heron, tricolored heron, great egret, snowy egret, yellow-crowned night-heron, black-crowned night-heron, and white ibis. The creation of an additional 60 acres of brackish marsh habitat, combined with the original 160 acres of marsh approved in SIER 1 at the NZR feature would provide habitat utilized by species such as songbirds, white-tailed deer, raccoons, squirrels, and rabbits.

Indirect impacts of the proposed action would be a displacement of species that utilize shallow open water habitats. However, these species would have the opportunity to utilize adjacent shallow open water areas. 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 borrow area would be free to relocate during construction since the borrow area encompasses only a small section of a 403,200 acre estuarine/brackish lake. This project would help to offset an overall loss in the basin of intermediate and brackish 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 prevent the net loss of intermediate, brackish wetland function and overall decline of wildlife species within the basin and would be beneficial in both preserving the species bio-diversity and combating the current trend of conversion of coastal marsh to open water, which would be accelerated due to sea level rise.

Future Conditions with the Purchase of Mitigation Bank/ILF Credits

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 Threatened and Endangered Species

Future Conditions with No-Action

The approved project in PIER 36 and SIER 1 for mitigating the LPV HSDRRS brackish marsh impacts was the BSFS Brackish Marsh Project. Under the no action alternative, this project would be constructed as discussed in SIER 1 and impacts to this resource would be the same as those presented for the brackish marsh portion of the proposed action in SIER 1.

Future Conditions with the Proposed Action *(The Expansion of NZR)*

Impacts to this resource would not be different than those identified in SIER 1 in that the project area for BSFS4 and the expansion at NZR are the same habitat, namely shallow open water surrounded by marsh. The borrow sites for both projects occur in the same portion of Lake Pontchartrain (in an area designated as critical habitat for Gulf sturgeon), with similar bottom substrates, and similar excavation depths (19 and 20 ft respectively). Since the borrow site for the BSFS Brackish Marsh project is shrinking by 41 acres with the removal of the BSFS4 feature, and the NZR borrow site is expanding by 41 acres for the proposed action, no overall difference in impact to Gulf sturgeon, their critical habitat or any other T&E species from what was addressed in SIER 1 is anticipated.

No listed species is expected to be directly impacted within the proposed marsh expansion footprint since water depths in the area are typically less than 2 feet and access to the site is restricted. Still, precautions would be taken during construction of retention dikes to ensure no impacts to listed species. The construction contractor would be required to induce listed species to leave the immediate work area prior to any work regardless of water depth. A bucket (or similar equipment)

would be dropped into the water and retrieved empty one time. After the bucket has been dropped and retrieved, a 1-minute no work period must be observed. During this no work period, personnel should carefully observe the work area in an effort to visually detect listed species. If species are sighted, no bucket dredging should be initiated until the listed species have left the work area. If the water turbidity makes such visual sighting impossible, work may proceed after the 1-minute no work period has elapsed. If more than 15 minutes elapses with no work, then the empty bucket drop/retrieval process shall be performed again prior to work commencing.

The borrow area could potentially be utilized by Gulf sturgeon, manatees and sea turtles. Dredging for borrow material would occur via hydraulic cutterhead dredge. Entrainment of Gulf sturgeon and sea turtles is not expected since hydraulic dredges are slow moving and their use is not known to impact these species. The presence of construction- related activity, machinery, and noise would be expected to cause these species to temporarily avoid the project area during the construction period. Manatees could potentially be affected by dredging operations, but adverse impacts to this species would be avoided through the implementation of standard manatee protection measures developed by the USFWS. These conditions are included in the construction contract specifications for nearly all USACE dredging contracts in coastal Louisiana.

The indirect impacts resulting from the temporary loss of the borrow area as foraging habitat would be insignificant given the small size of the borrow area compared to the overall area of Lake Pontchartrain. Although the borrow area is inside of designated critical habitat for Gulf sturgeon, Gulf sturgeon primarily feed on sandy substrates and preliminary borings show that the borrow area has a high clay content especially at surface floor levels; the sandy substrates lie 10-11 feet below surface. Turbidity would increase at each location, but would remain localized and should be reduced by movement of the tides.

CEMVN assessed the potential of the recommended action in SIER 1 to affect listed species and determined that the proposed action may affect, but is not likely to adversely affect the Gulf Sturgeon, West Indian manatee, and the green, Kemp's Ridley, and loggerhead sea turtles and may affect, but is not likely to adversely affect Gulf Sturgeon Critical Habitat and is not likely to destroy or adversely modify it. In its August 19, 2015 letter, NMFS concurred that the proposed action was not likely to adversely affect the Gulf Sturgeon and its critical habitat and the green, Kemp's Ridley and loggerhead sea turtles. More specifically, NMFS concluded:

"Because all potential project effects to listed species and critical habitat were found to be discountable, insignificant, or beneficial, we conclude that the proposed action is not likely to adversely affect listed species and critical habitat under NMFS's purview. This concludes your consultation responsibilities under the ESA for species under NMFS's purview. Consultation must be reinitiated if … new information reveals effects of the action not previously considered, or if the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat in a manner or to an extent not previously considered…. NMFS's findings on the project's potential effects are based on the project description in this response. Any changes to the proposed action may negate the findings of this consultation and may require re-initiation of consultation with NMFS." (Appendix B)

CEMVN's determinations with respect to potential effects to listed species and to Gulf sturgeon critical habitat remain unchanged from the conclusions articulated in the SIER. Namely, CEMVN's position continues to be that the proposed action may affect, but is not likely to adversely affect the Gulf Sturgeon, West Indian manatee, and the green, Kemp's Ridley, and loggerhead sea turtles and may affect, but is not likely to adversely affect Gulf Sturgeon critical habitat and is not likely to destroy or adversely modify it.

Applying the standard articulated by NMFS's concurrence and in 50 CFR Section 402.16, i.e., whether the action is modified in a manner that causes an effect to listed species or to critical habitat in a manner or to an extent not previously considered, CEMVN has concluded that the minor modification to the proposed action does not cause an effect to listed species or to critical habitat in any manner or to any extent that was not previously considered. NMFS's evaluation considered impacts to 748 acres of Gulf sturgeon critical habitat, which acreage and impacts remain unchanged with the proposed modification. As noted previously, the design of the New Zydeco borrow site is the same as the design evaluated in the SIER and by NMFS with respect to shape, side slopes and depth. The methods and precautions for excavating borrow likewise remain the same. Effects to listed species will be identical. Because there will be no effects of the proposed action to either listed species or critical habitat that were not previously considered and because the proposed minor modification will not cause effects in a manner or to an extent not previously considered, re-initiation of consultation is not required.

In its August 26, 2014 letter, USFWS concurred that the proposed action was not likely to adversely affect listed species under USFWS's purview (the West Indian manatee) and has verified this determination in its June 29, 2016 re-coordination email CEMVN for the proposed action.

Future Conditions with the Purchase of Mitigation Bank/ILF Credits

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.

4.3 Fisheries/Aquatic Resources/Water Quality

Future Conditions with No-Action

The approved project in PIER 36 and SIER 1 for mitigating the LPV HSDRRS brackish marsh impacts was the BSFS Brackish Marsh Project. Under the no action alternative, this project would be constructed as discussed in SIER 1 and impacts to this resource would be the same as those presented for the brackish marsh portion of the proposed action in SIER 1.

Future Conditions with the Proposed Action *(The Expansion of NZR)*

Impacts to this resource would not be different than those identified in SIER 1 in that the project area for BSFS4 and the expansion at NZR are the same habitat, namely shallow open water surrounded by marsh. The borrow sites for both projects occur in the same portion of Lake Pontchartrain and excavation depths are similar (19 and 20 ft respectively).

With the expansion at the NZR location, approximately 60 acres of open water, broken marsh, SAVs, and mud substrate would be replaced with intermediate and brackish marsh, increasing spawning, nursery, forage and cover habitat for fisheries resources over the long term. Implementation of the proposed action would prevent an overall loss in the basin of brackish marsh 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 shallow open water habitat in the basin, but no permanent adverse impacts are anticipated because this habitat is prevalent throughout the basin. Direct impacts from the SAV loss were factored into the mitigation planning analysis and would be mitigated by the restoration of intermediate and brackish marsh in the proposed project areas.

For approximately 5 years after project construction the project area would be above daily tidal inundation and only partially vegetated, so maximum fisheries benefits would not be realized until after this 5-year de-watering and settlement period has elapsed. Turbidity during borrow excavation and fill placement would temporarily impair visual predators and would impact filter feeders, but these impacts are expected to cease after construction and benthic species would rebound once construction is complete. Temporary water quality impacts from turbidity are not anticipated to be substantial enough to cause impairment of the water body's designated uses as defined under the standards of Louisiana Administrative Code, Title 33, Part IX, Chapter 11. Water quality impacts in the fill area would temporarily add to the water quality impairment of this sub-segment, but these impacts would be minimized through best management practices and would diminish to background levels after construction.

Fish access to this area would be extremely limited until the material consolidated and settled to an elevation conducive to natural emergent marsh habitats. It is expected this "lag" time would be approximately 5 years. Once the success criteria have been achieved, this area would once again serve its traditional functional role in the local ecosystem.

It is probable that crab fishermen sometimes place crab traps within the proposed borrow area as the practice is common throughout Lake Pontchartrain. Shrimp fishermen may venture into the area either pulling trawls or pushing "skimmer" nets. The fishermen and their gear would be temporarily displaced during project construction, and the borrow area may be less productive for up to a year after project construction due to loss of benthic animals from the dredging operation. The depth restriction on the borrow pit, preventing it from being more than 20 feet in total depth, would minimize the chance that the area would suffer from low oxygen conditions post construction. The borrow pit should revert to productive habitat within a couple growing seasons after project construction. Further, the relative size of the borrow area compared to the open water areas in the Lake is fairly small. Overall, commercial fisheries in Lake Pontchartrain would not be disrupted by the proposed action.
Activities associated with the dredging of borrow material for the proposed action would impact an additional 41 acres over the 289 acres identified in SIER 1. Although turbidity impacts would be localized and temporary, concern over borrow pit water quality impacts is justified as improperly planned dredge pits can result in hypoxic/anoxic conditions. The development of these conditions has been linked to the inability of the water to be properly mixed and flushed within the pits, resulting in stagnation and stratification. Water quality impacts from borrow pits varies greatly due to geographic location, pit design, and environmental parameters.

Hypoxic and anoxic conditions have been linked to the tendency for a borrow pit to accumulate organic material. This accumulation can be reduced by: 1) limiting the depth of the pit; 2) increasing the pits surface area; and 3) decreasing side-slopes that transition from the pit to adjacent water bottoms. A shallow and broad "pan-shaped" borrow pit would facilitate circulation with adjacent waters, thereby decreasing the likelihood that organic material would become entrained, as well as allow for periodic flushing of the pit during storm events.

The proposed borrow plan has been developed with an emphasis of mimicking a natural depression in the lake bottom. A gradual side slope of 1V:3H has been designed for the borrow pits. This gradual slope would facilitate tidal flushing. The NZR borrow pit, including the proposed expansion, is located in an area of tremendous tidal flow and high current velocities that would ensure water exchange within the borrow pit. Borrow pits also have been consolidated together to increase their surface area, which would facilitate tidal mixing of the water column.

<u>Future Conditions with the Purchase of Mitigation Bank/ILF Credits</u>

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.

4.4 Essential Fish Habitat

Future Conditions with No-Action

The approved project in PIER 36 and SIER 1 for mitigating the LPV HSDRRS brackish marsh impacts was the BSFS Brackish Marsh Project. Under the no action alternative, this project would be constructed as discussed in SIER 1 and impacts to this resource would be the same as those presented for the brackish marsh portion of the proposed action in SIER 1.

Future Conditions with the Proposed Action *(The Expansion of NZR)*

Impacts to this resource would not be different than those identified in SIER 1 in that the project area for BSFS4 and the expansion at NZR are the same habitat, namely shallow open water surrounded by marsh. The borrow sites for both projects occur in the same portion of Lake Pontchartrain and excavation depths are similar (19 and 20 ft respectively).

The existing essential fish habitat at the marsh restoration features includes estuarine water bottom, estuarine water column, and submerged aquatic vegetation. These habitats would be largely converted to another type of essential fish habitat – estuarine intertidal herbaceous wetlands (marsh). Benthic resources within the borrow site would be lost until they can re-colonize the borrow area. Relatively species-poor benthic assemblages associated with low salinity estuarine sediments can recover in periods of time ranging from a few months to approximately one year (Leathem et al. 1973; McCauley et al. 1976 and 1977; Van Dolah et al. 1979 and 1984; Clarke and Miller-Way 1992). Based on characteristics of the existing benthic community in the vicinity of the project area (Ray, 2007) it seems likely that the benthic community in the borrow areas would recover in one to two years. The borrow area would not be excavated to more than 20 feet deep thereby minimizing the possibility of anoxic conditions. Fisheries access to the marsh mitigation area would be extremely limited during the initial 3-5 years of the project life while the pumped-in sediments are dewatering and subsiding. These areas were once a functional marsh system that provided nursery and feeding habitat to local fisheries. Over time, the proposed actions would result in an increase of functional marsh and associated shallow water habitat thereby accomplishing the required level of mitigation and offsetting adverse impacts to certain categories of EFH. The adverse impacts to essential fish habitat that would result from the proposed actions may affect, but should not adversely affect, managed species considering the small acreage involved relative to Lake Pontchartrain, plus the project would provide long-term benefit to the managed species by providing intertidal wetlands, a valuable type of essential fish habitat.

Indirect impacts to managed species include increased turbidity and disturbance of Lake Pontchartrain in the vicinity of the borrow area. These species may be temporarily displaced. Cumulative impacts to fresh and intermediate marsh EFH resulting from construction of the LPV HSDRRS were considered and found to be adequately offset by the resulting increase in habitat quality from the proposed action. Implementation of the proposed action would result in sufficient EFH habitat improvement to offset adverse impacts to brackish and intermediate marsh EFH and open water designated as essential fish habitat from the LPV HSDRRS construction projects as well as the construction of this proposed mitigation project. The other LPV HSDRRS mitigation projects recommended in PIER 36 and SIER 36 were evaluated and found to have inconsequential cumulative impacts to EFH. No additional UCASE activities that would impact similar open water EFH were identified in the project vicinity.

The proposed action would convert approximately 60 acres of shallow open water habitat and SAVs to brackish marsh habitat. However, shallow open water is found in abundance throughout the LPV 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 LPV basin because the mitigation is off setting losses due to construction of the LPV HSDRRS. Implementation of this project would offset the loss of brackish marsh habitat that occurred as a result of the HSDRRS construction. There would be an overall loss of open water habitat in the basin, but no permanent adverse impacts are anticipated because this habitat is prevalent throughout the basin.

Future Conditions with the Purchase of Mitigation Bank/ILF Credits

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.

4.5 Cultural Resources

Future Conditions with No-Action

The approved project in PIER 36 and SIER 1 for mitigating the LPV HSDRRS brackish marsh impacts was the BSFS Brackish Marsh Project. Under the no action alternative, this project would be constructed as discussed in SIER 1 and impacts to this resource would be the same as those presented for the brackish marsh portion of the proposed action in SIER 1.

Future Conditions with the Proposed Action *(The Expansion of NZR)*

Existing and as yet undiscovered cultural resources could be adversely impacted by activities associated with the proposed projects such as retention dike construction, gapping along natural bayous, degrading of dikes, staging area location, access corridor use, and other activities. Implementation of the proposed action to restore vegetated marsh could help to prevent or slow future erosion, which over time could contribute to the protection and preservation of cultural resources that may exist in the project area.

The draft report titled “Phase I Cultural Resources Investigations and Remote Sensing Survey of Lake Pontchartrain and Vicinity Refuge Mitigation Projects – National Wildlife Refuge Habitat Mitigation, Orleans and St. Tammany Parishes, Louisiana – Turtle Bayou, Bayou Sauvage Marsh, and New Zydeco Ridge” was received on July 7, 2014. The SHPO concurred in a letter dated October 6, 2014, that the project would have no adverse effects on historic properties. No comments were received from federally recognized Indian Tribes. Consultation pursuant to Section 106 of the National Historic Preservation Act has been concluded.

Future Conditions with the Purchase of Mitigation Bank/ILF Credits

Purchase of mitigation credits from an approved mitigation bank would have no impacts to cultural resources.

4.6 Air Quality

Future Conditions with No-Action

The approved project in PIER 36 and SIER 1 for mitigating the LPV HSDRRS brackish marsh impacts was the BSFS Brackish Marsh Project. Under the no action alternative, this project would be constructed as discussed in SIER 1 and impacts to this resource would be the same as those presented for the brackish marsh portion of the proposed action in SIER 1.

Future Conditions with the Proposed Action *(The Expansion of NZR)*

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, tender boats, marsh buggies, 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. There would be no adverse indirect impacts to air quality with construction of the proposed action.

Because the project area is in a parish in attainment of NAAQS, a conformity analysis is not required.

Future Conditions with the Purchase of Mitigation Bank/ILF Credits

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.

4.7 Recreational Resources

Future Conditions with No-Action

The approved project in PIER 36 and SIER 1 for mitigating the LPV HSDRRS brackish marsh impacts was the BSFS Brackish Marsh Project. Under the no action alternative, this project would be constructed as discussed in SIER 1 and impacts to this resource would be the same as those presented for the brackish marsh portion of the proposed action in SIER 1.

Future Conditions with the Proposed Action *(The Expansion of NZR)*

Recreational opportunities within the project area may increase with increased formation of emergent marsh and other fish and wildlife habitats. An increase in habitat value would likely result in increased wildlife usage of the project area. The New Zydeco Ridge mitigation features are all located within NWRs and would continue to be used recreationally.

Direct impacts from the restoration include restricted boating, fishing and hunting during construction and for a period afterwards. Earthen retention dikes would remain in place for a period to allow for material to settle out within the restoration feature. Once the restoration is complete and the site matures, direct benefits should accrue to recreational users in the restoration features due to improved habitat quality attracting wildlife or fish. Indirect benefits would also take place in areas surrounding the restoration features as some of the material placed would naturally migrate once the dikes are plugged and/or degrade, nourishing marsh cells and benefiting waterfowl and birds.

Positive long-term benefits would likely be realized from the deposition of dredged material into shallow open water areas and onto existing emergent marsh vegetation. The mitigation area would accept the dredge material in its highly turbid form and in time, become continuous, non-turbid, brackish marsh. Marsh plants consisting of emergent and/or submergent vegetation would become established, complementing the already existing fish and wildlife habitat and increasing future recreational activities in the area. Once the site is fully functional, better habitat from the marsh restoration should improve conditions and opportunities for hunting or bird viewing.

Temporary direct impacts from dredging Lake Pontchartrain include an increase in water turbidity, which would affect fishing in the area of work. Dredging activities would disrupt most recreational activity occurring within the area of work; however, these adverse impacts would be temporary, short-lived, and confined to a relatively small area of the lake. There are, however, many other locations in the lake to fish. Once construction activities are completed, the newly dug pits at the lake bottom should offer new habitat and fishing opportunities should return to the area.

Indirect impacts to boaters would be minor and result from placement of the pipeline needed to deliver the dredge material to the restoration feature. In general, waterways would remain accessible and would not be totally shutoff from navigation. Where the pipeline crosses a navigable waterway, it would be submerged. In areas where the pipeline crosses a body of waterway, it would run along the waterway near its edge. Boaters may have to travel longer distances to arrive at their destination in areas where the floating pipeline blocks navigation. Indirect impacts would also accrue to areas surrounding the proposed restoration features as wildlife and fish in the vicinity would benefit from improved habitat nearby.

Recreational opportunities should improve in Lake Pontchartrain Basin once all of the LPV mitigation features are restored. These areas would provide valuable habitat to both fisheries and wildlife using the Lake and surrounding marshes. Long-term cumulative impacts of proposed marsh and BLH creation in the Lake Pontchartrain Basin would have positive impacts on recreational fishing and hunting by increasing habitat nursery and feeding areas. Cumulative impacts of these types of actions normally are positive for recreational resources; however, the negative impacts that occur during construction activities may affect recreational use in the short-term. Since there are an abundant number of places to fish and hunt in the basin, these negative, temporary impacts are expected to only minimally, cumulatively impact recreational resources and are far outweighed by the long-term benefits.

Future Conditions with the Purchase of Mitigation Bank/ILF Credits

There would be no direct indirect or cumulative impacts to recreational resources from the purchase of mitigation bank credits.

4.7 Wetlands

Future Conditions with No-Action

The approved project in PIER 36 and SIER 1 for mitigating the LPV HSDRRS brackish marsh impacts was the BSFS Brackish Marsh Project. Under the no action alternative, this project would be constructed as discussed in SIER 1 and impacts to this resource would be the same as those presented for the brackish marsh portion of the proposed action in SIER 1.

Future Conditions with the Proposed Action *(The Expansion of NZR)*

Impacts to this resource would not be different than those identified in SIER 1 in that the project area for BSFS4 and the expansion at NZR are the same habitat, namely shallow open water surrounded by marsh.

The NZR location was originally coordinated with FWS staff during the SIER 1 process to select wetlands areas that provided relatively low habitat quality and to improve the habitat through the creation of higher quality wetland habitat such as emergent marsh. Although the proposed project would take place in existing shallow open water habitats, the overall habitat quality of the project area would be enhanced by the proposed creation of 60 acres of marsh habitat. There is no lack of

open water habitat in Coastal Louisiana as natural processes continually erode existing land, converting wetland habitat to open water.

Future Conditions with the Purchase of Mitigation Bank/ILF Credits

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 wetlands and other surface waters would be incurred from the purchase of these credits for the HSDRRS mitigation.

4.11 Hazardous, Toxic, and Radioactive Waste

In accordance with Engineering Regulation 1165-2-132, identification and evaluation of the potential to encounter HTRW in the project area was investigated.

The proposed mitigation features were surveyed via aerial photographs, topographic maps, field investigation, and database searches. The proposed feature has not been developed in recent times based on a time-series of aerial photography. No recognized environmental concerns were found or identified within or near the proposed mitigation area. The database searches failed to identify any pipelines crossing the proposed mitigation area or borrow area. Likewise, no oil or gas wells or waste pits have been identified. In conclusion, there would be a low probability of encountering HTRW in the proposed mitigation area and borrow area.

4.12 Cumulative Impacts Analysis

NEPA requires Federal agencies to consider not only the direct and indirect impacts of a proposed action, but also the cumulative impacts of the action. The Council on Environmental Quality (CEQ) Regulations define cumulative impacts (CI) as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR §1508.7)." CI can result from individually minor but collectively significant actions taking place over a period of time."

Appendix B-19 in PIER 36 shows the impacts of other past, present and reasonably foreseeable projects in the LPV basin on the significant resources documented in this EA. 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 important resources, their overall effects on the system from a human and natural environmental perspective would be wholly positive. The structural projects (e.g. levee systems), 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 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 in the FWOP has resulted in the protection of cultural sites found within the protection of the levee system. Ecosystem restoration plans in the LPV and WBV basins and in the region that improve estuarine habitat also provide benefits to the commercial fishing industry.

The cumulative impacts caused by construction of the HSDRRS in conjunction with other past and

reasonably foreseeable future projects was evaluated in the Final Comprehensive Environmental Document, Phase 1 released May 22, 2013. That analysis is incorporated by reference.

NO ACTION

The approved project in PIER 36 and SIER 1 for mitigating the LPV HSDRRS brackish marsh impacts was the BSFS Brackish Marsh Project. Under the no action alternative, this project would be constructed as discussed in SIER 1. Although, implementation of the BSFS4 feature of the BSFS Brackish Marsh Project is not currently feasible, compliance with the laws requiring mitigation is assumed and the impacts from the LPV HSDRRS improvements would be mitigated elsewhere in the basin by the USACE. As such, there would be no overall loss of marsh habitat in the basin due to the LPV HSDRRS improvements.

PROPOSED ACTION

Construction of either layout in the proposed action would satisfy the outstanding 18.4 AAHUs of brackish marsh impacts at the NZR location. This project, when added to other past, present, and reasonably foreseeable ecosystem restoration and mitigation projects in the basin, would help prevent the net loss of wetland function and overall decline of wildlife species within the basin. Although the proposed project may result in impacts to wildlife, T&E species, aquatic resources, EFH, wetlands, water quality and recreational opportunities within the system, these impacts would be insignificant or temporary throughout the period of construction. Overall, the cumulative impacts of the proposed action are expected to be positive, with long-term benefits to wetlands, EFH, aquatic resources, wildlife resources, and recreational opportunities.

5. AGENCY COORDINATION

Preparation of this supplemental 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 in which Federal and state agency staff played an integral part in the project planning and alternative analysis phases of the HSDRRS mitigation planning. This interagency environmental team was integrated with the CEMVN project delivery team. A subset of the interagency environmental team participated in the more detailed development and analysis of the refuge mitigation projects and during preparation of this document.

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

U.S. Department of the Interior, Fish and Wildlife Service
U.S. Environmental Protection Agency, Region VI
U.S. Department of Commerce, National Marine Fisheries Service
U.S. Natural Resources Conservation Service, State Conservationist
U.S. Coast Guard Sector New Orleans
U.S. Coast Guard Marine Safety Unit Baton Rouge
Maritime Navigation Safety Association
The Associated Branch (Bar) Pilots
Crescent River Port Pilots Association
New Orleans Baton Rouge Steamship Pilot Association
Associated Federal Pilots
Big River Coalition
Lower Mississippi River Committee (LOMRC)
Coastal Protection and Restoration Authority Board of Louisiana
Advisory Council on Historic Preservation
Governor's Executive Assistant for Coastal Activities

Louisiana Department of Wildlife and Fisheries
Louisiana Department of Natural Resources, Coastal Management Division
Louisiana Department of Natural Resources, Coastal Restoration Division
Louisiana Department of Environmental Quality
Louisiana State Historic Preservation Officer
Plaquemines Parish Government
Alabama-Coushatta Tribe of Texas
Caddo Nation of Oklahoma
Chitimacha Tribe of Louisiana
Choctaw Nation of Oklahoma
Coushatta Tribe of Louisiana
Mississippi Band of Choctaw Indians
Jena Band of Choctaw Indians
Seminole Tribe of Florida
Seminole Nation of Oklahoma
Tunica-Biloxi Tribe of Louisiana

A final Fish and Wildlife Coordination Act Report (CAR) for SEA #546 was provided by the USFWS on June 29, 2016. The final CAR concluded that the USFWS supports the proposed action to mitigate impacts to fish and wildlife resources associated with HSDRRS. The USFWS project-specific recommendations for the SIER 1 proposed action are listed below:

1. Use of a mitifation bank or a project under the In Leiu Fee Program is acceptable provided that the bank or ILF Project is acceptable to mitigate impacts to EFH.

   CEMVN Response: Awknowledged

2. If construction of the mitigation project does not commence by the end of 2016, the Corps should commit to reassessing additive temporal losses and offsetting such losses with additional mitigation.

   CEMVN Response: Concur

3. The Corps should coordinate closely with the natural resource agencies including the Service, NMFS, and the Coastal Protection and Restoration Authority during and after construction to ensure adequate mitigation is achieved. To the expent practicable, this should include the opportunity to participate in the onsite construction inspections (not less than midpoint, red zone and final inspections), and review of fill area and access corridor elevation surveys prior to dredge demobilization and final acceptance.

   CEMVN Response: Concur. CEMVN will extend the opportunity to attend the construction inspections for the project to the resource agencies and the NFS.

4. A containment dike dredging/gapping plan should be refined and implemented through coordination with natural resource agencies and based on field conditions.

   CEMVN Response: Concur, CEMVN will coordinate the final gapping/degrading plan with the resource agencies.

5. After completion of the initial construction of mitigation, a baseline monitoring report should be prepared to record the final design of the monitoring plan and submitted to the Interagency Team for review. Future changes to those plans should be evaluated against the accrued

and anticipated benefits and the effect of implementing the proposal on achievement of the mitigation plan goals.

CEMVN Response: Concur.

6. The adaptive management plan should be revised to include more details in the marsh mitigation through coordination with the natural resource agencies.

   CEMVN Response: Concur. The adaptive anagement plan has been revised in coordination with the natural resourced agencies.

7. We recommend that the Corps reinitiate ESA consultation with this office and NMFS 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 to ensure that the proposed project does not adversely affect any federally listed threatened or endangered species or their habitat.

   CEMVN Response: Concur. CEMVN will reinitiate ESA consultation with USFWS should the proposed project features change significantly or are not implemented within one year of the last ESA consultation. The CEMVN will reinitate ESA consultation with NMFS if the proposed project features change to such an extent that additional impacts that could adversely affect ESA species or their critical habitat are identified.

8. We recommend that aqualified biologist inspect proposed work sites for the presence of undocumented bald eagle and osprey nests. Adverse impacts to bald eagle and osprey nesting locations and wading bird colonies should be avoided through careful design of 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: Concur

9. We recommend that a qualified biologist inspect proposed work sites for the presence of undocumented nesting colonies during the nesting season (e.g. March 1st through September, depending on the species). If colonies exist, work should not be conducted within 1,000 feet of the colony during the nesting season. Reduced no-work buffers may be possible in coordination with this office. On-site personnel should also be informed of the possible presence of nesting bald eagles and ospreys within the project boundary.

   CEMVN Response: Concur

10. On-site personnel should also be informed of the possible presence of nesting shorebirds should the construction occur any time during the nesting season (March 1st to September 15th). Should borrow material being placed at the mitigation site be suitable for and attract nesting shorebirds, we recommend that an abatement plan be developed in coordination with this office and be available in the event that shorebirds exhibit evidence of nesting behavior.
    CEMVN Response: Concur

11. Should the proposed mitigation projects directly and/or indirectly affect any of CWPPRA project features (e.g., canal plugs, rock dikes, levees, water control structures, diversion

channels, etc.) associated with those CWPPRA projects, the Corps should coordinate with the respective Federal agency.

CEMVN Response: Concur. CEMVN will coordinate with the necessary agencies should the proposed action have any effect on CWPPRA projects.

12. Water quality monitoring within the borrow areas is recommended, and should be conducted at least during March through November for a minimum of three years post dredging to verify the conductance, temperature, dissolved oxygen, and pH from the bottom to surface in five foot profiles. Samples should be collected at least monthly during March, April, September, October, and November. During the hotter months of May, June, July and August, sampling should be conducted once every two weeks. Benthos should be sampled immediately prior to construction and thereafter annually for three years post-dredging to evaluate potential recovery or changes in the community structure.

    CEMVN Response: Concur on the water quality monitoring. Benthic community structure and predicted response to dredging in the vicinity of the project areas was addressed in Ray 2007.

13. The Corps should continue to coordinate with refuge personnel during planning and compatibility determination processes. A Special-Use Permit should be obtained prior to any entrance onto the refuge. Coordination should continue until construction of the flood protection project and restoration projects are complete and prior to any subsequent maintenance. Points of contacts for that refuge are Stacey Armitage, (985) 822-2000, Project Leader for the Service's Southeast National Wildlife Refuges and Daniel Breaux, (985) 882-2030, Refuge Manager for the Big Branch NWR. The Corps should not sign the Decision of Record until a Compatibility Determination is complete.

    CEMVN Response: Concur on the continued coordination. Should the proposed project change, CEMVN will coordinate all activities with refuge personnel.

A letter from NMFS was received June 28, 2016 in which the Service “urged USACE to proceed with the implementation of mitigation to minimize further temporal losses of wetland functions that is occurring since completion of the flood protection measures in 2011.” Additionally, NMFS recommended the following to ensure the conservation of EFH and associated marine fishery resources:

1. The SEA should include recommendations in the Final Fish and Wildlife Coordination Act Report for these projects.

    CEMVN Response: Concur. Recommendations received from USFWS have been included in SEA #546.

2. If construction of the mitigation project does not commence during 2016, the USACE should commit to reassessing additive temporal losses and offsetting such losses with additional mitigation.

    CEMVN Response: Concur.

3. Use of a mitigation bank or a project under the In Lieu Fee Program (ILF) is acceptable if the bank or ILF project is accessible to mitigate impacts to EFH, approved by Regulatory Division, compliant, not suspended, and credits are available at the time of signature of the FONSI.

CEMVN Response: Concur

4. The USACE should coordinate with NMFS and other interested natural resource agencies during and after construction to ensure adequate mitigation is achieved. To the extent practicable, this should include the opportunity to participate in the onsite construction inspections (not less than a midpoint, red zone, and final inspections) and review of fill area and access corridor elevation surveys prior to dredge demobilization and final acceptance.

   CEMVN Response: Concur. The CEMVN looks forward to further coordination with the resource agencies to ensure our mitigation obligation is fully satisfied.

5. A containment dike dredging/gapping plan should be refined and implemented through coordination with NMFS and other interested agencies based on field conditions.

   CEMVN Response: Concur. The proposed mitigation areas will be monitored following placement of the dredged material to assure that the material has sufficiently dewatered and settled before proposing to move forward with degradation/gapping of the dikes. Field visits will be coordinated with the resource agencies and will be utilized to adjust the gapping/degrading plans and to ensure that tidal connection is achieved. Current plans include the degrading of all retention dikes around the marsh features except for the dikes between the BLH-Wet and marsh features at New Zydeco Ridge.

6. The adaptive management plan should be revised to include more details on the marsh mitigation through coordination with NMFS and other interested natural resource agency.

   CEMVN Response: Concur. The adaptive management plan has been revised.

6. Compliance with Environmental Laws and Regulations

Environmental compliance for the proposed action has been achieved upon the following:

- Coordination of this EA and draft FONSI with appropriate agencies, organizations, and individuals for their review and comments;
- LDNR concurred by letter dated June 21, 2016 with the determination that the proposed action is consistent, to the maximum extent practicable, with the Louisiana Coastal Resources Program; Consistency C20120046 Modification 7. (Appendix B)
- Receipt of and acceptance or resolution of all USFWS Fish and Wildlife Coordination Act recommendations; MVN is in receipt of Final CAR dated June 29, 2016, USFWS recommendations have been accepted or resolved and responses are provided in section 5.0 Coordination. (Appendix B)
- USFWS concurred with a determination of not likely to adversely affect Federally-listed threatened or endangered species, or their critical habitat, under the jurisdiction of USFWS (the West Indian manatee) in a letter dated May 26, 2016. (Appendix B)
- An email from the Louisiana Department of Environmental Quality was received on June 22, 2016 stating that the proposed expansion was consistent with the existing State Water Quality Certificate (WQC 140825-02) issued November 12, 2014. (Appendix B)
- A Section 404(b)(l) evaluation was signed on July 1, 2016 (Appendix C)
- In a letter dated October 6, 2014, the Louisiana State Historic Preservation Officer (SHPO) concurred with a recommendation of no effect on historic properties. (Appendix B)
- There would be a low probability of encountering HTRW in the proposed mitigation area and borrow area.

- NMFS concurred with the CEMVN's determination that the proposed action was not likely to adversely affect Federally-listed threatened or endangered species, or their critical habitat, under the jurisdiction of NMFS (Gulf sturgeon and its critical habitat, green, Kemp's Ridley and loggerhead sea turtles). Letter of concurrence was received Aug 19, 2015.
- In a letter dated June 28, 2016, NMFS provided 6 EFH recommendations under the Magnuson-Stevens Act and "urged the USACE to proceed with implementation of mitigation to minimize further temporal losses of wetland functions that is occurring since completion of the flood protection measures in 2011." The CEMVN has concurred with or resolved all recommendations in its July 1, 2016 response letter to NMFS. (Appendix F)

7. MITIGATION SUCCESS CRITERIA, MITIGATION MONITORING AND REPORTING, AND ADAPTIVE MANAGEMENT

An effective monitoring program is required by the Water Resources Development Act of 2007, Section 2036, to determine if the project outcomes are consistent with the identified success criteria. A monitoring plan including success criteria, monitoring requirements, and planting guidelines was developed for the approved mitigation projects in SIER 1 and can be found in Appendix N of SIER 1. For the proposed 60 acre expansion at NZR, the same mitigation success criteria, monitoring and reporting applicable to the originally approved project would apply to the expansion.

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 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 adaptive management 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. An adaptive management plan was developed for the approved mitigation projects in SIER 1 and can be found in Appendix D of SIER 1. For the proposed 60 acre expansion at NZR, the same adaptive management plan applicable to the originally approved project would apply to the expansion.

8. CONCLUSION

The proposed action has been assessed for its potential impacts to wildlife, threatened and endangered species, fisheries, aquatic resources, water quality, essential fish habitat, cultural resources, and recreation, and for the potential of the project to encounter HTRW. The proposed action would provide the 18.4 AAHU of brackish marsh mitigation that can no longer be satisfied with the BSFS4 feature of the Bayou Sauvage Flood Side Brackish Marsh Project approved in SIER 1. These benefits would be realized through restoration of approximately 60 acres of brackish marsh adjacent to the NZR Brackish Marsh and BLH features. Construction of the proposed action is recommended to satisfy the outstanding portion (18.4 AAHUs) of general brackish marsh impacts from construction of the LPV HSDRRS.

9. Prepared By

SEA #546 and the associated FONSI were prepared by Patricia S. Leroux, biologist, U.S. Army Corps of Engineers, New Orleans District; Regional Planning and Environment Division South, MVN-PDN-CEP; P.O. Box 60267; New Orleans, Louisiana 70160-0267.

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Appendix A: Adaptive Management Plan

ADAPTIVE MANAGEMENT PLAN

1.0. Introduction

This Adaptive Management (AM) Plan is for the Bayou Sauvage, Turtle Bayou and New Zydeco Ridge mitigation projects. The projects are designed to mitigate for impacts to refuge brackish and intermediate marsh and BLH-Wet resulting from construction of the Lake Pontchartrain and Vicinity (LBV) component of the Hurricane and Storm Damage Risk Reduction System (HSDRRS). The Water Resources Development Act (WRDA) of 2007, Section 2036(a) and U.S Army Corps of Engineers (USACE) implementation guidance for Section 2036(a) (CECW-PC Memorandum dated August 31, 2009: "*Implementation Guidance for Section 2036 (a) of the Water Resources Development Act of 2007 (WRDA 2007) – Mitigation for Fish and Wildlife and Wetland Losses*") requires adaptive management and monitoring plans be included in all mitigation plans for fish and wildlife habitat and wetland losses. Full descriptions of the mitigation projects are included in the Supplemental Individual Environmental Report (SIER) 36 and Supplemental Environmental Assessment (SEA) 546.

2.0. Adaptive Management Planning

Initial adaptive management planning was conducted during the planning process for the Programmatic Individual Environmental Report (PIER) 36 and was reviewed and revised for the Bayou Sauvage (BSFBM), Turtle Bayou (TBPIM) and New Zydeco Ridge (NZR) SIER. Adaptive management planning elements included: 1) development of a Conceptual Ecological Model (CEM), 2) identification of key project uncertainties and associated risks, 3) evaluation of the mitigation projects as a candidate for adaptive management and 4) the identification of potential adaptive management actions (contingency plan) to better ensure the mitigation project meets identified success criteria. The adaptive management Plan is a living document and would be refined as necessary.

2.1. Conceptual Ecological Model

A CEM was developed to identify the major stressors and drivers affecting the proposed mitigation projects in the SIER (see table 1). The CEM does not attempt to explain all possible relationships of potential factors influencing the mitigation sites; rather, the CEM presents only those relationships and factors deemed most relevant to obtaining the required acres/average annual habitat units (AAHU). Furthermore, this CEM represents the current understanding of these factors and would be updated and modified, as necessary, as new information becomes available. Stressors and Drivers identified in the CEM were identified during the PIER Alternative Evaluation Process (AEP) process to evaluate relative risks associated with each alternative mitigation alternative.

2.2. Sources of Uncertainty and Associated Risks

A fundamental tenet underlying adaptive management is decision making and achieving desired project outcomes in the face of uncertainties. There are many uncertainties associated with restoration of the coastal systems. The project delivery team (PDT) identified the following uncertainties during the planning process.

A. Climate change, such as relative sea level rise, drought conditions, and variability of tropical storm frequency, intensity, and timing.

B. Subsidence and water level trends at the mitigation sites

C. Uncertainty Relative to Achieving Ecological Success:

i. Water, sediment, and nutrient requirements for BLH Wet and Marsh
ii. Magnitude and duration of wet/dry cycles for BLH Wet
iii. Nutrients required for desired productivity for BLH Wet and Marsh
iv. Growth curves based on hydroperiod and nutrient application for BLH Wet and Marsh
v. Tree and marsh litter production based on nutrient and water levels for BLH Wet
vi. Tree propagation in relation to management/regulation of hydroperiod for BLH Wet

D. Loss rate of vegetative plantings due to herbivory

E. Long-Term Sustainability of Project Benefits

Table 1. Conceptual Ecological Model

Alternative Project /Issues/Drivers	Flood Side Brackish Marsh	Protected Side Intermediate Marsh	BLH Wet
Subsidence	-	-	-
Sea Level Rise	-	-	-
Runoff	-	-	-
Storm Induced	+/-	+/-	+/-
Salinity Impacts	+/-	+/-	+/-
Wave Action	-	-	-
Storm Surge	-	-	-
Vegetative Invasive Species	-	-	-
Herbivory	-	-	-
Hydrology	+/-	+/-	+/-
Topography (elevation)	+/-	+/-	+/-

Key to Cell Codes:
- = Negative Impact/Decrease
+ = Positive Impact/Increase
+/- = Duration Dependent

2.3. Adaptive Management Evaluation

As part of PIER 36, the project site was evaluated and planned through the AEP to develop a project with minimal risk and uncertainty. The items listed below were incorporated into the mitigation project implementation plan and Operation, Maintenance, Repair, Replacement, and Rehabilitation (OMRR&R) plans to minimize project risks.

- Detailed planting guidelines for intermediate and brackish marsh and BLH
- Specified success criteria (i.e., mitigation targets)
- Invasive species control
- Supplementary plantings as necessary (contingency)
- Corrective actions to meet topographic success as required (contingency)

Subsequently, as part of the adaptive management planning effort, the project features were re-evaluated against the CEM and sources of uncertainty and risk were identified to determine if there was any need for additional adaptive management actions.

Based on the uncertainties and risks associated with the project implementation the following contingency/adaptive management actions have been identified to be implemented if needed to ensure the required AAHU are met:

Potential Action #1. Additional vegetative plantings as needed to meet identified success criteria.

Uncertainties addressed: A, B, C, D, E

Potential Action #2. Potential need to adjust the gapping in the permanent dikes in the future to maintain sufficient marsh hydrology and connectivity.

Uncertainties addressed: A, B, C, E

Actions 1 and 2 are not recommended as separate adaptive management actions since they are already built into the mitigation plan and success criteria identified in Appendix C. In the event that monitoring reveals the project does not meet the identified vegetation or topographic success criteria, additional plantings or construction activities would be conducted under the mitigation project.

The USACE would be responsible for the proposed mitigation construction and monitoring until the initial success criteria are met. Initial construction and monitoring would be funded in accordance with all applicable cost-share agreements with the NFS. The USACE would monitor (on a cost-shared basis) the completed mitigation to determine whether additional construction, invasive/nuisance plant species control, and/or plantings are necessary to achieve initial mitigation success criteria. Once the USACE determines that the mitigation has met the initial success criteria, monitoring would 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, the USACE would consult with other agencies and the NFS to determine the appropriate management or remedial actions required to achieve ecological success. The USACE would retain the final decision on whether or not the project's required mitigation benefits are being achieved and whether or not remedial actions are required. If structural changes are deemed necessary to achieve ecological success, the USACE would 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. Due to the impact the addition of fill to the mitigation projects once they have been planted would incur, lifts to the projects are not currently considered as a viable remedial action. Instead, increasing the size of the existing mitigation project or mitigating the outstanding balance of the mitigation requirement elsewhere or through the purchase of mitigation bank/ILF credits would be options that could be considered through additional coordination with the NFS and the IET. However, such options would have to undergo further analysis in a supplemental NEPA document.

3.0. Monitoring for Project Success

A monitoring plan consistent with WRDA 2007 Section 2036(a) specific to the mitigation project has been developed (see Appendix C). The monitoring plan identifies success criteria and targets, a schedule for the monitoring events, and the specific content for the monitoring reports that measure progress towards meeting the success criteria.

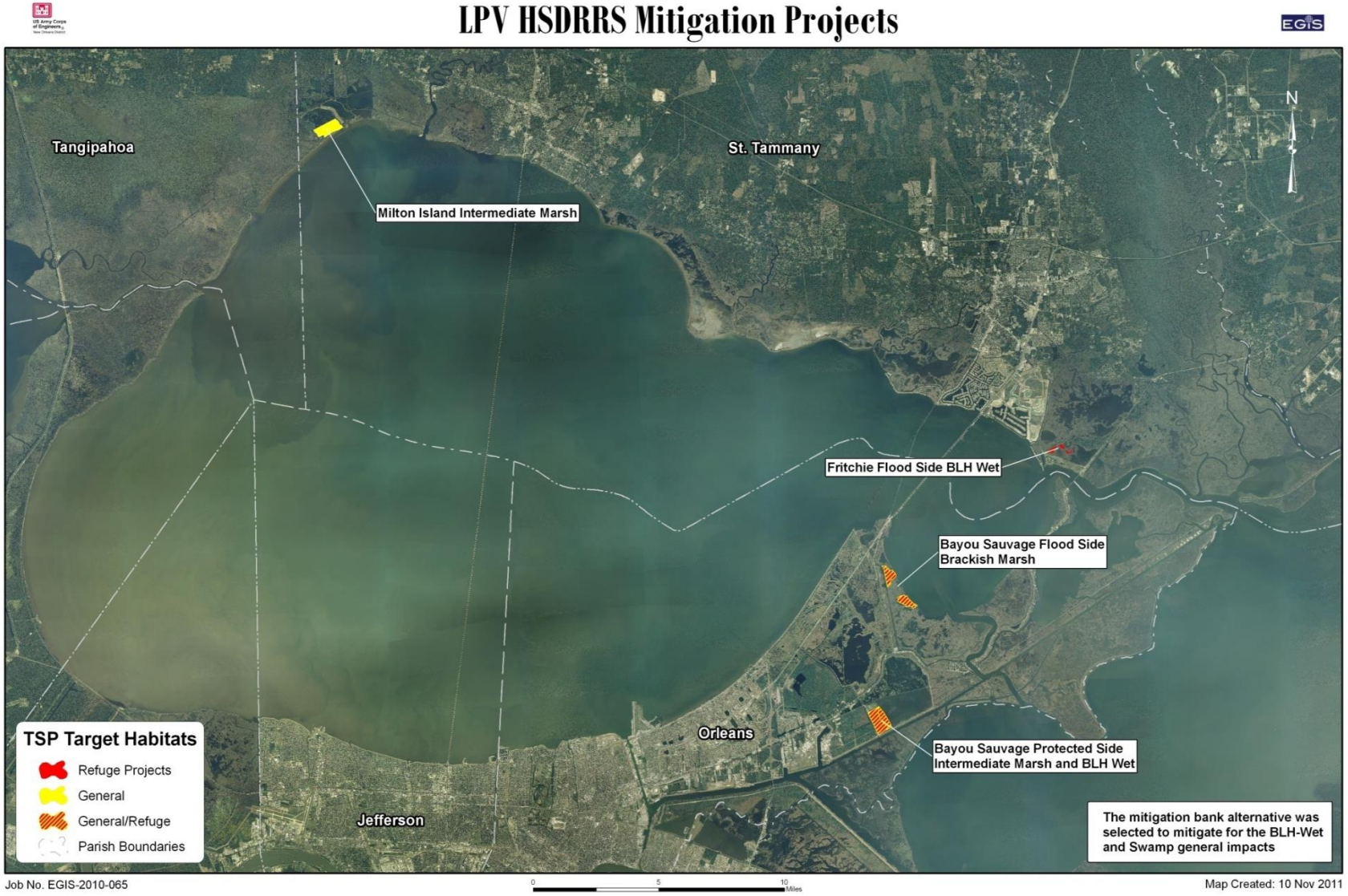

Figure1. PIER 36 Tentatively Selected Plan

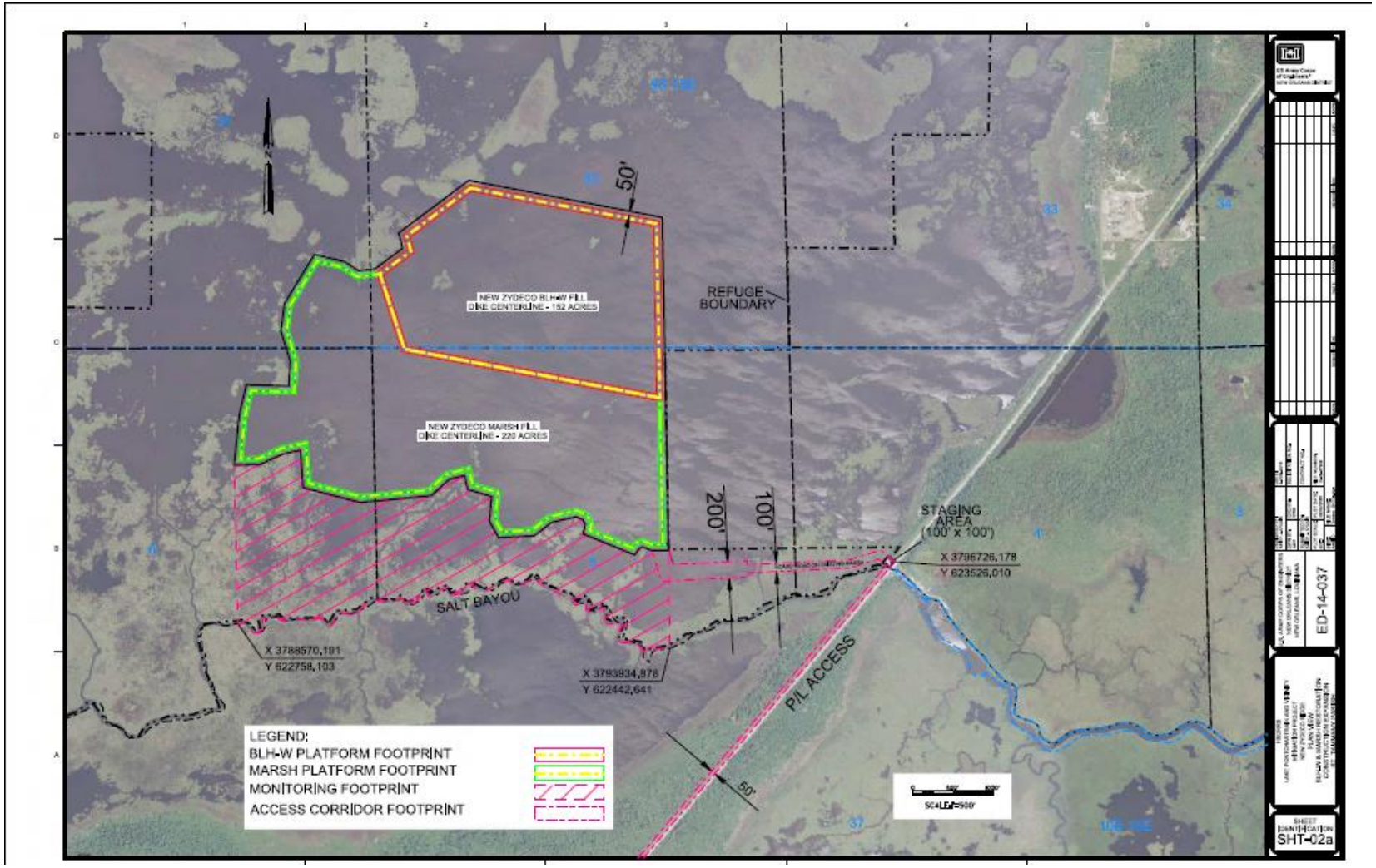

Figure 2: NZR Expansion – Design Layout 1

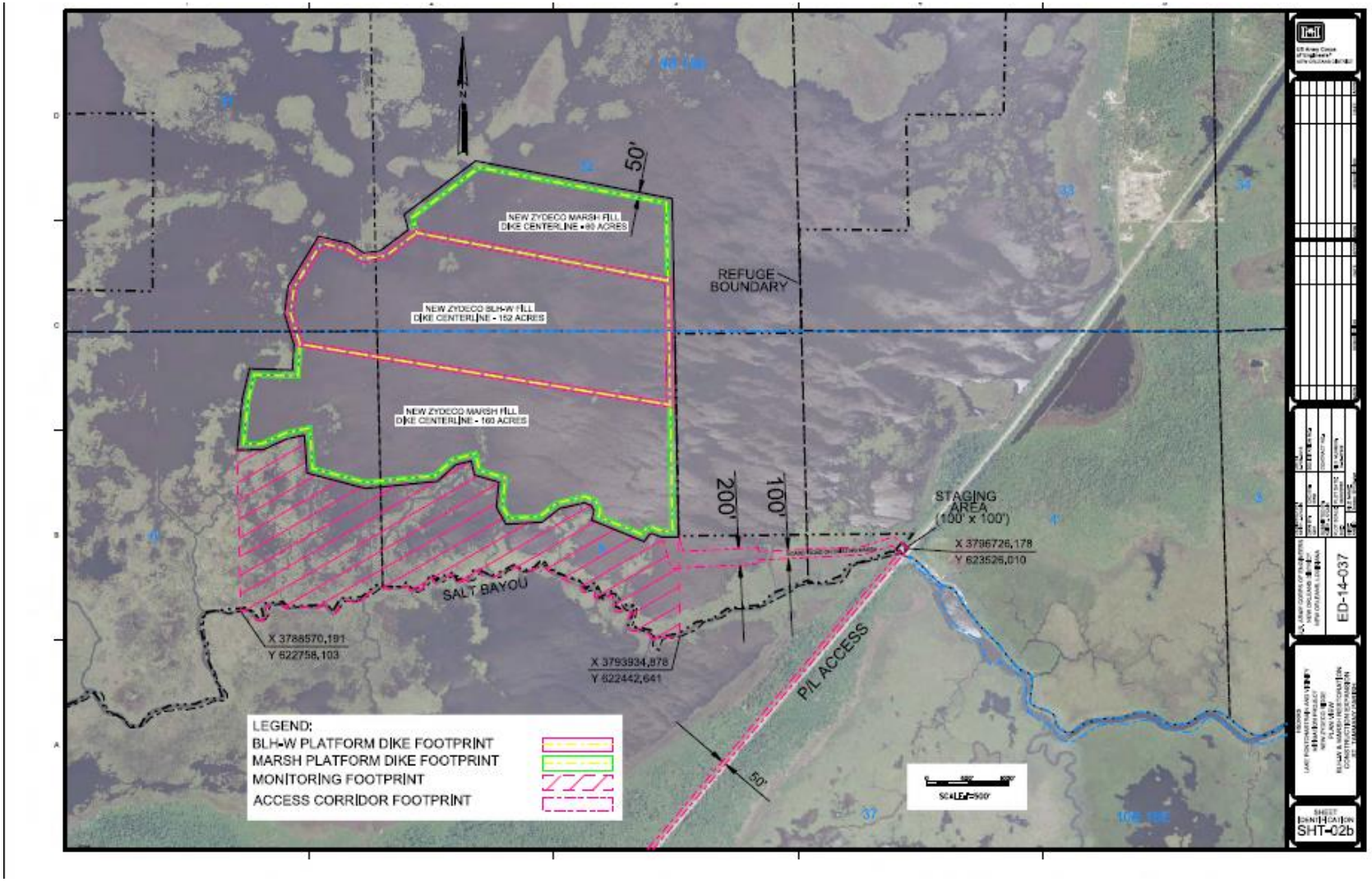

Figure 3: NZR Expansion – Design Layout 2

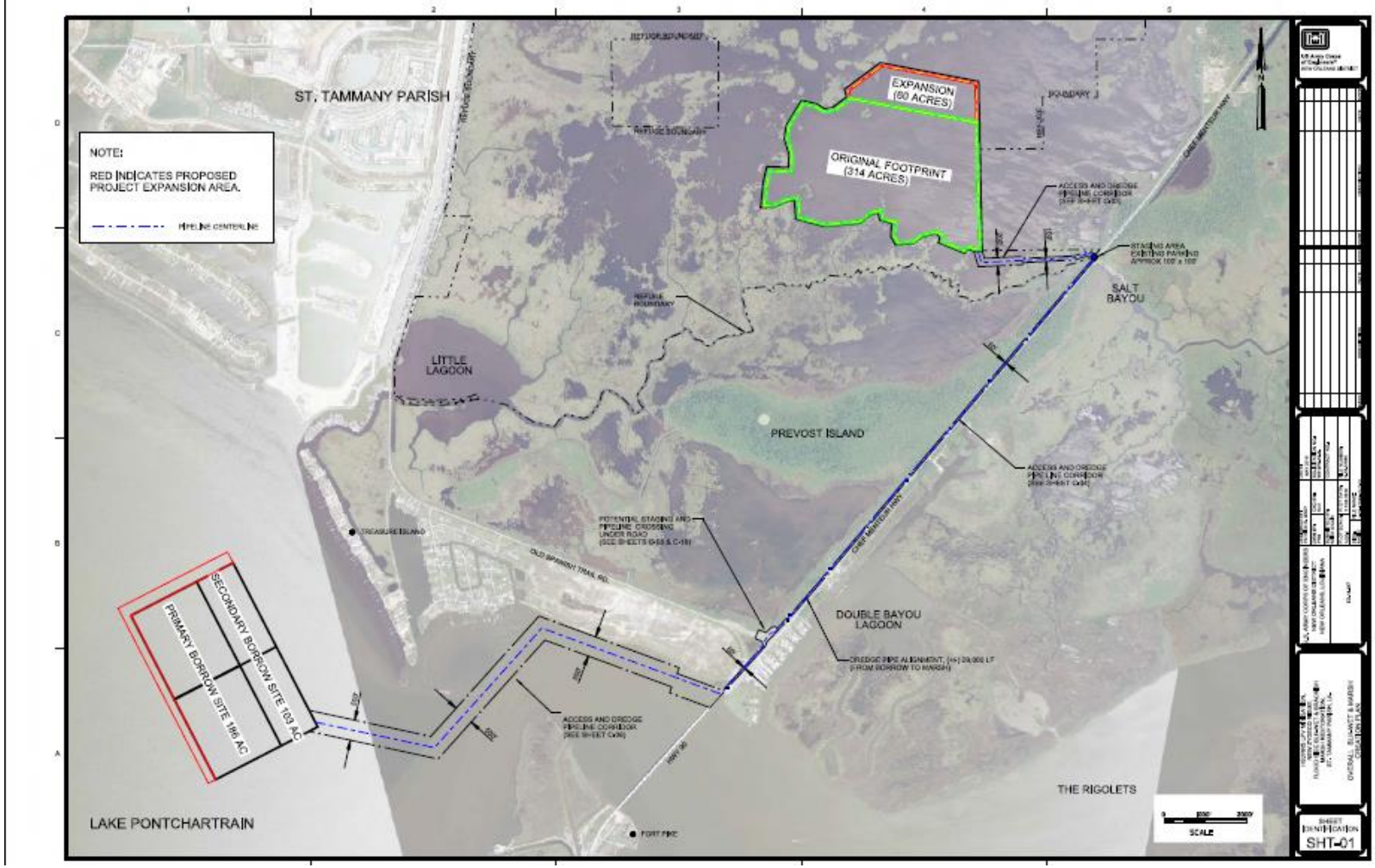

Figure 4: Borrow Location Expansion

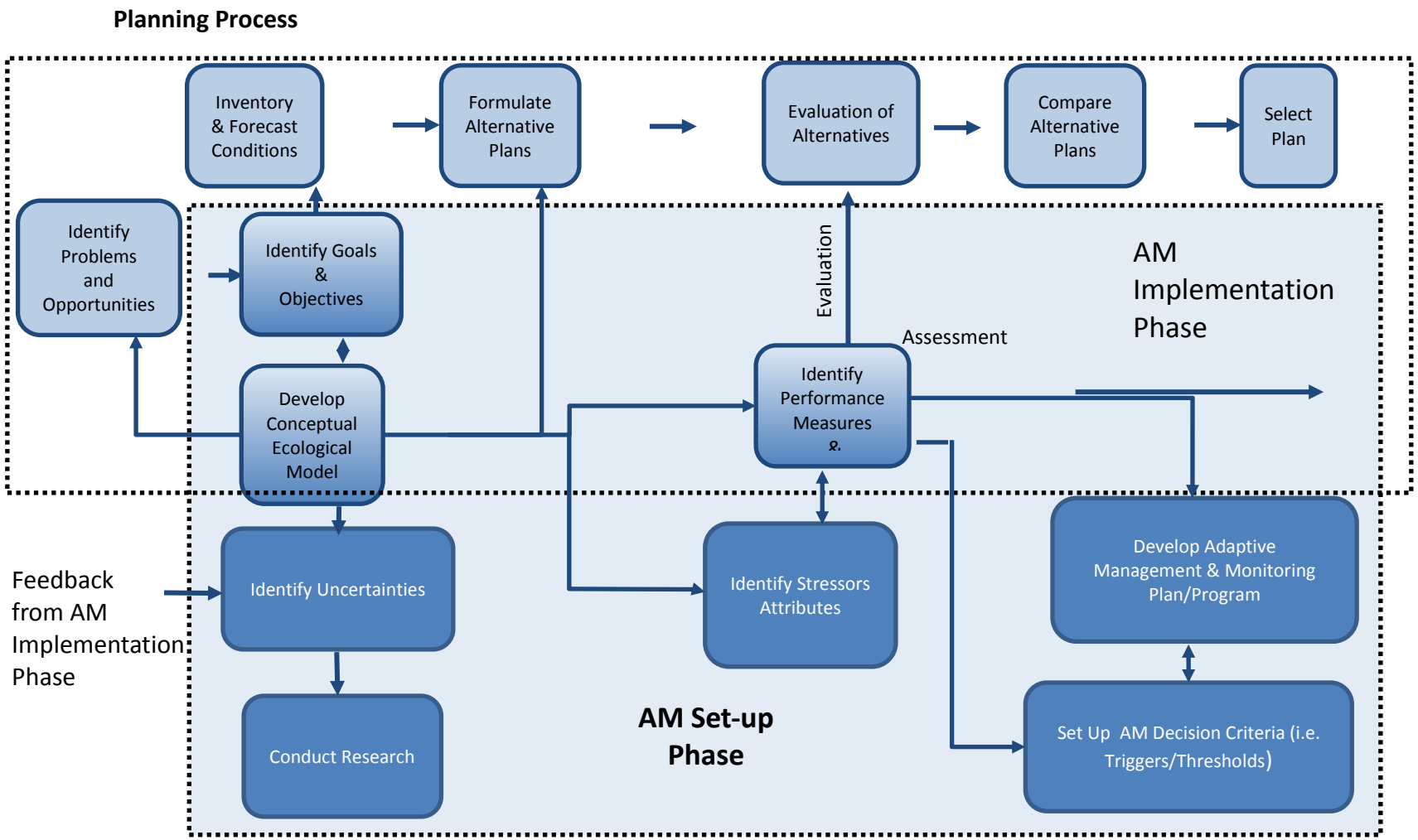

Figure 5. Set-up Phase of Adaptive Management Framework

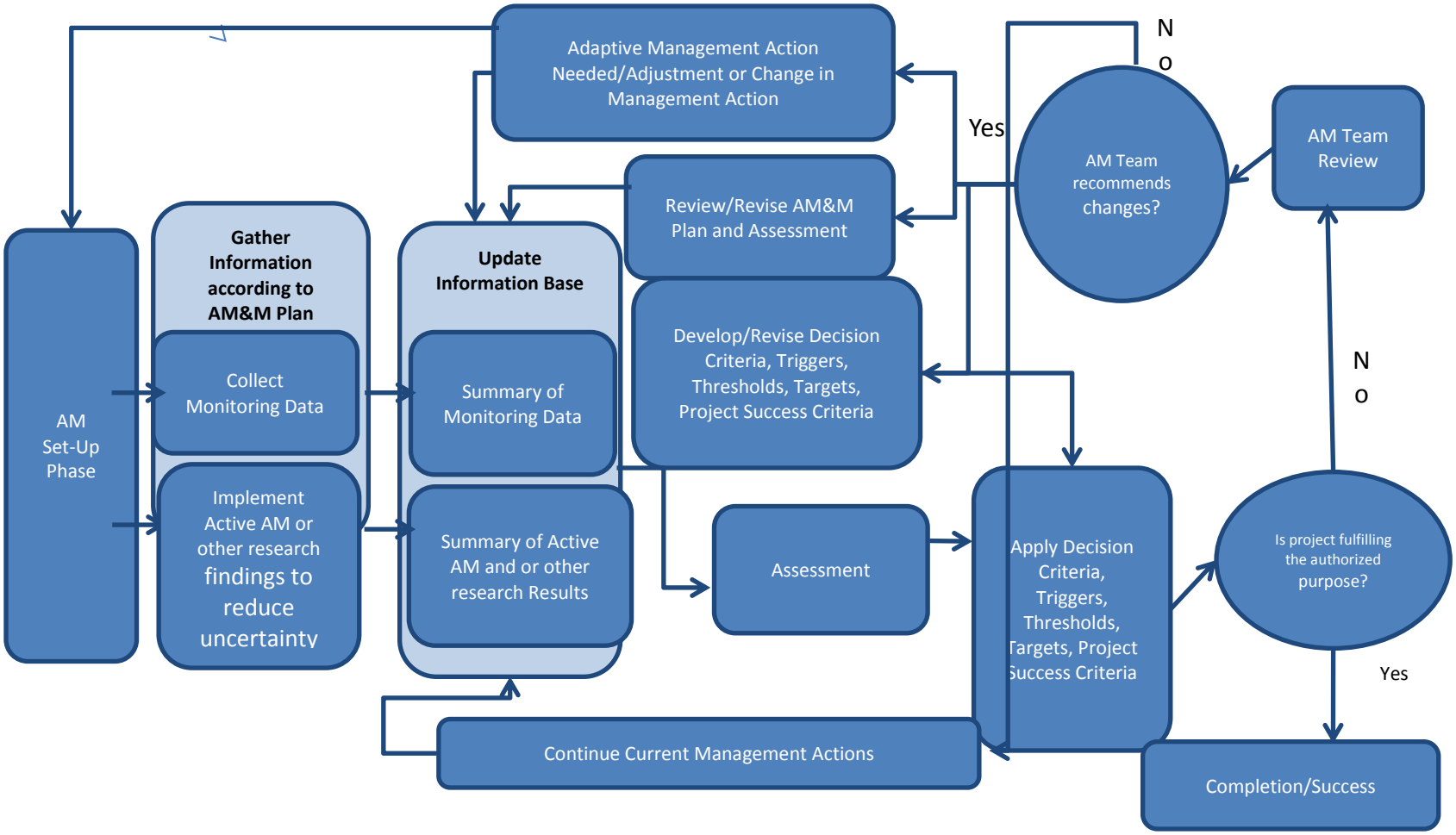

Figure 6. Implementation Phase of the Adaptive Management Framework

Appendix B: Agency Coordination

Leroux, Patricia S MVN

From: Elizabeth Hill <Elizabeth.Hill@la.gov>
Sent: Wednesday, June 22, 2016 7:50 AM
To: Leroux, Patricia S MVN
Subject: [EXTERNAL] Lake Pontchartrain and Vicinity Marsh Restoration SEA #546
Attachments: 9535754.pdf

Trish:

The additional information including the Draft FONSI SEA #546 has been reviewed and is found it to be consistent with the existing water quality certification WQC 140825-02 issued November 12, 2014. The administrative record has been updated. If you have no objection, LDEQ considers water quality certification WQC 140825-02 valid for the Lake Pontchartrain and Vicinity Marsh Restoration, Bayou Sauvage, Turtle Bayou & New Zydeco Ridge Restoration Project in St. Tammany and Orleans Parishes.

The original water quality certification has been attached for your convenience.

If I can provide any further assistance, please let me know.

Elizabeth Hill

Environmental Scientist Staff

Louisiana Department of Environmental Quality

Office of Environmental Services

Water Permits Division

Post Office Box 4313

Baton Rouge, Louisiana 70821-4313

(225) 219-3225 Voice

(225) 325-8125 Fax

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BOBBY JINDAL
GOVERNOR

PEGGY M. HATCH
SECRETARY

State of Louisiana

DEPARTMENT OF ENVIRONMENTAL QUALITY

ENVIRONMENTAL SERVICES

November 12, 2014

Mr. Daniel Sumerall
US Army Corps of Engineers, CEMVN-PDN-UDP
4155 East Clay Street
Vicksburg, Mississippi 39183

AI No.: 101235
Activity No.: CER20140001

RE: US Army Corps of Engineers, New Orleans District
Lake Pontchartrain and Vicinity Marsh Restoration
Bayou Sauvage, Turtle Bayou and New Zydeco Ridge
Water Quality Certification WQC 140825-02
St. Tammany and Orleans Parishes

Dear Mr. Sumerall:

The Louisiana Department of Environmental Quality, Water Permits Division (LDEQ), has received notice of the application for a 401 Water Quality Certification to excavate and place fill material to restore brackish marsh, fresh/intermediate marsh and bottom land hardwood wetlands on the southeastern and northeastern lobes of Lake Pontchartrain in St. Tammany and Orleans Parishes.

The information provided in the application and the additional information received November 5, 2014, was reviewed in terms of compliance with State Water Quality Standards, the approved Water Quality Management Plan and applicable state water laws, rules and regulations. LDEQ determined that the requirements for a Water Quality Certification have been met. LDEQ concludes the discharge of fill material will not violate water quality standards as provided for in LAC 33:IX.Chapter 11. Therefore, LDEQ hereby issues US Army Corps of Engineers, New Orleans District Water Quality Certification, WQC 140825-02.

Should you have any questions concerning any part of this certification, please contact Elizabeth Johnson at (225) 219-3225, or by email at elizabeth.johnson@la.gov. To ensure all correspondence regarding this certification is properly filed into the Department's Electronic Document Management System, please reference Agency Interest (AI) number 101235 on all future correspondence to this Department.

Sincerely,

Scott Guilliams
Administrator
Water Permits Division

c: IO-W
Corps of Engineers – New Orleans District

Post Office Box 4313 • Baton Rouge, Louisiana 70821-4313 • Phone 225-219-3181 • Fax 225-219-3309
www.deq.louisiana.gov

JAY DARDENNE
LIEUTENANT GOVERNOR

State of Louisiana
OFFICE OF THE LIEUTENANT GOVERNOR
DEPARTMENT OF CULTURE, RECREATION & TOURISM
OFFICE OF CULTURAL DEVELOPMENT

CHARLES R. DAVIS
DEPUTY SECRETARY

PAM BREAUX
ASSISTANT SECRETARY

6 October 2014

Joan Exnicios
Chief, Environmental Planning Branch
New Orleans District, Corps of Engineers
PO Box 60627
New Orleans, LA 70160-0267

Re: Draft Report
La Division of Archaeology Report No. 22-4782
Phase I Cultural Resources Investigations and Remote Sensing Survey of Lake Pontchartrain and Vicinity Refuge Mitigation Projects – National Wildlife Refuge Habitat Mitigation, Orleans and St. Tammany Parish, Louisiana – Turtle Bayou, Bayou Sauvage Marsh, and New Zydeco Ridge

Dear Ms. Exnicios:

We acknowledge receipt of your letter dated 19 September 2014 and two copies of the above-referenced report. We have completed our review of this report and do not have any comments to offer.

We concur that site 16OR697 is not eligible for nomination to the National Register of Historic Places, and that sites 16OR695 and 16OR696 are undetermined with respect to their eligibility for nomination to the National Register. In the letter dated 19 September 2014, the Corps documents that both of these latter sites will be avoided during the construction projects. With this stipulation, our office concurs that this project will have no adverse effects on historic properties, and we do not have any further concerns for this project.

We look forward to receiving two bound copies of the final report along with a pdf of the report. If you have any questions, please contact Chip McGimsey in the Division of Archaeology by email at cmcgimsey@crt.la.gov or by phone at 225-219-4598.

Sincerely,

Pam Breaux

Pam Breaux
State Historic Preservation Officer

PB:crm

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THOMAS F. HARRIS
SECRETARY

State of Louisiana

DEPARTMENT OF NATURAL RESOURCES

OFFICE OF COASTAL MANAGEMENT

June 21, 2016

Joan M. Exnicios
Chief, Environmental Planning Branch
Department of the Army
New Orleans District, Corps of Engineers
P. O. Box 60267
New Orleans, LA 70160-0267
Via e-mail: Joan.M.Exnicios@usace.army.mil

RE: **C20120046 Modification 07,** Coastal Zone Consistency
Corps of Engineers, New Orleans District
Direct Federal Action
Lake Pontchartrain and Vicinity, Hurricane and Storm Damage Risk Reduction System (HSDRRS) Mitigation Project; modification to create an additional 60 acres of marsh at the Bayou Sauvage, Turtle Bayou, and New Zydeco Ridge sites
Orleans and St. Tammany Parishes, Louisiana

Dear Ms. Exnicios:

The above referenced project has been reviewed for consistency with the approved Louisiana Coastal Resource Program (LCRP) as required by Section 307 (c)(1)(A) of the Coastal Zone Management Act of 1972, as amended. The modification, as proposed in the application, is consistent with the LCRP.

The Louisiana Department of Wildlife and Fisheries has provided the following guidance regarding threatened and endangered species:

> **Louisiana Natural Heritage Program:**
> Manatee (*Trichechus manatus*) may occur in the surrounding water bodies of your site location. Manatees are large mammals inhabiting both fresh and salt water. Although most manatees are year round residents of Florida or Central America, they have been known to migrate to areas along the Atlantic and Gulf coast during the summer months. Manatee is an endangered species protected under the Endangered Species Act of 1973 and the Federal Marine Mammal Protection Act of 1972. In Louisiana, taking or harassment of a manatee is in violation of state and federal law. Critical habitat for manatee includes marine submergent vascular vegetation (sea-grass beds). Areas with sea-grass beds should be avoided during project activities if possible. Report all manatee sightings to the Louisiana Department of Wildlife and Fisheries at 225-765-2809 or 1-800-442-2511.

Post Office Box 44487 • Baton Rouge, Louisiana 70804-4487
617 North Third Street • 10th Floor • Suite 1078 • Baton Rouge, Louisiana 70802
(225) 342-7591 • Fax (225) 342-9439 • http://www.dnr.louisiana.gov
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The proposed project may impact the gulf sturgeon (*Acipenser oxyrhynchus desotoi*) and its designated critical habitat. The gulf sturgeon is listed as threatened on both the federal and state species list. Major population limiting factors are thought to include barriers to spawning habitats and habitat loss associated with the construction of water control structures, including dams and sills. Other threats identified include modification to habitat associated with dredged material disposal and poor water quality associated with contamination.

No other impacts to rare, threatened or endangered species or critical habitats are anticipated from the proposed project. No state or federal parks, wildlife refuges, wildlife management areas or scenic rivers are known at the specified site or within ¼ mile of the proposed project.

The Louisiana Natural Heritage Program (LNHP) reports summarize the existing information known at the time of the request regarding the location in question. LNHP reports should not be considered final statements on the biological elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments. If at any time LNHP tracked species are encountered within the project area, please contact our biologist at 225-765-2643.

If you have any questions concerning this determination please contact Jim Bondy of the Consistency Section at (225) 342-3870 or 1-800-267-4019.

Sincerely,

/S/ Keith Lovell (for Don Haydel)
Acting Administrator
Interagency Affairs/Field Services Division

DH/SK/jab

cc: Patricia Leroux, COE-NOD
Dave Butler, LDWF
Frank Cole, OCM FI
Ron Harper, Orleans Parish
Dave Brunet, St. Tammany Parish

United States Department of the Interior

FISH AND WILDLIFE SERVICE
646 Cajundome Blvd.
Suite 400
Lafayette, Louisiana 70506

May 26, 2016

Ms. Patricia Leroux
U.S. Army Corps of Engineers
Planning, Programs, and Project Management Division
Environmental Planning and Compliance Branch
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Ms. Leroux:

Please reference the U.S. Army Corps of Engineers (Corps) Endangered Species Act (ESA) Memorandum (Memo) submitted to our office via electronic mail on May 24, 2016, which addresses the Supplemental Environmental Assessment (SEA) #546, titled "Bayou Sauvage, Turtle Bayou and New Zydeco Ridge Restoration Projects, Saint Tammany and Orleans Parishes, Louisiana". SEA #546 discusses proposed revisions to the mitigation projects previously discussed in the Programmatic Individual Environmental Report 36 (PIER 36) approved mitigation plan and the Supplemental PIER 1 (SIER 1) approved mitigation plan. Your memo requested Fish and Wildlife Service's (Service) concurrence with the Corps' determination that the proposed project is not likely to adversely affect the endangered West Indian manatee. We have reviewed the information provided, and offer the following comments in accordance with provisions of the National Environmental Policy Act (NEPA) of 1969 (83 Stat. 852; 42 U.S.C. 4321 et seq.), and the ESA of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

The Corps proposes to expand the New Zydeco bottomland hardwood and brackish marsh mitigation project to create 60 additional acres of brackish marsh habitat on Big Branch Marsh National Wildlife Refuge (NWR). This would expand the total New Zydeco footprint to 220 acres. The proposed expansion of the New Zydeco restoration feature would mitigate impacts to brackish marsh habitat associated with the construction and operation of the Lake Pontchartrain and Vicinity (LPV) Hurricane and Storm Damage Risk Reduction System. The proposed project is located centrally in the Pontchartrain Basin and would benefit the Big Branch Marsh NWR on the north shore of Lake Pontchartrain. The proposed 60 acres expansion of brackish marsh mitigation at New Zydeco would require approximately 500,000

additional cubic yards of dredged material. To provide this additional material, the proposed borrow site would be expanded by 41 acres for a total borrow area footprint of 330 acres.

The endangered West Indian manatee (*Trichechus manatus*) is known to regularly occur in Lakes Pontchartrain and Maurepas and their associated coastal waters and streams and is likely to occur within the project area. It also can be found less regularly in other Louisiana coastal areas, most likely while the average water temperature is warm. Based on data maintained by the Louisiana Natural Heritage Program (LNHP), over 80 percent of reported manatee sightings (1999-2011) in Louisiana have occurred from the months of June through December. Manatee occurrences in Louisiana appear to be increasing and they have been regularly reported in the Amite, Blind, Tchefuncte, and Tickfaw Rivers, and in canals within the adjacent coastal marshes of southeastern Louisiana. Cold weather and outbreaks of red tide may adversely affect these animals. However, human activity is the primary cause for declines in species number due to collisions with boats and barges, entrapment in flood control structures, poaching, habitat loss, and pollution.

The West Indian manatee is known to regularly occur in Lake Pontchartrain where the borrow area is proposed and may occasionally occur within the marsh mitigation project area. The Corps' concurrence request ensures that standard manatee protection measures (attached) will be implemented in the Corps' construction contracts. The Service, therefore, concurs that the proposed project is not likely to adversely affect the West Indian manatee. Please ensure that all contract personnel associated with the project will be informed of the potential presence of manatees and the need to avoid collisions with manatees.

As you are aware, the National Marine Fisheries Service (NMFS) is responsible for consultation for the Federally threatened Atlantic sturgeon and its critical habitat, the Federally threatened loggerhead and green sea turtles, and the Federally endangered Kemp's Ridley sea turtle. As we understand it, the Corps is coordinating with the NMFS Regional Office in St. Petersburg, Florida, concerning those species and critical habitat. Ms. Cathy Tortorici (727/209-5953) can be contacted for information regarding Atlantic sturgeon and its designated critical habitat, and Mr. Eric Hawk (727/824-5312) can be contacted for information regarding sea turtles.

Should the NMFS determine that conservation measures and reasonable and prudent measures are necessary to avoid adverse impacts to threatened or endangered species, those measures could result in a modification of project features. If modification of the proposed project occurs, consultation with the Service should be accomplished as soon as such changes are made. The Service recommends that the Decision Record not be signed until ESA consultation is complete, and that the Decision Record address the results of the ESA Section 7 consultation with NMFS and the Service.

Should plans change significantly, or work not implemented within one year following coordination with the Service and NMFS, we recommend that the Corps reinitiate coordination

with each office to ensure that the proposed project would not adversely affect any Federally listed threatened or endangered species or their habitat.

We appreciate the continued coordination with the Corps to evaluate impacts and provide recommendations during the development of LPV mitigation projects. Should you have any questions regarding our comments, please contact Angela Trahan (337/291-3137) of this office.

Sincerely,

Darryl Clark
Acting Field Supervisor
Louisiana Ecological Services Office

Enclosure

cc: LDWF, Natural Heritage Program, Baton Rouge, LA

West Indian Manatee Protection Measures

The endangered West Indian manatee (*Trichechus manatus*) is known to regularly occur in Lakes Pontchartrain and Maurepas and their associated coastal waters and streams. It also can be found less regularly in other Louisiana coastal areas, most likely while the average water temperature is warm. Based on data maintained by the Louisiana Natural Heritage Program (LNHP), over 80 percent of reported manatee sightings (1999-2011) in Louisiana have occurred from the months of June through December. Manatee occurrences in Louisiana appear to be increasing and they have been regularly reported in the Amite, Blind, Tchefuncte, and Tickfaw Rivers, and in canals within the adjacent coastal marshes of southeastern Louisiana. Manatees may also infrequently be observed in the Mississippi River and coastal areas of southwestern Louisiana. Cold weather and outbreaks of red tide may adversely affect these animals. However, human activity is the primary cause for declines in species number due to collisions with boats and barges, entrapment in flood control structures, poaching, habitat loss, and pollution.

During in-water work in areas that potentially support manatees all personnel associated with the project should be instructed about the potential presence of manatees, manatee speed zones, and the need to avoid collisions with and injury to manatees. All personnel should be advised that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act of 1972 and the Endangered Species Act of 1973. Additionally, personnel should be instructed not to attempt to feed or otherwise interact with the animal, although passively taking pictures or video would be acceptable.

All on-site personnel are responsible for observing water-related activities for the presence of manatee(s). We recommend the following to minimize potential impacts to manatees in areas of their potential presence:

- All work, equipment, and vessel operation should cease if a manatee is spotted within a 50-foot radius (buffer zone) of the active work area. Once the manatee has left the buffer zone on its own accord (manatees must not be herded or harassed into leaving), or after 30 minutes have passed without additional sightings of manatee(s) in the buffer zone, in-water work can resume under careful observation for manatee(s).

- If a manatee(s) is sighted in or near the project area, all vessels associated with the project should operate at "no wake/idle" speeds within the construction area and at all times while in waters where the draft of the vessel provides less than a four-foot clearance from the bottom. Vessels should follow routes of deep water whenever possible.

- If used, siltation or turbidity barriers should be properly secured, made of material in which manatees cannot become entangled, and be monitored to avoid manatee entrapment or impeding their movement.

- Temporary signs concerning manatees should be posted prior to and during all in-water project activities and removed upon completion. Each vessel involved in construction activities should display at the vessel control station or in a prominent location, visible to

all employees operating the vessel, a temporary sign at least 8½ " X 11" reading language similar to the following: "CAUTION BOATERS: MANATEE AREA/ IDLE SPEED IS REQUIRED IN CONSRUCTION AREA AND WHERE THERE IS LESS THAN FOUR FOOT BOTTOM CLEARANCE WHEN MANATEE IS PRESENT". A second temporary sign measuring 8½ " X 11" should be posted at a location prominently visible to all personnel engaged in water-related activities and should read language similar to the following: "CAUTION: MANATEE AREA/ EQUIPMENT MUST BE SHUTDOWN IMMEDIATELY IF A MANATEE COMES WITHIN 50 FEET OF OPERATION".

- To ensure manatees are not trapped due to construction of containment or water control structures, we recommend that the project area be surveyed prior to commencement of work activities. Should manatee be observed within those areas, the contractor should immediately contact the Service's Louisiana Ecological Services Office (337/291-3100) and the Louisiana Department of Wildlife and Fisheries, Natural Heritage Program (225/765-2821).

- Collisions with, injury to, or sightings of manatees should be immediately reported to the Service's Louisiana Ecological Services Office (337/291-3100) and the Louisiana Department of Wildlife and Fisheries, Natural Heritage Program (225/765-2821). Please provide the nature of the call (i.e., report of an incident, manatee sighting, etc.); time of incident/sighting; and the approximate location, including the latitude and longitude coordinates, if possible.

From: Patrick Williams - NOAA Federal
To: Behrens, Elizabeth MVN; Leroux, Patricia S MVN
Cc: Angela_Trahan@fws.gov; Richard Hartman - NOAA Federal
Subject: [EXTERNAL] Fwd: SER-2014-14728
Date: Tuesday, June 28, 2016 8:18:08 AM

Libby & Trish,

see the below response from Michelle with PRD.

HCD's letter will be forwarded today.

---------- Forwarded message ----------
From: Michelle Press - NOAA Affiliate <michelle.press@noaa.gov <mailto:michelle.press@noaa.gov> >
Date: Tue, Jun 28, 2016 at 7:33 AM
Subject: Re: SER-2014-14728
To: Patrick Williams - NOAA Federal <patrick.williams@noaa.gov <mailto:patrick.williams@noaa.gov> >
Cc: Ryan Hendren - NOAA Affiliate <ryan.hendren@noaa.gov <mailto:ryan.hendren@noaa.gov> >

Hi Patrick,

NMFS would not consult again unless the Action Agency believes that the changes will modify the original determination.

Please let me know if you have additional questions.

Michelle

Michelle Press
Marine Habitat Resource Specialist II
ERT Contractor for
NOAA Southeast Regional Office
Protected Resource Division

Tel: (727) 209-5977 <tel:%28727%29%20209-5977>

Fax: (727) 824-5309 <tel:%28727%29%20824-5309>

On Mon, Jun 27, 2016 at 3:32 PM, Patrick Williams - NOAA Federal <patrick.williams@noaa.gov <mailto:patrick.williams@noaa.gov> > wrote:

Ryan, I called you to hastily. After some more searches I'm reminded the one I am calling about is one Michelle worked.

Michelle,

the public comment period closes today on a supplemental EA for the USACE to dredge in Lakes Borgne and Pontchartrain to create marsh as mitigation. The change triggering the supplemental EA is reducing the borrow by 41 acres in Lake Borgne and adding 41 acres of borrow in Lake Pontchartrain. No change in dredge (cutterhead) and no change in dredging depth. In the EA, the USACE determined the impacts from this change in location and not acres would result in similar impacts that resulted in a NLAA determination for the original locations previously cleared through consultation with PRD (August 19, 2015 NMFS PRD letter).

Do you want HCD to include the canned paragraph in our letter requesting the USACE coordinate with PRD on this? The USACE is concerned it will cause problems on their timeline which would reopen the alternatives analysis.

--

Patrick Williams
NOAA's National Marine Fisheries Service
Habitat Conservation Division
(225)389-0508 ext 208 <tel:%28225%29389-0508%20ext%20208> office

--

Patrick Williams
NOAA's National Marine Fisheries Service
Habitat Conservation Division
(225)389-0508 ext 208 office

Appendix C: 404(B)(1)

Section 404(b)(1) Evaluation

The following short form 404(b)(1) evaluation follows the format designed by the Office of the Chief of Engineers, (OCE). As a measure to avoid unnecessary paperwork and to streamline regulation procedures while fulfilling the spirit and intent of environmental statutes, New Orleans District is using this format for all proposed project elements requiring 404 evaluation, but involving no adverse significant impacts.

PROJECT TITLE: LAKE PONTCHARTRAIN AND VICINITY MARSH RESTORATION, BAYOU SAUVAGE, TURTLE BAYOU AND NEW ZYDECO RIDGE RESTORATION PROJECTS

PROJECT DESCRIPTION: The proposed action would restore brackish marsh habitat that would partially mitigate already-completed Lake Ponchartrain and Vicinity (LPV) Hurricane Storm Damage Risk Reduction System (HSDRRS) construction impacts. The changes being proposed are to compensate for the loss of 60 acres (18.4) of mitigation that were previously approved under the Bayou Sauvage Flood Side (BSFS) Restoration and Nourishment alternative in Supplemental Individual Environmental Report 1 (SIER 1).

PROPOSED ACTION:

The New Zydeco Ridge (NZR) restoration projects are located on the north shore of Lake Pontchartrain in the north east quadrant of the lake, northwest of U.S. Highway 90, and approximately 5 miles east of Slidell, Louisiana on the Big Branch National Wildlife Refuge. The project sites are bounded on the east by U.S Highway 90, on the North by U.S. Highway 190, on the west by Interstate 10, and on the south by Lake Pontchartrain. The approved projects in SIER 1 consists of creating approximately 159 acres of BLH-Wet habitat and creating 160 acres of brackish marsh habitat.

Potential Project Expansion Layouts

The NZR restoration expansion options are located on the north shore of Lake Pontchartrain in the north east quadrant of the lake, northwest of U.S. Highway 90, and approximately 5 miles east of Slidell, Louisiana on the Big Branch National Wildlife Refuge. The project area is bounded on the east by U.S Highway 90, on the North by U.S. Highway 190, on the west by Interstate 10, and on the south by Lake Pontchartrain. The approved NZR projects in SIER 1 consist of creating approximately 159 acres of BLH-Wet habitat and 160 acres of intermediate/brackish marsh habitat.

The Bayou Sauvage Flood Side Brackish Marsh Project (BSFS), approved in SIER 1, originally consisted of two sites, BSFS4 and BSFS5. (Figure 1) The BSFS4 site, approximately 60 acres in size, has been removed from this project alternative since the site is no longer available for purchase. As such, only the BSFS5 site would be constructed. With the removal of the BSFS4 site, the needed borrow for this project alternative and the Turtle Bayou project alternative (to be constructed in concert with the BSFS5 site, see SIER 1) would be reduced by 41 acres (from 459 acres to 418 acres). This reduction left a deficit of 18.4 annual average habitat units (AAHUs) in the proposed mitigation for the impacts associated with the construction of the LPV HSDRRS.

Two designs were considered for satisfying the outstanding 18.4 AAHUs of brackish marsh impacts at the NZR location.

Design 1, expands the current design of the NZR Brackish Marsh restoration project by approximately 60 acres, making the total acreage for that project approximately 220 acres; and moving the approved NZR BLH-Wet footprint northward. (Figure 2) This project alternative minimized the increase linear footage of retention dike required by maintaining the original outer perimeter dike and cross dike between the two habitat types. As such, the perimeter retention dike for the brackish marsh project would only increase by 2,460 linear feet from the 10,165 linear feet of perimeter retention dike originally identified in SIER 1.

Design 2 maintains the alignment of the NZR BLH-Wet and Brackish Marsh layouts approved in SIER 1 and adds a 60 acre brackish marsh cell to the north of the BLH-Wet footprint. (Figure 3) This design option would require an additional 4,500 linear feet of brackish marsh retention dike.

The earthen perimeter dike(s) around the marsh creation area(s) would be constructed to an elevation +4.0 feet NAVD88 with a five foot crown and 1V on 3H side slopes. (Figure 4) The retention dike around the BLH-Wet creation area would be constructed to elevation +7.0 feet NAVD88 with a 5 foot crown and 1V on 3H side slopes. This varies from the original NZR design in which the retention dikes were to be constructed with a 1V on 4H side slope. Cross dikes between the marsh creation cell(s) and the BLH creation cell would be constructed to elevation +5.5 feet NAVD88 to allow effluent from the BLH cell to spill into the marsh creation cell(s). Spill boxes or weirs would be constructed at pre-determined locations within the retention dike to allow for effluent water release from within the marsh creation area(s). Borrow for dike construction would be obtained from the interior of the marsh/BLH creation footprints. Specifics on the interior borrow ditch design can be found in SIER 1. The marsh creation area(s) will initially be filled to an elevation of approximately +3.0 feet NAVD88 to ultimately reach a target marsh elevation ranging from +1.0 feet to +1.5 feet NAVD88.

Borrow Site and Access Corridor

The original borrow site for NZR measured 289 acres and was broken into 2 primary (sites #1) and 2 secondary (sites #2) borrow areas due to differential lake bottom elevations. (Figure 5) The primary and secondary borrow sites #1 are in deeper water (7 to 18 feet deep), thus a dredging depth of -20 feet NAVD88 is being used to obtain a suitable quantity of material. Primary and secondary borrow sites #2 are in shallower water (4 to 9 feet deep), therefore dredge depths vary with primary borrow site # 2 having a dredge depth of -18' NAVD88 and secondary borrow site #2 having a dredge depth of -16' NAVD88. The total anticipated amount of fill material being dredged from all 4 borrow sites was 3,600,000 cubic yards.

The proposed 60 acres expansion of the brackish marsh creation footprint would require approximately 500,000 additional cubic yards of dredged material to construct. Applying a 30% oversize factor and converting to acres, this results in a need for approximately 41 additional acres of borrow footprint. The oversize factor is to assure adequate borrow amounts in case of contract overruns, and to account for unsuitable materials, unknown utilities, unidentified anomalies, and/or unsighted cultural finds within the borrow footprint. This factor matches that used to size the originally proposed footprint. To provide this needed additional borrow material, the proposed borrow site would need to be expanded 200 feet in width along the south boundary and 300 feet along the west boundary resulting in a total increase in the borrow footprint of 3,000 feet by 4,800 feet (330 acres) or an increase of 41 acres. The borrow footprint would remain divided into primary and secondary dredging regions; maintaining the restricting depths as previously described.

A different access corridor than what was approved in SIER 1 for the NZR projects, would be allowed from the lake to the NZR projects. Fill material for the creation of the BLH-Wet and marsh creation areas would still come from the same borrow site identified in SIER 1 located in Lake Pontchartrain approximately 2,700 feet offshore from Treasure Island, LA. Dredging of borrow would still be conducted via hydraulic dredging, however a floating/submerged pipeline would be placed for approximately 6,900 feet from the borrow site to the shallow area near the shoreline north of the Rigolets channel. The submerged line would then continue east for approximately 4,600 feet within the shallow offshore waters along the lake shoreline to within close proximity of the Hwy 90 bridge structure. The access corridor width for all open water reaches is 500 feet and the Contractor would be required to maintain navigation access in this open water reach of access channel for recreational boaters. The access corridor would then turn north, following the west side of Hwy 90 for approximately 14,000 feet from Lake Pontchartrain to the project site. This reach of access corridor is confined to a 50 foot width as measured from the outer limit of the highway shoulder, except in the immediate vicinity of the Hwy 433 junction. From the junction, the access corridor diverts west for approximately 125 feet to avoid the highway intersection, where a 36 inch steel culvert would be installed to pass beneath Hwy 433 for the pipeline to pass under the road.

From the new culvert, the access corridor would transition back to within the 50 foot access corridor paralleling Hwy 90. The northern terminus of this portion of the access corridor is defined by an approximate 100 foot by 100 foot existing gravel parking area, which would be used for parking, pipeline unloading, staging of equipment, and a potential booster pump location. At this point, the pipeline access corridor turns west, widens to 100 feet, and runs over existing marsh for approximately 1,700 feet. A timber board road would be constructed along this reach of the access corridor to minimize damage to the existing marsh. Sand fill shall be placed in the low areas of this portion of the access corridor prior to board road installation. The board road would be removed upon completion of the project. Upon board road removal, dressing and additional fill as required to ensure restoration of the area to pre-construction marsh elevations would occur. At the location where the timber board road ends at open water, the access corridor widens to 200 feet and continues for the final 1,500 feet

to the marsh and BLH-Wet creation areas. The entire access corridor, from borrow pit to perimeter retention dike is approximately 29,000 feet in length. No additional access corridor is needed for the expansion. Should the northern expansion proceed as proposed, the pipeline be routed through the current project footprint.

Figure 1: SIER 1 - Original Project Features and Borrow Sites Locations

Page 4

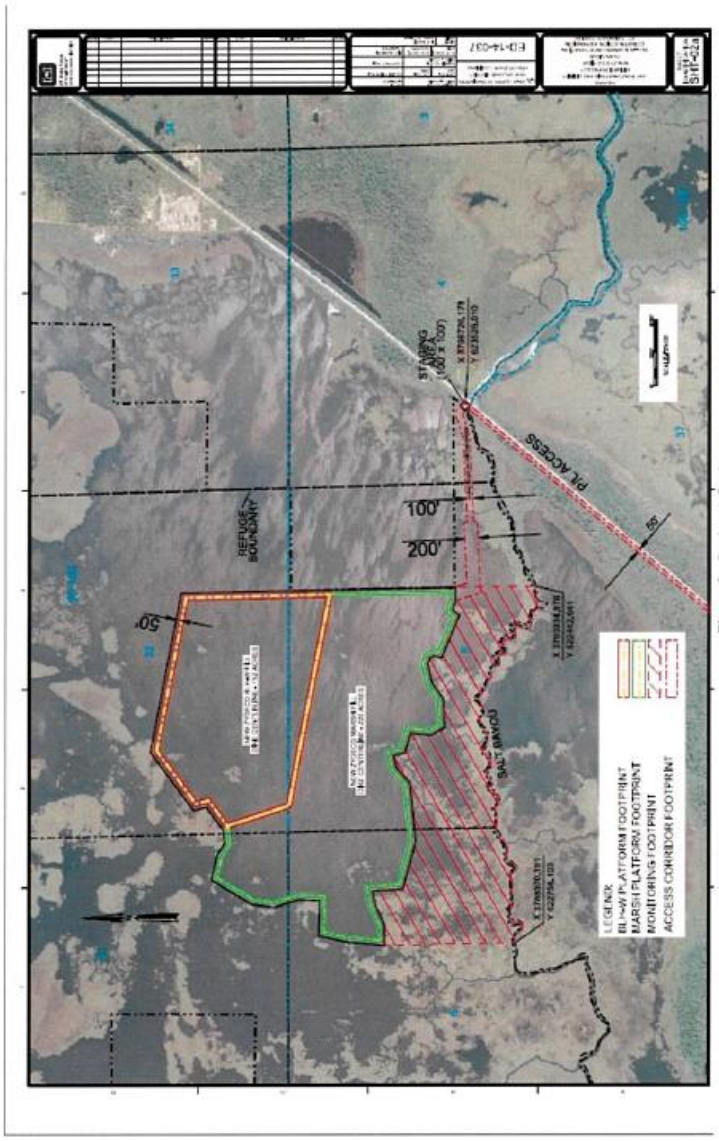


Figure 2: Design 1 Option

Page 5

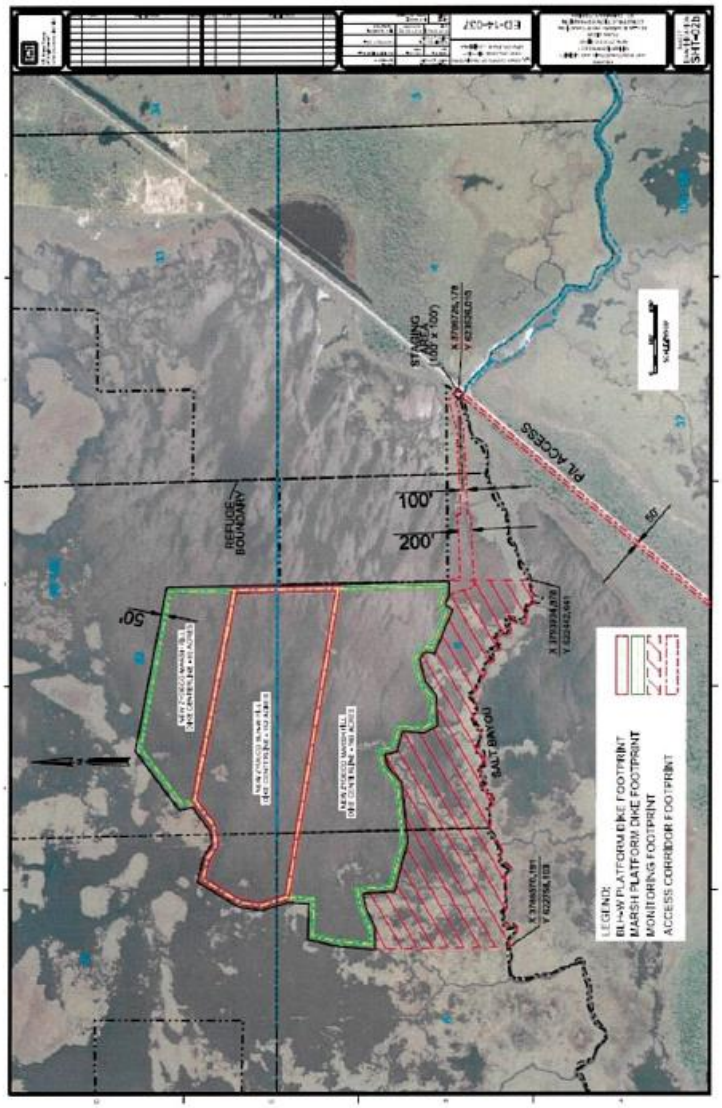


Figure 3: Design 2 Option

Page 6

Figure 4: Retention Dike Cross Section

Page 7

Figure 5: Proposed Borrow Expansion Location

Page 8

1. Review of Compliance (§230.10 (a)-(d)).	Preliminary[1]		Final[2]	
A review of this project indicates that:				
a. The discharge represents the least environmentally damaging practicable alternative and if in a special aquatic site, the activity associated with the discharge must have direct access or proximity to, or be located in the aquatic ecosystem to fulfill its basic purpose (if no, see section 2 and information gathered for environmental assessment alternative);	YES	NO*	YES	NO
b. The activity does not appear to: (1) violate applicable state water quality standards or effluent standards prohibited under Section 307 of the Clean Water Act; (2) jeopardize the existence of Federally listed endangered or threatened species or their habitat; and (3) violate requirements of any Federally designated marine sanctuary (if no, see section 2b and check responses from resource and water quality certifying agencies);	YES	NO*	YES	NO
c. The activity will not cause or contribute to significant degradation of waters of the United States including adverse effects on human health, life stages of organisms dependent on the aquatic ecosystem, ecosystem diversity, productivity and stability, and recreational, esthetic, and economic values (if no, see section 2);	YES	NO*	YES	NO
d. Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem (if no, see section 5).	YES	NO*	YES	NO

2. Technical Evaluation Factors (Subparts C-F).	N/A	Not Significant	Significant*
a. Physical and Chemical Characteristics of the Aquatic Ecosystem (Subpart C).			
(1) Substrate impacts.			
(2) Suspended particulates/turbidity impacts.			
(3) Water column impacts.			
(4) Alteration of current patterns and water circulation.			
(5) Alteration of normal water fluctuations/ hydroperiod.			
(6) Alteration of salinity gradients.			
b. Biological Characteristics of the Aquatic Ecosystem (Subpart D).			
(1) Effect on threatened/endangered species and their habitat.		x	
(2) Effect on the aquatic food web.		x	

(2) Effect on the aquatic food web.		x	
(3) Effect on other wildlife (mammals, birds, reptiles, and amphibians).		x	

c. Special Aquatic Sites (Subpart E).

(1) Sanctuaries and refuges.	x		
(2) Wetlands.	x		
(3) Mud flats.	x		
(4) Vegetated shallows.	x		
(5) Coral reefs.	x		
(6) Riffle and pool complexes.	x		

d. Human Use Characteristics (Subpart F).

(1) Effects on municipal and private water supplies.			
(2) Recreational and commercial fisheries impacts.		x	
(3) Effects on water-related recreation.		x	
(4) Esthetic impacts.		x	
(5) Effects on parks, national and historical monuments, national seashores, wilderness areas, research sites, and similar preserves.		x	

Remarks. Where a check is placed under the significant category, the preparer has attached explanation.

3. Evaluation of Dredged or Fill Material (Subpart G).[3]

a. The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material.

(1) Physical characteristics .....
(2) Hydrography in relation to known or anticipated sources of contaminants .....
(3) Results from previous testing of the material or similar material in the vicinity of the project .....
(4) Known, significant sources of persistent pesticides from land runoff or percolation .....
(5) Spill records for petroleum products or designated (Section 311 of CWA) hazardous substances .....
(6) Other public records of significant introduction of contaminants from industries, municipalities, or other sources .....
(7) Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge activities .....
(8) Other sources ..See references below.....

Appropriate references:

a. U.S. Army Corps of Engineers (USACE), 404 (b)(1) Evaluation (Long Form) - MRGO Restoration, July 2010

b. USACE, White's Ditch Diversion Water Quality Assessment, September 2010

c. US Coast Guard, National Response Center: http://www.nrc.uscg.mil/nrchp.html

d. US EPA, CERCLIS Database of Hazardous Waste Sites: www.epa.gov/superfund/sites/cursites/index.htm

e. US EPA, EnviroMapper StoreFront: http://www.epa.gov/enviro/html/em/index.html

f. US EPA, National Recommended Water Quality Criteria, 2006: http://epa.gov/waterscience/criteria/wqcriteria.html

g. US EPA, Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material, July 2004: http://www.epa.gov/owow/wetlands/pdf/40cfrPart230.pdf

h. Louisiana Department of Environmental Quality (LDEQ) 2008a. Ambient Surface Water Quality Monitoring Data website. http://www.deq.louisiana.gov/portal/Default.aspx?tabid=2421. Last accessed on January 13, 2009.

i. LDEQ 2008b. Chapter 11 Surface Water Quality Standards. http://www.deq.louisiana.gov/portal/LinkClick.aspx?link=planning%2fregs%2ftitle33%2f33v09.pdf&tabid=1674. Last accessed on November 17, 2008

j. National Oceanic and Atmospheric Administration (NOAA) 2006. *Screening Quick Reference Tables.* http://response.restoration.noaa.gov/type_topic_entry.php?RECORD_KEY%28entry_topic_type%29=entry_id,topic_id,type_id&entry_id(entry_topic_type)=90&topic_id(entry_topic_type)=2&type_id(entry_topic_type)=2. Last accessed on November 18, 2008

b. An evaluation of the appropriate information in 3a above indicates that there is reason to believe the proposed dredge or fill material is not a carrier of contaminants, or the material meets the testing exclusion criteria.

YES NO*

4. Disposal Site Delineation (§230.11(f)).

a. The following factors, as appropriate, have been considered in evaluating the disposal site.

(1) Depth of water at disposal site ..... ____
(2) Current velocity, direction, and variability at disposal site ..... ____
(3) Degree of turbulence ..... ____
(4) Water column stratification ..... ____
(5) Discharge vessel speed and direction ..... ____
(6) Rate of discharge ..... ____
(7) Dredged material characteristics (constituents, amount, and type of material, settling velocities) ..... ____
(8) Number of discharges per unit of time ..... ____
(9) Other factors affecting rates and patterns of mixing (specify) ..... ____

Appropriate references:
Same as 3(a)

b. An evaluation of the appropriate factors in 4a above indicates that the disposal site and/or size of mixing zone are acceptable.

YES NO*

5. Actions to Minimize Adverse Effects (Subpart H).

All appropriate and practicable steps have been taken, through application of the recommendations of §230.70-230.77 to ensure minimal adverse effects of the proposed discharge.

YES NO*

All appropriate and practicable steps have been taken, through application of the recommendations of 230. 70 - 230. 77 to ensure minimal adverse effects of the proposed discharge. Retention dikes will be utilized to minimize the escape of\ dredged material from the established disposal area.

6. Factual Determination (§230.11).

A review of appropriate information as identified in items 2-5 above indicates that there is minimal potential for short- or long-term environmental effects of the proposed discharge as related to:

a. Physical substrate at the disposal site (review sections 2a, 3, 4, and 5 above).	YES	NO*
b. Water circulation, fluctuation and salinity (review sections 2a, 3, 4, and 5).	YES	NO*
c. Suspended particulates/turbidity (review sections 2a, 3, 4, and 5)	YES	NO*
d. Contaminant availability (review sections 2a, 3, and 4).	YES	NO*
e. Aquatic ecosystem structure and function (review sections 2b and c, 3, and 5).	YES	NO*
f. Disposal site (review sections 2, 4, and 5).	YES	NO*
g. Cumulative impact on the aquatic ecosystem.	YES	NO*
h. Secondary impacts on the aquatic ecosystem.	YES	NO*

*A negative, significant, or unknown response indicates that the project may not be in compliance with the Section 404(b)(1) Guidelines.

[1]Negative responses to three or more of the compliance criteria at this stage indicates that the proposed projects may not be evaluated using this "short form procedure". Care should be used in assessing pertinent portions of the technical information of items 2a-d, before completing the final review of compliance.

[2]Negative responses to one of the compliance criteria at this stage indicates that the proposed project does not comply with the guidelines. If the economics of navigation and anchorage of Section 404(b)(2) are to be evaluated in the decision-making process, the "short form" evaluation process is inappropriate.
[3]If the dredged or fill material cannot be excluded from individual testing, the "short form" evaluation process is inappropriate.

7. Evaluation Responsibility.

a. Water Quality input provided by:

b. This evaluation was reviewed by:

8. Findings.

a. The proposed disposal site for discharge of dredged or fill material complies with the

Section 404(b)(1) guidelines ..... _____

b. The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines with the inclusion of the following conditions ..... _____

c. The proposed disposal site for discharge of dredged or fill material does not comply with the Section 404(b)(1) guidelines for the following reason(s):

(1) There is a less damaging practicable alternative ..... _____
(2) The proposed discharge will result in significant degradation of the aquatic ecosystem ..... _____
(3) The proposed discharge does not include all practicable and appropriate measures to minimize potential harm to the aquatic ecosystem ..... _____

Date: July 1, 2016

Sandra Stiles for
Joan M. Exnicios
Chief, New Orleans Environmental Branch

Appendix D: Wetland Value Assessment

WETLAND VALUE ASSESSMENT COMMUNITY MODEL
Fresh/Intermediate Marsh

Project: New Zydeco Marsh Mitigation - Expansion

Condition: Future Without Project

Project Area:	60
% Fresh	0
% Intermediate	100

Variable		TY 0 Value	TY 0 SI	TY 1 Value	TY 1 SI	TY 50 Value	TY 50 SI
V1	% Emergent	0	0.10	0	0.10	0	0.10
V2	% Aquatic	51	0.38	31	0.38	20	0.28
V3	Interspersion	%		%		%	
	Class 1	0	0.10	0	0.10	0	0.10
	Class 2	0		0		0	
	Class 3	0		0		0	
	Class 4	0		0		0	
	Class 5	100		100		100	
V4	%OW <= 1.5ft	66	0.84	66	0.84	44	0.60
V5	Salinity (ppt)						
	fresh	3.2	0.86	3.2	0.86	3.2	0.86
	intermediate	3.2		3.2		3.2	
V6	Access Value						
	fresh	0.8500	0.88	0.8500	0.88	0.8500	0.88
	intermediate	0.8500		0.8500		0.8500	
	Emergent Marsh HSI =		0.22	EM HSI =	0.22	EM HSI =	0.22
	Open Water HSI =		0.50	OW HSI =	0.50	OW HSI =	0.41

Intermediate Calculations

Interspersion		
0	0	0
0	0	0
0	0	0
0	0	0
0.1	0.1	0.1
Salinity		
0.46	0.46	0.46
0.86	0.86	0.86
Access Value		
0.90	0.90	0.90
0.88	0.88	0.88

Project: New Zydeco Marsh Mitigation

FWOP

Variable		TY Value	TY SI	TY Value	TY SI	TY Value	TY SI
V1	% Emergent						
V2	% Aquatic						
V3	Interspersion	%		%		%	
	Class 1						
	Class 2						
	Class 3						
	Class 4						
	Class 5						
V4	%OW <= 1.5ft						
V5	Salinity (ppt)						
	fresh						
	intermediate						
V6	Access Value						
	fresh						
	intermediate						
		EM HSI =		EM HSI =		EM HSI =	
		OW HSI =		OW HSI =		OW HSI =	

Intermediate Calculations

Interspersion		
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
Salinity		
Access Value		

WETLAND VALUE ASSESSMENT COMMUNITY MODEL
Fresh/Intermediate Marsh

Project: New Zydeco Marsh Mitigation

Condition: Future With Project

Project Area:	60
% Fresh	0
% Intermediate	100

Variable		TY 0 Value	TY 0 SI	TY 1 Value	TY 1 SI	TY 2 Value	TY 2 SI
V1	% Emergent	1	0.11	1	0.11	10	0.19
V2	% Aquatic	31	0.38	0	0.10	0	0.10
V3	Interspersion	%		%		%	
	Class 1	0	0.10	0	0.10	0	0.40
	Class 2	0		0		0	
	Class 3	0		0		100	
	Class 4	0		0		0	
	Class 5	100		100		0	
V4	%OW <= 1.5ft	66	0.84	100	0.60	100	0.60
V5	Salinity (ppt)						
	fresh	3.2	0.86	3.2	0.86	3.2	0.86
	intermediate	3.2		3.2		3.2	
V6	Access Value						
	fresh	0.8500	0.88	0.0001	0.20	0.0001	0.20
	intermediate	0.8500		0.0001		0.0001	
	Emergent Marsh HSI =		0.23	EM HSI =	0.20	EM HSI =	0.29
	Open Water HSI =		0.50	OW HSI =	0.21	OW HSI =	0.23

Intermediate Calculations

Interspersion		
0	0	0
0	0	0
0	0	0.4
0	0	0
0.1	0.1	0
Salinity		
0.46	0.46	0.46
0.86	0.86	0.86
Access Value		
0.90	0.30	0.30
0.88	0.20	0.20

Project: New Zydeco Marsh Mitigation

FWP

Variable		TY 3 Value	TY 3 SI	TY 5 Value	TY 5 SI	TY 6 Value	TY 6 SI
V1	% Emergent	25	0.33	98	0.98	97	0.97
V2	% Aquatic	0	0.10	31	0.38	36	0.42
V3	Interspersion	%		%		%	
	Class 1	0	0.40	50	0.70	100	1.00
	Class 2	0		0		0	
	Class 3	100		50		0	
	Class 4	0		0		0	
	Class 5	0		0		0	
V4	%OW <= 1.5ft	100	0.60	100	0.60	100	0.60
V5	Salinity (ppt)						
	fresh	3.2	0.86	3.2	0.86	3.2	0.86
	intermediate	3.2		3.2		3.2	
V6	Access Value						
	fresh	0.0001	0.20	0.8500	0.88	0.8500	0.88
	intermediate	0.0001		0.8500		0.8500	
	EM HSI =		0.37	EM HSI =	0.92	EM HSI =	0.95
	OW HSI =		0.23	OW HSI =	0.52	OW HSI =	0.58

Intermediate Calculations

Interspersion		
0	1	1
0	0	0
0.4	0.4	0
0	0	0
0	0	0
Salinity		
0.46	0.46	0.46
0.86	0.86	0.86
Access Value		
0.30	0.90	0.90
0.20	0.88	0.88

Project: New Zydeco Marsh Mitigation

FWP

Variable		TY	39	TY	50	TY	
		Value	SI	Value	SI	Value	SI
V1	% Emergent	75	0.78	61	0.65		
V2	% Aquatic	36	0.42	16	0.24		
V3	Interspersion	%		%		%	
	Class 1	0	0.60	0	0.40		
	Class 2	100		0			
	Class 3	0		100			
	Class 4	0		0			
	Class 5	0		0			
V4	%OW <= 1.5ft	100	0.60	83	1.00		
V5	Salinity (ppt)						
	fresh	3.2	0.86	3.2	0.86		
	intermediate	3.2		3.2			
V6	Access Value						
	fresh	0.8500	0.88	0.8500	0.88		
	intermediate	0.8500		0.8500			
		EM HSI =	0.78	EM HSI =	0.67	EM HSI =	
		OW HSI =	0.55	OW HSI =	0.43	OW HSI =	

Intermediate Calculations		
Interspersion		
0	0	0
0.6	0	0
0	0.4	0
0	0	0
0	0	0
Salinity		
0.46	0.46	
0.86	0.86	
Access Value		
0.90	0.90	
0.88	0.88	

AAHU CALCULATION - EMERGENT MARSH

Project: New Zydeco Marsh Mitigation

Future Without Project			Total	Cummulative
TY	Marsh Acres	x HSI	HUs	HUs
0	0.0001	0.22	0.00	
1	0.0001	0.22	0.00	0.00
50	0.0001	0.22	0.00	0.00
Max=	50		AAHUs =	0.00

Future With Project			Total	Cummulative
TY	Marsh Acres	x HSI	HUs	HUs
0	0.0001	0.23	0.00	
1	0.0001	0.20	0.00	0.00
2	5.9	0.29	1.71	0.77
3	14.8	0.37	5.52	3.49
5	58.5	0.92	54.01	51.52
6	58.2	0.95	55.34	54.68
39	45.1	0.78	35.08	1479.54
50	36.8	0.67	24.69	327.15
Max=	50		AAHUs	38.34

NET CHANGE IN AAHUs DUE TO PROJECT	
A. Future With Project Emergent Marsh AAHUs =	38.34
B. Future Without Project Emergent Marsh AAHUs =	0.00
Net Change (FWP - FWOP) =	38.34

AAHU CALCULATION - OPEN WATER

Project: New Zydeco Marsh Mitigation

Future Without Project			Total	Cummulative
TY	Water Acres	x HSI	HUs	HUs
0	60	0.50	29.84	
1	60	0.50	29.84	29.84
50	60	0.41	24.31	1326.74
Max=	50		AAHUs =	27.13

Future With Project			Total	Cummulative
TY	Water Acres	x HSI	HUs	HUs
0	60	0.50	29.84	
1	0.3	0.21	0.06	12.07
2	0.6	0.23	0.14	0.10
3	0.9	0.23	0.21	0.17
5	1.5	0.52	0.79	0.93
6	1.8	0.58	1.04	0.91
39	14.9	0.55	8.17	154.13
50	23.2	0.43	9.95	101.49
Max=	50		AAHUs	5.40

NET CHANGE IN AAHUs DUE TO PROJECT		
A. Future With Project Open Water AAHUs	=	5.40
B. Future Without Project Open Water AAHUs	=	27.13
Net Change (FWP - FWOP) =		-21.74

TOTAL BENEFITS IN AAHUs DUE TO PROJECT		
A. Emergent Marsh Habitat Net AAHUs	=	38.34
B. Open Water Habitat Net AAHUs	=	-21.74
Net Benefits=(2.1xEMAAHUs+OWAAHUs)/3.1		18.96

Appendix E: USFWS Coordination Act Report (CAR)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
646 Cajundome Blvd.
Suite 400
Lafayette, Louisiana 70506

June 29, 2016

Colonel Michael N. Clancy
District Commander
U.S. Army Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Colonel Clancy:

Please reference the U.S. Army Corps of Engineers' (Corps) Programmatic Individual Environmental Report (PIER) 36, Supplement 1 (SPIER 1), titled "Bayou Sauvage, Turtle Bayou, and New Zydeco Ridge Restoration Projects, St. Tammany and Orleans Parishes, Louisiana." PIER 36 and SPIER 1 were completed under the approval of the Council on Environmental Quality (CEQ) and partially fulfills the Corps compliance with the National Environmental Policy Act (NEPA) of 1969 (83 Stat. 852, as amended; 42 U.S.C. 4321- 4347). Work proposed in those documents is being conducted under the authority of Public Law 109-234, Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006 (Supplemental 4). That law authorized the Corps to upgrade two existing hurricane protection projects (i.e., Westbank and Vicinity of New Orleans and Lake Pontchartrain and Vicinity, LPV) in the Greater New Orleans area in southeast Louisiana, and is collectively known as the Hurricane Storm Damage Risk Reduction System (HSDRRS).

The Corps is preparing a Supplemental Environmental Assessment (SEA #546) to address changes to the design of some of the features in the recommended mitigation plan described in SPIER 1. Specifically, SEA #546 evaluates the potential impacts associated with implementing brackish marsh mitigation by expanding the New Zydeco marsh mitigation project in St. Tammany Parish, Louisiana. That mitigation was originally proposed at the Bayou Sauvage Flood-side (BSFS) mitigation area in Orleans Parish, Louisiana, and will mitigate brackish marsh impacts associated with the construction and upgrading of the LPV, HSDRRS project. These impacts are considered general impacts in that they did not occur on public lands [i.e., National Wildlife Refuge, (NWR)].

The Fish and Wildlife Service (Service) provided to the Corps an October 28, 2013, Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) report and a

September 2, 2015, supplemental report that addressed the mitigation plan for NWR and non-NWR impacts resulting from the LPV, HSDRRS project (Table 1). This report also incorporates, and supplements the numerous FWCA Reports provided for the work authorized under 4th and 5th Supplemental for the LPV Hurricane Protection Project only (i.e., IERS 1-11, including supplemental documents). Those reports contain a thorough discussion of the significant fish and wildlife resources (including those habitats) that occur within the study area. For brevity, that discussion is incorporated by reference herein, however the following information contains an analysis of the impacts on fish and wildlife resources that would result from changes to the previously proposed plan and provides recommendations to minimize impacts and optimize benefits proposed in the revised mitigation plan. The Service submits the following comments in accordance with provisions of the NEPA, Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.), the Migratory Bird Treaty Act (MBTA) (40 Stat. 755, as amended; 16 U.S.C. 703 et seq.), and the Fish and Wildlife Coordination Act (FWCA, 48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). This report constitutes the report of the Secretary of the Interior as required by Section 2(b) of the FWCA. Copies of this report were provided to the National Marine Fisheries Service (NMFS) and the Louisiana Department of Wildlife and Fisheries. NMFS provided comments, and their comments on the draft FWCA report are incorporated and have been enclosed.

Table 1: LPV HSDRRS Project Impacts Addressed in SIER#1

Habitat	Levee Side	AAHUs*	Acres
General Brackish Marsh	floodside	118.06	226.47
Refuge Brackish Marsh	floodside	8.79	24.59
Refuge Intermediate Marsh	protected side	41.29	86.34
Refuge BLH-Wet Flood side	floodside	8.91	22.85
Refuge BLH-Wet Protected side++	protected side	83.92	164.52

*AAHUs = average annual habitat units
++includes Task Force Guardian impacts

ALTERNATIVES EVALUATED

The Corps proposes design changes to the BSFS marsh restoration features approved in SPIER 1 and evaluates the potential of satisfying 18.4 AAHUs of the mitigation requirement that can no longer be accomplished at BSFS-4 feature (Figure 1). That alternative feature is no longer viable due to North American Waterfowl Conservation Act (NAWCA) funds being awarded in November 2014, to protect and restore marsh in the project area. That project awarded in partnership with The Conservation Fund will be managed as part of the refuge after those lands are acquired. Those proposed alternative project features have been discussed and evaluated in our September 2, 2015, supplemental report, and those descriptions are incorporated by reference herein. To compensate for the loss of 60 acres of mitigation that was previously approved under the BSFS4 alternative in SPIER 1, the Corps has evaluated the following alternatives:

1. Expansion of the marsh mitigation component at the proposed New Zydeco marsh and bottomland hardwood (BLH) habitat mitigation alternative;

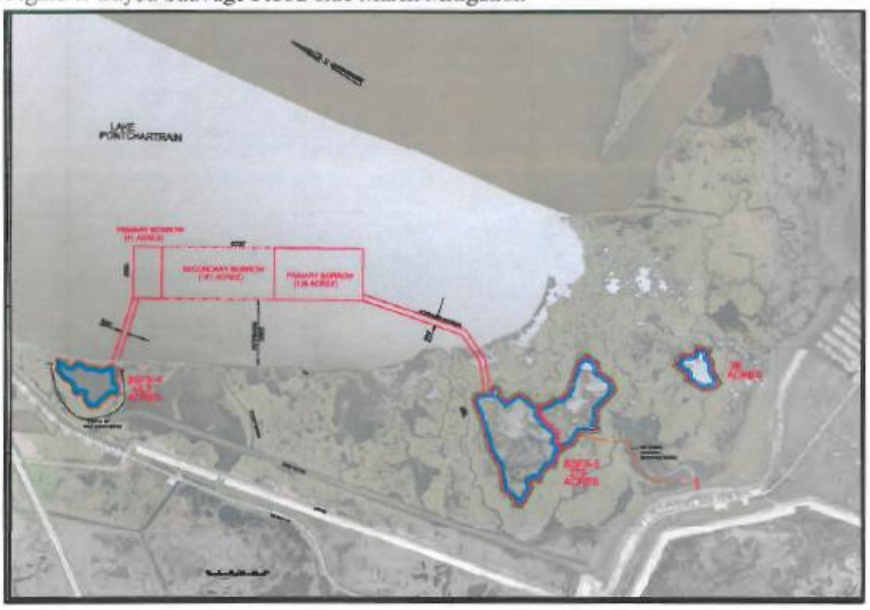
2. Addition of a 60-acre marsh mitigation component to the north of the currently proposed New Zydeco BLH habitat feature of the New Zydeco alternative; or,

3. Purchase credits at an approved mitigation bank.

PROJECT IMPACTS & MITIGATION PLAN

The New Zydeco marsh and bottomland hardwood habitat mitigation projects are located on the north shore of Lake Pontchartrain, northwest of U.S. Highway 90, and approximately 5 miles east of Slidell, Louisiana on the Big Branch NWR. The project sites are bounded on the east by U.S Highway 90, on the North by U.S. Highway 190, on the west by U.S. Interstate 10, and on the south by Lake Pontchartrain. The approved projects in SPIER 1 consist of creating approximately 159 acres of bottomland hardwood habitat and creating 160 acres of brackish marsh habitat (Figure 2).

Figure 1. Bayou Sauvage Flood-side Marsh Mitigation

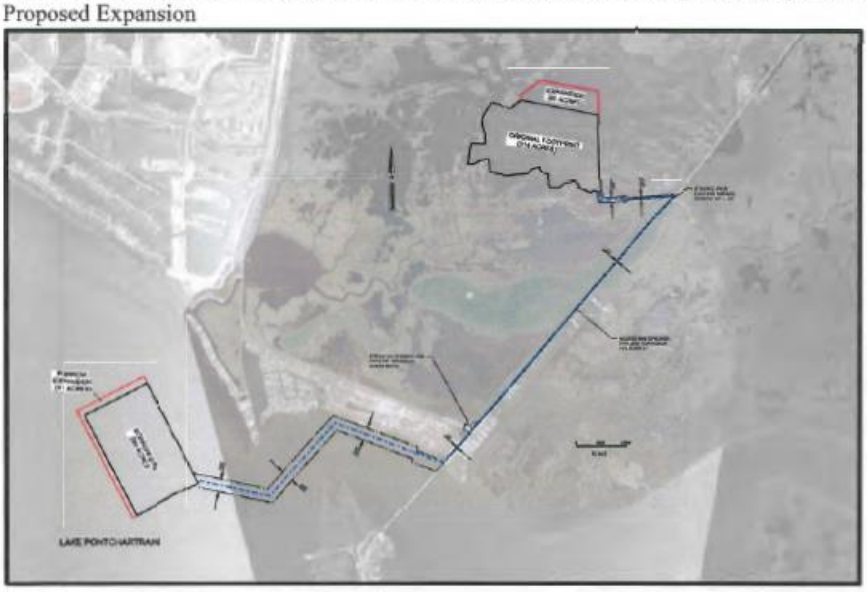


As a replacement to the BSFS4 mitigation feature, the Corps is evaluating the restoration of marsh habitat in addition to, and in conjunction with, the proposed New Zydeco marsh restoration and BLH habitat mitigation feature (Figure 2). The proposed marsh restoration expansion feature at the New Zydeco location is within the Pontchartrain Basin and is considered to be located in the "middle" Pontchartrain Basin along with the areas of impact.

Implementation of the mitigation plan would maintain and/or increase fish and wildlife resource values via the restoration of estuarine marsh. This proposed mitigation plan is being developed to offset losses to brackish marshes and includes the purchase of protective easements (or fee-title) and the construction of restoration projects (containment dike construction, dedicated dredging, and filling of open water areas) within Big Branch Marsh NWR.

Two layout options are being considered to satisfy the outstanding 18.4 AAHUs of brackish marsh impacts at the New Zydeco location. The first layout option expands the currently proposed design of the New Zydeco brackish marsh restoration feature by approximately 60 acres, making the total acreage for that project approximately 220 acres; and moving the approved New Zydeco BLH habitat footprint northward. This project alternative minimizes the linear footage of retention dike required by maintaining an outer perimeter dike and a cross dike between the two habitat varieties.

Figure 2. New Zydeco Marsh and Bottomland Hardwood Habitat Mitigation Footprint with Proposed Expansion



The second layout option being considered is to maintain the alignment of the New Zydeco BLH habitat and brackish marsh layouts approved in SPIER 1 and to add a 60-acre brackish marsh cell to the north of the BLH habitat footprint.

Any earthen perimeter dike around the marsh creation area will be constructed to an elevation +4.0 feet North American Vertical Datum (NAVD) 88 with a five foot crown and 1 vertical (V) on 3 horizontal (H) side slopes. The retention dike around the BLH habitat mitigation area will be constructed to elevation +7.0 feet NAVD88 with a 5 foot crown and 1V on 3H side slopes. Borrow for dike construction would be obtained from the interior of the marsh creation footprint. This varies

from the original New Zydeco design in that the retention dikes were to be constructed to an elevation of +4 feet NAVD88, with a 1V on 4H side slope.

The marsh creation area(s) will initially be filled to an elevation of approximately +3.0 feet NAVD88 to ultimately reach a target marsh elevation ranging from +1.0 feet to +1.5 feet NAVD88. It is anticipated that the proposed 60 acres expansion of the brackish marsh mitigation footprint would require approximately 500,000 cubic yards of dredged material to construct. To provide this needed additional borrow material, the proposed borrow site would need to be expanded 200 feet in width along the south boundary and 300 feet along the west boundary resulting in a total increase in the borrow footprint of 3,000 feet by 4,800 feet (330 acres) or an increase of 41 acres.

The Service quantified unavoidable project impacts on wildlife resources and calculated mitigation needs and benefits through the use of the Wetland Value Assessment (WVA). Habitat units fluctuate in response to changes in habitat quality, represented by the Habitat Suitability Index (HSI), and/or quantity (acres); those changes are predicted for various target years over the period-of-analysis (i.e., 50 years), for future without-project and future with-project scenarios. Target years (TY) were selected for this analysis to capture the effects of important biological events. Values for model variables were obtained from site visits to the area, previous wetland assessments in similar habitats, communication with personnel knowledgeable about the study area and similar habitats, and review of aerial photographs and reports documenting fish and wildlife habitat conditions in the study area and similar habitats. For all the habitat assessments, the products of the resulting HSI values and acreage estimates were then summed and annualized for each habitat type to determine the average annual habitat units (AAHUs) available. The net change (increase or decrease) in AAHUs under future with-project conditions, compared to future without-project conditions, provides a quantitative comparison of anticipated project impact/benefits in AAHUs. By dividing the AAHU by the proposed mitigation project acreage a mitigation potential per acre was determined. That mitigation potential was used to refine the project size to meet the mitigation needs. Further explanation of how impacts/benefits are assessed with the WVA and an explanation of the assumptions affecting HSI values are available for review at the Service's Louisiana Ecological Services Office. Impact assessments and mitigation benefit assessments considered sea-level rise, subsidence, accretion, and historic marsh loss trends and were coordinated with other State and Federal agencies.

According to the WVA, the addition of 60 acres of marsh mitigation at the New Zydeco alternative location will offset an estimated 18.96 AAHUs of impacts (Table 2). The marsh mitigation feature provides a mitigation potential of 0.32 AAHUs per acre. With the additional 60 acres of marsh mitigation, the New Zydeco Ridge mitigation will be comprised of creating a total of 220 acres of marsh and 159 acres of BLH habitat, of which 207.88 acres of marsh and 154.72 acres of BLH habitat is required to compensate for impacts.

Table 2: Total Benefits in AAHUs Due to Project.

A. Emergent Marsh Habitat Net AAHUs	=	38.34
B. Open Water Habitat Net AAHUs	=	-21.74
Net Benefits = (2.1xEMAAHUs+OWAAHUs)/3.1	=	**18.96**

Additional impacts to fish and wildlife resources are associated with the construction of the refuge mitigation features, and to ensure a no net loss these impacts have been incorporated into the overall mitigation requirement and mitigation plan. Because these impacts were not addressed in our September 2, 2015, report, they are accounted for in this report. These additional impacts are associated with access rights-of-way through vegetated marsh habitat and are presented in Table 3.

Table 3. Impacts Associated with Mitigation Features

Mitigation Access	Levee Side	Habitat*	AAHUs	Acres
Turtle Bayou	flood side	BM	0.77	2.11
Turtle Bayou	protected side	IM	3.36	10.13
Bayou Sauvage	flood side	BM	0.41	0.5
New Zydeco	flood side	BM	1.51	3.75

* BM = brackish marsh, IM = intermediate marsh, SAV = submerged aquatic vegetation - brackish

Success Criteria, Monitoring and Adaptive Management

The mitigation plan was developed in coordination with the Service and the Interagency Team. That plan can be found in Appendix C of the SPIER 1, and is incorporated by reference herein. That plan provided conceptual layouts of the number and location of monitoring plots and transects. The expansion footprint of the New Zydeco marsh restoration feature is comparable to the size of the originally proposed BSFS4 feature, and therefore the number of transects and monitoring plots proposed for the New Zydeco marsh restoration expansion should be comparable. After completion of the initial construction of mitigation, a baseline monitoring report will be prepared to record the final design of the monitoring plan. Future changes to those plans should be evaluated against the accrued and anticipated benefits and the effect of implementing the proposal on achievement of the mitigation plan goals.

Endangered Species Act (ESA)

To accommodate the proposed marsh expansion feature the Corps proposes to expand the New Zydeco borrow area and reduce the Bayou Sauvage borrow area, accordingly. The Corps determined that the recommended proposed action addressed in SPIER 1 may affect, but is not likely to adversely affect the Atlantic sturgeon, West Indian manatee, and the green, Kemp's Ridley, and loggerhead sea turtles. The Corps also determined that the recommended action may

affect, but is not likely to adversely affect Atlantic sturgeon critical habitat and is not likely to destroy or adversely modify it. In an August 19, 2015, letter to the Corps, the NMFS concurred that the proposed action was not likely to adversely affect listed species and critical habitat under their purview. The Service provided an updated concurrence on May 26, 2016, that the proposed action recommended in SEA #546 was not likely to adversely affect listed species under our purview. Because the proposed action includes modifications to the proposed borrow area footprints, we recommend further consultation with the NMFS (Ms. Michelle Press at 727.209.5977) to determine affects to Atlantic sturgeon designated critical habitat.

Protected Species

The Migratory Bird Treaty Act (MBTA) (40 Stat. 755, as amended; 16 U.S.C. 703 et seq.) and the Bald and Golden Eagle Protection Act (BGEPA) (54 Stat. 250, as amended, 16 U.S.C. 668a-d) offer additional protection to many bird species within the project area including colonial nesting birds, osprey, and the bald eagle (Haliaeetus leucocephalus). We continue to recommend that a qualified biologist inspect proposed work sites for the presence of undocumented nesting colonies during the nesting season (e.g. March 1st through September, depending on the species). If colonies exist, work should not be conducted within 1,000 feet of the colony during the nesting season. Reduced no-work buffers may be possible in coordination with this office. On-site personnel should also be informed of the possible presence of nesting bald eagles and ospreys near the project boundary.

The Service developed the National Bald Eagle Management (NBEM) Guidelines to provide landowners, land managers, and others with information and recommendations to minimize potential project impacts to bald eagles, particularly where such impacts may constitute "disturbance," which is prohibited by the BGEPA. A copy of the NBEM Guidelines is available at: http://www.fws.gov/southeast/es/baldeagle/NationalBaldEagleManagementGuidelines.pdf. Those Guidelines recommend: (1) maintaining a specified distance between the activity and the nest (buffer area); (2) maintaining natural areas (preferably forested) between the activity and nest trees (landscape buffers); and (3) avoiding certain activities during the breeding season. During any project construction, on-site personnel should be informed of the possible presence of nesting bald eagles in the vicinity of the project boundary, and should identify, avoid, and immediately report any such nests to this office. If a bald eagle nest occurs or is discovered within 660 feet of the proposed project area, then an evaluation must be performed to determine whether the project is likely to disturb nesting bald eagles. That evaluation may be conducted on-line at: http://www.fws.gov/southeast/es/baldeagle. Following completion of the evaluation, that website will provide a determination of whether additional consultation is necessary.

Further, on-site personnel should also be informed of the possible presence of nesting shorebirds should the construction occur any time during the nesting season (March 1st to September 15th). Borrow material being placed at the mitigation site may be suitable for and attract nesting shorebirds. In this case we recommend that an abatement plan be developed in coordination with this office and be available in the event that shorebirds exhibit evidence of nesting behavior.

National Wildlife Refuge

The National Wildlife Refuge System Improvement Act of 1997 authorized that no new or expanded use of a refuge may be allowed unless it is first determined to be compatible. A compatibility determination is a written determination signed and dated by the Refuge Manager and Regional Refuge Chief, signifying that a proposed or existing use of a NWR is a compatible use or is not a compatible use. A compatible use is defined as a proposed or existing wildlife-dependent recreational use or any other use of a NWR that, based on sound professional judgment, will not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purposes of the NWR. A compatibility determination is only required when the Service has jurisdiction over the use.

The Corps should continue to work closely with the Refuge to determine if the proposed project constitutes a "refuge use" subject to a compatibility determination. If the proposed project requires a compatibility determination, a concise description of the project (refuge use) including who, what, where, when, how and why will be needed to prepare the compatibility determination. In order to determine the anticipated impacts of use, the project proponent may be required to provide sufficient data and information sources to document any short-term, long-term, direct, indirect or cumulative impacts on refuge resources. Compatibility determinations will include a public review and comment before issuing a final determination.

All construction or maintenance activities (e.g., surveys, land clearing, etc.) on a NWR will require the Corps to obtain a Special Use Permit from the Refuge Manager; furthermore, all activities on that NWR must be coordinated with the Refuge Manager. Therefore, we recommend that the Corps request issuance of a Special Use Permit well in advance of conducting any work on the refuge. Please contact Stacy Armitage, the Project Leader for the Service's Southeast NWR Complex, (985) 822-2000, for further information on compatibility of restoration features, and for assistance in obtaining a Special Use Permit. Close coordination by the Corps, Local Sponsor, and its contractor must be maintained with the Refuge Manager, Daniel Breaux, (985) 882-2030, to ensure that construction and maintenance activities are carried out in accordance with provisions of any Special Use Permit issued by the NWR.

The Service continues to recommend and support the mitigation for impacts to public lands on public lands within the managing agencies jurisdiction. If mitigation lands are purchased for inclusion within a NWR, those lands must meet certain requirements; a summary of some of those requirements was provided in our September 2, 2015, supplemental report, and are incorporated by reference herein. Coordination with the Service's Southeast Louisiana Refuge Complex should continue.

Coastal Wetlands Planning, Protection, and Restoration Act

As you are aware, several restoration projects, which are authorized by the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) (104 Stat. 4779; 16 U.S.C. 3951 et seq.) are located within and near the proposed LPV mitigation features. Additional projects have been approved since our last report was provided. Should the proposed mitigation projects directly

and/or indirectly affect any of the CWPPRA project features (e.g., canal plugs, rock dikes, levees, water control structures, diversion channels, etc.) associated with those CWPPRA projects, the Corps should coordinate with the respective Federal agency. The exact locations of the proposed and existing specific CWPPRA project features may be obtained at http://lacoast.gov/new/Projects/List.aspx, and we recommend that the Corps coordinate directly with the appropriate CWPPRA agency sponsors of the project in developing their proposed project. Please be aware that Section 303(d) of the CWPPRA requires that all Federal activities be consistent with the purposes of that Act. Since those activities would also include permits issued by any Federal, State, and/or local agencies, we recommend that the design and features of the proposed project are consistent with the need to protect the public investment in those CWPPRA projects.

Per NMFS' June 29, 2016, letter, expansion of the New Zydeco Ridge Restoration Project may impact the Fritchie Marsh Creation and Terracing Project (PO-173). Please coordinate with Mr. Patrick Williams at (225)389-0508, extension 208, the NMFS project manager for that project, should the expansion of the proposed mitigation project directly and/or indirectly affect PO-173 project features.

SERVICE POSITION AND RECOMMENDATIONS

The Service supports the Corps' proposed mitigation plan to mitigate impacts to fish and wildlife resources (i.e., brackish marsh impacts) associated with HSDRRS, either by the expansion of the New Zydeco marsh mitigation feature or the addition of brackish marsh north of the New Zydeco bottomland hardwood habitat feature; both of which occur on Big Branch NWR. The Service does not object to considering the State's In-Lieu-Fee (ILF) Program in the alternatives evaluation procedures. However, there is a concern that mitigation will not be in-kind, within the same hydrologic basin, or concurrent with impacts. Although not preferred, should that alternative be considered and selected, the Service would not oppose that option provided that the State can confirm that credits are available, and that the funds will be used to create in-kind habitat within the Lake Pontchartrain Basin. The Service does not object to considering the purchase of released credits from an approved and fully compliant bank to mitigate off-refuge impacts in the alternatives evaluation procedures and the purchase of those credits if selected. However, if a bank is temporarily suspended or sale of credits is closed for any reason (e.g., temporary lapse in financial assurances, not achieving any success criteria, etc.) the Service would not support the use of such a bank until it has demonstrated its ability to maintain a fully compliant status, the suspension is lifted, it is approved by the Corps' Regulatory Branch and credits are available at the time of signature of the Finding of No Significant Impact. Whether using bank credits or Corps-constructed projects, the goal for compensatory mitigation is that it will occur as concurrent with impacts as possible and that it will fully compensate for those impacts over the long term. In addition, the following recommendations are provided:

1. In addition to the conditions noted above, use of a mitigation bank or a project under the ILF Program is acceptable provided that the bank or ILF project is acceptable to mitigate impacts to EFH.

2. If construction of the mitigation project does not commence by the end of 2016, the Corps should commit to reassessing additive temporal losses and offsetting such losses with additional mitigation.

3. The Corps should coordinate closely with the natural resource agencies including the Service, NMFS, and the Coastal Protection and Restoration Authority during and after construction to ensure adequate mitigation is achieved. To the extent practicable, this should include the opportunity to participate in the onsite construction inspections (not less than midpoint, red zone, and final inspections) and review of fill area and access corridor elevation surveys prior to dredge demobilization and final acceptance.

4. A containment dike degrading/gapping plan should be refined and implemented through coordination with the natural resource agencies and based on field conditions.

5. After completion of the initial construction of mitigation, a baseline monitoring report should be prepared to record the final design of the monitoring plan and submitted to the Interagency Team for review. Future changes to those plans should be evaluated against the accrued and anticipated benefits and the effect of implementing the proposal on achievement of the mitigation plan goals.

6. The adaptive management plan should be revised to include more details on the marsh mitigation through coordination with the natural resource agencies.

7. We recommend that the Corps reinitiate ESA consultation with this office and NMFS 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 to ensure that the proposed project does not adversely affect any federally listed threatened or endangered species or their habitat.

8. We recommend that a qualified biologist inspect proposed work sites for the presence of undocumented bald eagle and osprey nests. Adverse impacts to bald eagle and osprey nesting locations and wading bird colonies should be avoided through careful design of 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.

9. We recommend that a qualified biologist inspect proposed work sites for the presence of undocumented nesting colonies during the nesting season (e.g. March 1st through September, depending on the species). If colonies exist, work should not be conducted within 1,000 feet of the colony during the nesting season. Reduced no-work buffers may be possible in coordination with this office. On-site personnel should also be informed of the possible presence of nesting bald eagles and ospreys within the project boundary.

10. On-site personnel should also be informed of the possible presence of nesting shorebirds should the construction occur any time during the nesting season (March 1st to September 15th). Should borrow material being placed at the mitigation site be suitable for and attract nesting shorebirds, we recommend that an abatement plan be developed in coordination with this office and be available in the event that shorebirds exhibit evidence of nesting behavior.

11. Should the proposed mitigation projects directly and/or indirectly affect any of CWPPRA project features (e.g., canal plugs, rock dikes, levees, water control structures, diversion channels, etc.) associated with those CWPPRA projects, the Corps should coordinate with the respective Federal agency.

12. Water quality monitoring within the borrow areas is recommended, and should be conducted at least during March through November for a minimum of three years post dredging to verify the conductance, temperature, dissolved oxygen, and pH from the bottom to surface in five foot profiles. Samples should be collected at least monthly during March, April, September, October, and November. During the hotter months of May, June, July and August, sampling should be conducted once every two weeks. Benthos should be sampled immediately prior to construction and thereafter annually for three years post-dredging to evaluate potential recovery or changes in the community structure.

13. The Corps should continue to coordinate with refuge personnel during planning and compatibility determination processes. A Special-Use Permit should be obtained prior to any entrance onto the refuge. Coordination should continue until construction of the flood protection project and restoration projects are complete and prior to any subsequent maintenance. Points of contacts for that refuge are Stacey Armitage, (985) 822-2000, Project Leader for the Service's Southeast National Wildlife Refuge Complex, and Daniel Breaux, (985) 882-2030, Refuge Manager for the Big Branch NWR. The Corps should not sign the Decision of Record until a Compatibility Determination is complete.

The Service appreciates the opportunity to comment on SEA #546, and we look forward to continuing coordination with the Corps and the other natural resource agencies to finalizing a mitigation plan for the LPV project in a timely manner. If your staff has additional questions regarding our comments, please contact David Walther at (337) 291-3122.

Sincerely,

Darryl Clark
Acting Field Supervisor
Louisiana Ecological Services Office

Enclosures

cc: FWS, Southeast Refuge Complex, Lacombe, LA
NMFS, Baton Rouge, LA
EPA, Dallas, TX
LDWF, Baton Rouge, LA
LDNR, CMD, Baton Rouge, LA
CPRA, Baton Rouge, LA

Appendix F: Comments Received During Public Review and CEMVN Responses

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
http://sero.nmfs.noaa.gov

June 28, 2016 F/SER46/PW:jk
225/389-0508

Ms. Joan M Exnicios, Chief
Regional Planning and Environmental Division South
New Orleans District Environmental Branch
U.S. Army Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Ms. Exnicios:

NOAA's National Marine Fisheries Service (NMFS) has received the draft Supplemental Environmental Assessment (SEA) #546 for Individual Environmental Report (SIER#1, PIER 36) titled, "Bayou Sauvage, Turtle Bayou, and New Zydeco Ridge Restoration Projects, St. Tammany and Orleans Parishes, Louisiana". The activities described in the document are necessary to supplement the mitigation for the Lake Pontchartrain and Vicinity (LPV) of the Hurricane and Storm Damage Risk Reduction System (HSDRRS) by the U.S. Army Corps of Engineers (USACE).

The SEA evaluates reducing the Bayou Sauvage Flood Side (BSFS) brackish marsh mitigation previously approved and expanding the New Zydeco Ridge (NZR) brackish marsh mitigation to satisfy the mitigation requirements. The BSFS brackish marsh previously was comprised of two sites. One site has been eliminated because it is no longer available for purchase. As a result, the borrow area in Lake Borgne would be reduced by 41 acres and the borrow area in Lake Pontchartrain would be increased by 41 acres to construct compensatory mitigation. The expansion of the brackish marsh on Big Branch National Wildlife Refuge would either be expansion of the NZR brackish marsh or adding a brackish marsh site north of the NZR bottomland hardwood wet mitigation site.

The USACE has coordinated closely with NMFS during the development and amendment of these projects. Although some unforeseen issues have arisen in recent months contributing to revision of the BSFS brackish marsh mitigation, NMFS urges the USACE to proceed with implementation of mitigation to minimize further temporal losses of wetland functions that is occurring since completion of the flood protection measures in 2011. The NMFS is interested in inspecting the marsh mitigation sites during construction and prior to final acceptance to help maximize the potential for success. To accommodate site conditions after construction and as the marsh creation sites settle, the NMFS is interested in working collaboratively with the USACE to refine the containment dike degrading/gapping plans. This is to help establish tidal functions while minimizing erosion of the placed sediment. The NMFS encourages the USACE to improve marsh mitigation components of the adaptive management plan in the appendix.

The NMFS has a "findings" with the New Orleans District (NOD) that fulfillment of EFH coordination requirements of the Magnuson-Stevens Act for civil works projects such as

we

HSDRRS would be fulfilled through our review and comment on National Environmental Policy Act documents prepared for those projects. Section 305(b)(4)(A) of the Magnuson-Stevens Act requires NMFS provide EFH conservation recommendations for any federal action which may result in adverse impacts to EFH. Therefore, NMFS recommends the following to ensure the conservation of EFH and associated marine fishery resources.

EFH Conservation Recommendations

1. The SEA should include recommendations in the Final Fish and Wildlife Coordination Act Report for these projects.

2. If construction of the mitigation project does not commence during 2016, the USACE should commit to reassessing additive temporal losses and offsetting such losses with additional mitigation.

3. Use of a mitigation bank or a project under the In Lieu Fee Program (ILF) is acceptable if the bank or ILF project is acceptable to mitigate impacts to EFH, approved by Regulatory Division, compliant, not suspended, and credits are available at the time of signature of the FONSI.

4. The USACE should coordinate with NMFS and other interested natural resource agencies during and after construction to ensure adequate mitigation is achieved. To the extent practicable, this should include the opportunity to participate in the onsite construction inspections (not less than a midpoint, red zone, and final inspections) and review of fill area and access corridor elevation surveys prior to dredge demobilization and final acceptance.

5. A containment dike degrading/gapping plan should be refined and implemented through coordination with NMFS and other interested agencies based on field conditions.

6. The adaptive management plan should be revised to include more details on the marsh mitigation through coordination with NMFS and other interested natural resource agencies.

Consistent with Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act and NMFS' implementing regulation at 50 CFR 600.920(k), the NOD is required to provide a written response to our EFH conservation recommendations within 30 days of receipt. If the NOD response is inconsistent with our EFH conservation recommendations, the NOD must provide a substantive discussion justifying the reasons for not implementing that recommendation. If it is not possible to provide a substantive response within 30 days, the NOD should provide an interim response to NMFS, to be followed by the detailed response. The detailed response should be provided in a manner to ensure that it is received by NMFS at least 10 days prior to the final approval of the action (i.e., signage of the Finding of No Significant Impact).

The NMFS appreciates consideration of the above comments and the close and cooperative coordination by the USACE on HSDRRS mitigation. If you have questions or wish to discuss our comments, please contact Patrick Williams at (225)389-0508, extension 208 or patrick.williams@noaa.gov.

Sincerely,

Virginia M. Fay
Assistant Regional Administrator
Habitat Conservation Division

Enclosure

c:
USACE, Erwin, Leroux, Behrens
FWS, Lafayette, Trahan, Walther
EPA, Dallas, Keeler
LA DNR, Consistency, Haydel
LA CPRA, Bennett
F/SER46, Swafford
F/SER4, Rolfes, Dale
F/SER, Silverman
Files

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

REPLY TO
ATTENTION

Regional Planning and
Environment Division South

Ms. Virginia M. Fay
Assistant Regional Director
Habitat Conservation Division
NMFS, Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701

Dear Ms. Fay:

The US Army Corps of Engineers, New Orleans District (CEMVN) received your agency comments dated June 29, 2016 on the draft Supplemental Environmental Assessment – Bayou Sauvage, Turtle Bayou, & New Zydeco Ridge Restoration Projects (SEA #546) for the Lake Pontchartrain and Vicinity (LPV) Hurricane Storm Damage and Risk Reduction (HSDRRS) Mitigation located in St. Tammany and Orleans Parishes, Louisiana. Enclosed are our responses to your comments.

We appreciate your comments and look forward to coordinating with your agency staff to resolve your concerns. If you have questions or would like additional information, please contact Ms. Patricia Leroux at 504-862-1544 or by email at Patricia.S.Leroux@usace.army.mil.

Sincerely,

For

Joan M. Exnicios
Chief, Environmental Planning Branch

Enclosure

RESPONSES TO NMFS COMMENTS ON LPV ON-REFUGE MITIGATION SEA

GENERAL COMMENTS:

Coordination:

1. The SEA should include recommendations in the Final Fish and Wildlife Coordination Act Report for these projects.

CEMVN Response: Concur. Recommendations received from USFWS have been included in SEA #546.

2. If construction of the mitigation project does not commence during 2016, the USACE should commit to reassessing additive temporal losses and offsetting such losses with additional mitigation.

CEMVN Response: Concur. CEMVN will fulfill its compensatory mitigation obligation as required by the Water Resources Development Acts (WRDA) of 1986, 2007, and 2014 and by the Clean Water Act Section 404(b)(1) Guidelines.

3. Use of a mitigation bank or a project under the In Lieu Fee Program (ILF) is acceptable if the bank or ILF project is accessible to mitigate impacts to EFH, approved by Regulatory Division, compliant, not suspended, and credits are available at the time of signature of the FONSI.

CEMVN Response: Concur.

4. The USACE should coordinate with NMFS and other interested natural resource agencies during and after construction to ensure adequate mitigation is achieved. To the extent practicable, this should include the opportunity to participate in the onsite construction inspections (not less than a midpoint, red zone, and final inspections) and review of fill area and access corridor elevation surveys prior to dredge demobilization and final acceptance.

CEMVN Response: Concur. The CEMVN looks forward to further coordination with the resource agencies to ensure our mitigation obligation is fully satisfied.

5. A containment dike dredging/gapping plan should be refined and implemented through coordination with NMFS and other interested agencies based on field conditions.

CEMVN Response: Concur. The proposed mitigation areas will be monitored following placement of the dredged material to assure that the material has sufficiently dewatered and settled before proposing to move forward with degradation/gapping of the dikes. Field visits will be coordinated with the resource agencies and will be utilized to adjust the gapping/degrading plans and to ensure that tidal connection is achieved. Current plans include the degrading of all retention dikes around the marsh features except for the dikes between the BLH-Wet and marsh features at New Zydeco Ridge.

6. The adaptive management plan should be revised to include more details on the marsh mitigation through coordination with NMFS and other interested natural resource agency.

CEMVN Response: The AM plan has been revised. See attached.

From: Patrick Williams - NOAA Federal
To: Leroux, Patricia S MVN
Cc: Behrens, Elizabeth MVN; Stiles, Sandra E MVN; Angela_Trahan@fws.gov; Swafford, Rusty; David Dale - NOAA Federal; Renee Bennett (CPRA); Sharon Rolfes - NOAA Federal; Keeler, Barbara; Noah Silverman - NOAA Federal; Erwin, Patrick J MVN; donald.haydel@la.gov
Subject: [EXTERNAL] Re: NMFS Response Letter
Date: Tuesday, July 05, 2016 2:36:54 PM

Trish,

the NOAA's Fisheries (NMFS) has received the U.S. Army Corps of Engineers' (USACE) letter transmitted by electronic mail dated July 3, 2016, responding to our June 28, 2016, comments on the draft Supplemental Environmental Assessment - Bayou Sauvage, Turtle Bayou, and New Zydeco Ridge Restoration Projects (SEA #546) for the Lake Pontchartrain and Vicinity Hurricane Storm Damage and Risk Reduction (HSDRRS) mitigation located in St. Tammany and Orleans Parishes, Louisiana. The USACE's letter concurs with all of our six essential fish habitat (EFH) conservation recommendations. By separate electronic mail transmittals on July 3, 2016, the USACE acknowledged the previous commitment by the USACE to conduct water quality monitoring of the borrow areas and supplied the most up to date adaptive management plan.

This is to notify you the USACE's responses, including water quality monitoring and the up to date adaptive management plan, adequately address our concerns regarding potential project impacts to EFH and related marine fishery resources. Provided the project is not revised, this satisfies the consultation procedures outlined in 50 CFR Section 600.920, the regulation to implement the EFH provisions of the Magnuson-Stevens Fishery Conservation and Management Act.

Thank you for the continued close coordination with the NMFS on HSDRRS.

On Fri, Jul 1, 2016 at 2:29 PM, Leroux, Patricia S MVN <patricia.leroux@usace.army.mil <mailto:patricia.leroux@usace.army.mil> > wrote:

> Pat -
>
> Please see the attached response letter to the NMFS comments on SEA #546. Please let me know if you have any questions.
>
> Patricia S. Leroux
> Environmental Resource Specialist
> Regional Planning and Environmental Division South
> (504) 862-1544 <tel:%28504%29%20862-1544>

--

Patrick Williams
NOAA's National Marine Fisheries Service
Habitat Conservation Division
(225)389-0508 ext 208 office

Ecosystem Investment Partners

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June 16, 2016

COL Richard L. Hansen, Commander
U.S. Army Corps of Engineers, New Orleans District
Executive Office
P.O. Box 60267
New Orleans, LA 70160
Richard.L.Hansen.col@usace.army.mil

Subject: Comments on and Request to Delay Finalizing Draft FONSI for Supplemental Environmental Assessment and the Draft Environmental Assessment prepared to Supplement the Programmatic Individual Environmental Report 36, Supplement 1 Bayou Savage, Turtle Bayou & New Zydeco Ridge Restoration Project (SEA # 546), New Orleans District Civil Works Mitigation Needs

Dear Colonel Hansen:

I am writing to provide comments for the District's consideration on the subject Draft FONSI and Draft EA for SEA #546 found on the nolaenvironmental.gov website. We have several questions and comments about this FONSI and Draft EA, including the Decision Record, on which the Draft FONSI is supplementing (Individual Environmental Report Prepared to Supplement: PIER 36, Supplement 1 (SIER 1)). Our comments cover both substance and process issues.

Our key concern, that we believe you can appreciate following our meeting on June 8th, is that the District's Civil Works assessment of the Chef Bank appears to not be based on all available data and that the cost estimate is not accurate, resulting in the District eliminating the Chef Bank as a viable mitigation alternative for evaluation. As a result, the only alternatives being evaluated involve the expansion of the New Zydeco Ridge (NZR) project for non-USFWS Refuge impacts, while the Chef Bank has ample credits available to service the 18.4 AAHU shortfall from the removal of BSFS4: the Chef Bank has 124.2 released credits (38.5 AAHUs based on 0.31 AAHUs/acre) available for sale to the District at less cost than the expansion of NZR. While we are working diligently and expeditiously with your staff to resolve the Civil Works assessment of the Chef Bank, we respectfully request that the District delay finalizing the Draft FONSI until the District either verifies that the District's assessment is accurate or revises its assessment based on the Brown & Caldwell analysis and additional information. We believe this delay will likely result in a substantial benefit to the government with the purchase of bank credits that would be advantageous to the government at less cost than expanding the NZR project, as well as relieving the Corps from responsibility of long term monitoring of the mitigation project and demonstrating that the mitigation is successful, including any operation and maintenance costs required over time.

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I am enclosing a Summary of both Substance and Process Concerns and Technical Comments for the District's consideration.

We appreciate the District's time, attention, and willingness to work together with us to provide a high quality, cost-effective mitigation option for the District. Please feel free to call me at 410-982-0230 if you would like to discuss.

Sincerely,

Nicholas Dilks
Managing Partner

Attachments:
Summary of Substance and Process Concerns
Technical Comments

cc: MG Michael C. Wehr, Commanding General, Mississippi Valley Division

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SUMMARY OF SUBSTANCE AND PROCESS CONCERNS

Substance issues:

- The PIER 36, Supplement 1 (SIER 1) issued in July 2014 states very clearly that, per Section 2036 (c)(1) of WRDA07, mitigation bank credits shall be considered FIRST to make up the stated 13.16 AAHU shortfall in the planned Corps-constructed HSDRRS brackish marsh mitigation at Bayou Sauvage (BSFS 4 and 5). This document goes on to enumerate the multiple advantages that mitigation bank credits afford the Corps over Corps-constructed projects, including time, risk and reliability, cost effectiveness, and operations and maintenance. This document states that a decision between mitigation methods would be determined based on cost.
- Subsequently, the Decision Document to PIER 36, issued in December 2015, states that the Proposed Action for making up the above-referenced AAHU shortfall for non-U.S. Fish and Wildlife Refuge impacts is expansion of New Zydeco Ridge (NZR) bottomland hardwood project with an added brackish marsh Corps-constructed segment. However, there is zero explanation of the method by which this Proposed Action was decided, or how it is environmentally preferable, including no discussion of any cost comparison, evaluation of mitigation credit availability, etc. Also, the stated AAHU shortfall increased from 13.16 AAHUs to 23.7 AAHUs.
- The Draft FONSI just issued acknowledges a second brackish marsh AAHU shortfall of 18.4 AAHUs as a result of BSFS4 no longer being available to the Corps as a Corps-constructed mitigation site. Again, the Proposed Action is further expansion of NZR, without justification or explanation of why mitigation bank credits were not selected.
- **EIP maintains that based on Section 2036 (c)(1) of WRDA07 and Corps Implementation Guidance for Section 2036 (c), the District shall first consider unequivocally the purchase of mitigation bank credits , and EIP posits that based on the documents described above including the Draft FONSI, the Corps has not accurately or completely performed this evaluation for EITHER the 23.7 AAHU shortfall from BSFS5, or the 18.4 AAHU shortfall from BSFS 4.**
- Finally, there is a factual inaccuracy in the USFWS comment letter that is incorporated to the Draft FONSI. The USFWS states that the use of mitigation credits would be from mitigation banks that are "*not approved and functioning.*" This is simply erroneous, as the Chef Bank has been approved and functioning for a time period that well precedes the May 24, 2016 date of the USFWS comments and has 124.2 released credits (38.5 AAHUs based on 0.31 AAHUs/acre) already approved and ready for sale.

Process issues:

- EIP is unclear on where / how, if at all, the Corps distributed this Draft FONSI for public comment? Please clarify the public review and comment process and timeline.

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Technical Comments
to the
Draft FONSI for Supplemental Environmental Assessment and the Draft Environmental Assessment prepared to Supplement the Programmatic Individual Environmental Report 36, Supplement 1 Bayou Savage, Turtle Bayou & New Zydeco Ridge Restoration Project (SEA # 546)

SECTION 2.4.2.

1. Our review of the draft EA raises questions about how the New Orleans District is evaluating the proposed project in light of the availability of mitigation credits from a Corps approved mitigation bank. The draft EA does acknowledge that a mitigation bank is an appropriate Alternative to the proposed action, but then does not seem to flesh out the evaluation of that Alternative, but says in Section 2.4.2 that it is only an alternative IF the Corps is unable to implement the expansion of NZR Brackish Marsh project. This reasoning is counter to Section 2036(c)(1) of WRDA07 and Corps Implementing Guidance which states that the Corps FIRST consider the use of Mitigation Bank credits. There is no evidence in this draft FA that the Corps is complying with the requirement for FIRST analysis.

2. Section 2.4.2 also states that the Corps would also use "the same version of the WVA model as was used to assess impacts from constructing the HSDRRS would be run on the mitigation bank/ILF project to ensure that the assessment of the functions and services provided by the mitigation bank/ILF project matches the assessment of the lost functions and services at the impacted site." In a meeting between COl Hansen and MVN staff and EIP on June 8, 2016, MVN staff stated that they did NOT use the same WVA model and assumptions to evaluate EIP's Chef Menteur mitigation bank, the HSDRSS impacts, and the proposed Corps constructed mitigation projects. It is our understanding that the Corps and EIP technical staff are meeting within the next week to work through the assumptions used in the various WVA models used.

3. **Section 4** discusses environmental consequences of the action. We could go through each evaluation item in the EA but overall we note that the purchase of credits has no negative short or long term impact on the environment, unlike the proposed action. In fact, the proposed action has a negative effect on the environment (increased temporal loss of aquatic resources) compared to purchasing already-constructed and already-approved and released mitigation credits. We note that at the summation of Section 4, the Corps lists a summary for NO Action and Proposed Action, but did not provide a summary for Mitigation Bank Credit Purchase action.

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4. **Section 6** of the EA is a list of the Compliance with Environmental Laws and Regulations. We do not see where this EA lists Section 2036 of WRDA07 and describes how it complies with that law.

5. **Appendix D** lists the Wetland Valuation Assessment for the Proposed Action. We question whether the WVA properly evaluates the 5 years which the Proposed Action will be above the tidal interaction and therefore not the appropriate type of marsh desired to be restored.

6. **USFWS Comment Letter dated May 24, 2016.** The draft EA includes a support letter from USFWS – dated May 24, 2016 - that stated the following: *"We are concerned that the Corps is continuing to evaluate a mitigation concept that would rely on bank credits from mitigation banks that are currently not approved by the Interagency Review Team. Because this concept does rely on banks that are not approved and functioning and could result in further delays in mitigation implementation the Service cannot support any alternative that would rely on this concept at this time."* At the time this letter was signed, Chef Menteur Mitigation Bank in fact had sufficient released AAHUs on the ledger, approved by the Interagency Review Team, to satisfy all of the 18.4 AAHUs for brackish marsh mitigation, while thethe FONSI proposes to instead to mitigate by a Corps-constructed addition to the already planned New Zydeco Ridge project. The USFWS statement is simply inaccurate.

7. Requested Action. We therefore request that you address properly the requirements of Section 2036 of WRDA07 and FIRST consider the Mitigation Bank alternative since credits are approved for use by the New Orleans District.

Process Comments

Our comments on process are primarily concerned with the Pubic Notice and comment period. The Draft FONSI states "the proposed action has been coordinated with appropriated federal, state and local agencies and business, organizations, and individuals through distribution of SEA #546 on May 27, 2016 for their review and comment. There were no comments received from the public. No agency comments were received during the review process".

Our question is how was this draft distributed, and when was it posted to nolaenvironmental.gov? It was not distributed to EIP, a business known to the New Orleans District as an interested party. There is no notice on the website of the timing of when this document was posted, whether the public can comment, nor a specified date for any close of the comment period. We do have comments on the draft, enclosed herein, so the draft FONSI is inaccurate in stating that there are no comments received by the public.

The EA appears to be undated, and has several dates throughout with placeholders, but contains a letter dated May 24, 2016 from the USFWS, Lafayette Field Office, providing the USFWS's comments. This also raises questions about the draft FONSI, in that an agency did comment. That the USFWS was able to comment three days before the Draft FONSI states that it was made public is concerning since we cannot find any public notice requesting public comments.

State of Louisiana

JOHN BEL EDWARDS
GOVERNOR

June 27, 2016

Mr. Patrick Erwin
Project Manager
U.S. Army Corps of Engineers, New Orleans District
P.O. Box 60267
New Orleans, LA 70160-0267

Dear Mr. Erwin:

On May 27, 2016, the U.S. Army Corps of Engineers, New Orleans District solicited comments from the public, including Federal and State agencies, on the Supplemental Environmental Assessment #546 (SEA #546) titled, "Bayou Sauvage, Turtle Bayou, and New Zydeco Ridge Restoration Projects, St. Tammany and Orleans Parishes, Louisiana." As the non-federal sponsor, the Coastal Protection and Restoration Authority (CPRA) offers the following comments.

Note #	File Name	Page Number	(Paragraph, Section, and/or Sentence number)	Comment
1	FONSI	4	2nd paragraph	Dates are ## - replace with actual dates
2	FONSI	4	Environmental Design Commitments, first bullet	Clarify the statement. Does the statement refer to implementation within one year of an approved FONSI?
3	FONSI	4	Environmental Design Commitments, 3rd and 4th bullet	Fix Section XX to actual section #.
4	EA	8	Section 2.2	There is no language describing how the two habitats (marsh and BLH) impact each other. For Design 1, please provide any analysis performed or language as to why having two habitat types is beneficial. For Design 2, please provide language as to why breaking up the habitat from marsh to BLH back to marsh is beneficial. If there is no difference in positive or negative impacts between the two designs with respect to habitat interaction, then please state.
5	EA	19	Table 2	Replace "They" statements with the specific item being referenced. Instead of "They are a critical element", replace with "Wildlife is a critical element...", "Fisheries are critical elements..." Also revise to "The high priority that the public places on the aesthetic, recreational and commercial value of wildlife", etc.

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6	EA	20	Table 3	The first footnote is unclear. NHPA is one of the laws/regulations that falls under the NEPA umbrella.
7	EA	21	Section 3.4.1 "Bottlenose dolphins..." first paragraph	Would consider dolphins under protected species, as they are protected under MMPA and not generic wildlife like deer.
8	EA	21	Section 3.4.1 "Bottlenose dolphins..." first paragraph	Consider revising. "Lake Pontchartrain has a semi-resident population of dolphins that are generally found on the eastern side of the lake, which has a higher salinity level. Dolphins feed on estuarine fish and shellfish. They are unlikely to occur in the project area due to shallow water and SAV." They either occur or do not occur (not appears to have) and they do feed on fish and shellfish. Remove language such as "appears to" and "likely" when describing known information.
9	EA	21	Section 3.4.2	First sentence - move the period to after Table 4 "threatened (Table 4)."
10	EA	21	Section 3.4.2	Revise to "Designated Critical Habitat for the Gulf Sturgeon is located with St. Tammany Parish."
11	EA	21	Section 3.4.2, manatee, third paragraph	Recommend bulleting the SOPs developed by USFWS.
12	EA	26	Section 3.4.7	Much of this discussion is cumulative impacts or environmental consequences (no action). Recommend keeping the discussion only to existing conditions, not what would happen with land loss.
13	EA	30	Section 4.3, second to last paragraph	Update date for USFWS email.
14	EA	43	Section 5	Please add CPRA to the list of agencies.
15	EA	52-53	Section 2.3 and 3.0	Costs identified are for Bonnet Carre BLH mitigation project. What are the AM costs for this project?
16	EA	43	Adaptive Management Plan	Adaptive Management Plan seems to be for a different project (Bonnet Carre Swamp and BLH) - this is mentioned several times but nothing about this project specifically. CPRA requests additional time to review and comment on the Adaptive Management Plan once it's been revised specifically for this site and this habitat.
17	EA	7	Section 2.1	Change "HSDRSS" to "HSDRRS"

18	EA	16, 37	Section 2.4.1, Section 2.4.2, and Section 4.12	Per Section 2.4.1, "...mitigation requirement would be satisfied elsewhere in the watershed," and Section 2.4.2, "...USACE, where appropriate, would first consider the use of the mitigation bank..." Please add additional language and justification in Sections 2.4.2 and 4.12 to explain specific reason(s) as to why mitigation banks were removed as the preferred alternative.
19	EA	39	Section 7	CPRA requests adequate time to review and comment on a site specific OMRR&R Plan for this project prior to issuing the NCC and/or turnover of this project to the NFS.
20	EA	48-49	Figures 5-6	Please revise Figures 5 and 6 to ensure language in the cells of the figure is readable.

CPRA appreciates the opportunity to comment on the SEA #546 for the Bayou Sauvage, Turtle Bayou, and New Zydeco Ridge Restoration Projects. If you have any questions regarding the comments, please contact me at (225) 342-4592.

Respectfully,

Renee Sanders Bennett

Renee Sanders Bennett, Project Manager
CPRA Project Management Division

Date Received	Person	Comment (may be paraphrased or summarized)	Final CEMVN Response
6/28/2016	Fay, Virginia M	The SEA should include recommendations in the Final Fish and Wildlife Coordination Act for these projects	Concur. Recommendations received from USFWS have been included in SEA #546.
		If construction of the mitigation project does not commence during 2016, the USACE should commit to reassessing additive temporal losses and offsetting such losses with additional mitigation	Concur. CEMVN will satisfy its mitigation requirements.
		Use of a mitigation bank or a project under the In Lieu Fee Program (ILF) is acceptable if the bank or ILF project is acceptable to mitigate impacts to EFH, approved by Regulatory Division, compliant, not suspended, and credits are available at the time of signature of the FONSI	Although we anticipate mitigating the brackish marsh shortfall through the expansion of the NZR BM project, the utilization of released credits from approved mitigation banks or the State of Louisiana's In-Lieu Fee (ILF) program is an alternative to the proposed action. If, for some reason, implementation of an expansion to the NZR BM project became infeasible, the CEMVN may choose, upon further analysis and coordination with the agencies, to mitigate the shortfall using mitigation banks or the ILF program. If that option is utilized, the same version of the WVA model as was used to assess the impacts from constructing the HSDRRS would be run on the mitigation bank project to ensure that the assessment of the functions and services provided by the mitigation bank project matches the assessment of the lost functions and services at the impacted site. Similarly, the same version of the WVA model as was used for the impacts would be run generically for the ILF program to include assumptions agreed upon by the on 2.2 to clarify this decision. action based on it's performance under cost effectiveness and other cost consid
		The USACE should coordinate with NMFS and other interested natural resource agencies during and after construction to ensure adequate mitigation is achieved. To the extent practicable, this should include the opportunity to participate in the onsite construction inspections (not less than a midpoint, red zone, and final inspections) and review of fill area and access corridor elevation surveys prior to dredge demobilization and final acceptance	Concur
		A containment dike degrading/gapping plan should be refined and implemented through coordination with NMFS and other interested agencies based on field conditions.	Please refer to section 4.7 of SEA #546. Containment dikes will be utilized during construction to contain dredged material. Earthen retention dikes would remain in place for a period to allow for material to settle out within the restoration feature. Once the restoration is complete and the site matures, the dikes would be plugged and/or degrade, nourishing marsh cells and benefitting waterfowl and birds. The proposed mitigation areas will be monitored by the interagency PDT following the completion of placement of dredged material to assure that the material has settled and to document local conditions. These field visits will be used to adjust the gapping/degrading plans and to ensure that tidal connection is achieved.
		The adaptive management plan should be revised to include more details on the marsh mitigation through coordination with NMFS and other interested natural resource agencies.	CEMVN Response: The AM plan has been revised. See attached.
6/16/2016	Dilks, Nicholas EIP	Our key concern, that we believe you can appreciate following our meeting on June 8th, is that the District's Civil Works assessment of the Chef Bank appears to not be based on all available data and that the cost estimate is not accurate, resulting in the District eliminating the Chef Bank as a viable mitigation alternative for evaluation.	With respect to the SEA, evaluation of a mitigation bank alternative involves an evaluation of a generic mitigation bank. We do not select particular mitigation banks through our NEPA documents as the process of purchasing mitigation bank credits must comply with the Federal Acquisition Regulations and would involve a competitive bid process. The results of that bid process cannot be predicted or pre-determined in a NEPA evaluation. However, with respect to your comment and recent letters regarding potential purchase of credits from the Chef Menteur Mitigation Bank, our evaluation of the mitigation potential for that bank was based on information obtained from the bank and from other resource agencies. We have reviewed the materials you have provided and we disagree with your conclusions regarding the mitigation potential for the Chef Menteur bank. We also have concerns regarding the sustainability of the marsh based on data regarding settlement rates.
		While we are working diligently and expeditiously with your staff to resolve the Civil Works assessment of the Chef Bank, we respectfully request that the District delay finalizing the Draft FONSI until the District either verifies that the District's assessment is accurate or revises its assessment based on the Brown & Caldwell analysis and additional information.	The District has already expended considerable time and resources in its effort to address your concerns. Additional delay to the implementation of the mitigation is not warranted.
		The PIER 36, Supplement I (SIER I) issued in July 2014 states very clearly that, per Section 2036 (c)(l) ofWRDA 07, mitigation bank credits shall be considered FIRST to make up the stated 13.16 AAHU shortfall in the planned Corps-constructed HSDRRS brackish marsh mitigation at Bayou Sauvage (BSFS 4 and 5). This document goes on to enumerate the multiple advantages that mitigation bank credits afford the Corps over Corps-constructed projects, including time, risk and reliability, cost effectiveness, and operations and maintenance. This document states that a decision between mitigation methods would be determined based on cost.	Following guidelines established in the Water Resources Development Act (WRDA) of 2007 Section 2036(c)(1) in carrying out a water resources project involving wetlands mitigation and impacts that occur within the service area of a mitigation bank, USACE, where appropriate, would first consider the use of the mitigation bank if the bank contains sufficient available credits to offset the impact and the bank is approved in accordance with the Federal guidance for the establishment, use, and operation of mitigation banks. WRDA 2007 does not direct the USACE to only consider the use of mitigation banks to satisfy it's mitigation obligation. It likewise does not require that USACE purchase bank credits if credits are available. In SEA #546, the CEMVN has considered the purchase of mitigation bank credits as an alternative for satisfying the LPV HSDRRS general brackish marsh impacts in addition to the reasonable alternative of expanding the NZR project. Of the alterntives considered, the expansion of the NZR project was selected as the proposed action based on it's performance under cost effectiveness and other cost considerations criteria. Expansion of the New Zydeco project is significantly less expensive than purchase of bank credits.

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		Subsequently, the Decision Document to PIER 36, issued in December 2015, states that the Proposed Action for making up the above-referenced AAHU shortfall for non-U.S. Fish and Wildlife Refuge impacts is expansion of New Zydeco Ridge (NZR) bottomland hardwood project with an added brackish marsh Corps-constructed segment. However, there is zero explanation of the method by which this Proposed Action was decided, or how it is environmentally preferable, including no discussion of any cost comparison, evaluation of mitigation credit availability, etc. Also, the stated AAHU shortfall increased from 13.16 AAHUs to 23.7 AAHUs.	In SEA #546, the CEMVN considered the purchase of mitigation bank credits as an alternative for satisfying the LPV HSDRRS general brackish marsh impacts in addition to the reasonable alternative of expanding the NZR project. Of the alternatives considered, the expansion of the NZR project was selected as the proposed action based on it's performance under cost effectiveness and other cost considerations criteria. The decision document for PIER 36, SIER1 was signed October 2015 and it references a shortfall of 23.7 AAHUs. The Decision Record for PIER 36 was signed November 2013.
		The Draft FONSI just issued acknowledges a second brackish marsh AAHU shortfall of 18.4 AAHUs as a result of BSFS4 no longer being available to the Corps as a Corps- constructed mitigation site.. Again, the Proposed Action is further expansion of NZR, without justification or explanation of why mitigation bank credits were not selected.	The following text has been added to section 2.2 of the final EA: "Of the alterntives considered, the expansion of the NZR project was selected as the proposed action based on it's performance under cost effectiveness and other cost considerations criteria. The purchase of mitigation bank credits based on cost estimates provided by the bank in the watershed show the purchase of mitigation bank credits would be many times more expensive than the expansion of the existing NZR project. Additionally, the expansion would be built on public lands and provide benefits to the general public in the form of additional recreational opportunities." See also Section 2.3.2 for discussion of the proposed action relative to the purchase of mitigation bank credits.
		EIP maintains that based on Section 2036 (c)(l) of WRDA07 and Corps Implementation Guidance for Section 2036 (c), the District shall first consider unequivocally the purchase of mitigation bank credits, and EIP posits that based on the documents described above including the Draft FONSI, the Corps has not accurately or completely performed this evaluation for EITHER the 23.7 AAHU shortfall from BSFS5, or the 18.4 AAHU shortfall from BSFS 4.	Following guidelines established in the Water Resources Development Act (WRDA) of 2007 Section 2036(c)(1) in carrying out a water resources project involving wetlands mitigation and impacts that occur within the service area of a mitigation bank, USACE, where appropriate, would first consider the use of the mitigation bank if the bank contains sufficient available credits to offset the impact and the bank is approved in accordance with the Federal guidance for the establishment, use, and operation of mitigation banks. WRDA 2007 does not direct the USACE to only consider the use of mitigation banks to satisfy it's mitigation obligation. In SEA #546, the CEMVN has considered the purchase of mitigation bank credits as an alternative for satisfying the LPV HSDRRS general brackish marsh impacts in addition to the reasonable alternative of expanding the NZR project, and determined through analysis of both alternatives, that the NZR expansion is the recommended alternative.
		Finally, there is a factual inaccuracy in the USFWS comment letter that is incorporated to the Draft FONSI. The USFWS states that the use of mitigation credits would be from mitigation banks that are "not approved and functioning." This is simply erroneous, as the Chef Bank has been approved and functioning for a time period that well precedes the May 24, 2016 date of the USFWS comments and has 124.2 released credits (38.5 AAHUs based on 0.31 AAHUs/acre) already approved and ready for sale	The FONSI for SEA #546 has never contained the CAR recommendations. USFWS has revised the wording you reference in their final CAR which has been reflected in the final SEA #546.
		EIP is unclear on where/how, if at all, the Corps distributed this Draft FONSI for public comment? Please clarify the public review and comment process and timeline	The Draft FONSI, Draft Supplemental Environmental Assessment #546 (SEA #546) and the 404(b)(1) were released for 30-Day public review from May 27, 2016 until June 27, 2016. A Notice of Availibility announcing the availability of the SEA for review and comment was published in the New Orleans Advocate and notices were mailed to Interested Parties on May 26, 2016. Electronic versions of the Draft FONSI, Draft SEA #546 and and 404(b)(1) were made available to the public through publication on USACE's www.nolaenvironmental.gov website.
		SECTION 2.4.2. Our review of the draft EA raises questions about how the New Orleans District is evaluating the proposed project in light of the availability of mitigation credits from a Corps approved mitigation bank. The draft EA does acknowledge that a mitigation bank is an appropriate Alternative to the proposed action, but then does not seem to flesh out the evaluation of that Alternative, but says in Section 2.4.2 that it is only an alternative IF the Corps is unable to implement the expansion of NZR Brackish Marsh project. This reasoning is counter to Section 2036(c)(l) of WRDA07 and Corps Implementing Guidance which states that the Corps FIRST consider the use of Mitigatigation Bank credits. There is no evidence in this draft EA that the Corps is complying with the requirement for FIRST analysis.	Following guidelines established in the Water Resources Development Act (WRDA) of 2007 Section 2036(c)(1) in carrying out a water resources project involving wetlands mitigation and impacts that occur within the service area of a mitigation bank, USACE, where appropriate, would first consider the use of the mitigation bank if the bank contains sufficient available credits to offset the impact and the bank is approved in accordance with the Federal guidance for the establishment, use, and operation of mitigation banks. WRDA 2007 does not direct the USACE to only consider the use of mitigation banks to satisfy it's mitigation obligation. In SEA #546, the CEMVN has considered the purchase of mitigation bank credits as an alternative for satisfying the LPV HSDRRS general brackish marsh impacts in addition to the reasonable alternative of expanding the NZR project, and determined through analysis of both alternatives, that the NZR expansion is the recommended alternative. Additional text has been added to section 2.2 to clarify this decision.
		Section 2.4.2 also states that the Corps would also use "the same version of the WVA model as was used to assess impacts from constructing the HSDRRS would be run on the mitigation bank/ILF project to ensure that the assessment of the functions and services provided by the mitigation bank/ILF project matches the assessment of the lost functions and services at the impacted site. In a meeting between COL Hansen and MVN staff and EIP on June 8, 2016, MVN staff stated that they did NOT use the same WVA model and assumptions to evaluate EIP's Chef Menteur mitigation bank, the HSDRSS impacts, and the proposed Corps constructed mitigation projects. It is our understanding that the Corps and EIP technical staff are meeting within the next week to work through the assumptions used in the various WVA models used.	That is incorrect. Version 1.0 of the WVA was used for all of the LPV HSDRRS impacts and proposed mitigation alternatives, including the Chef Menteur bank.
		Section 4 discusses environmental consequences of the action. We could go through each evaluation item in the EA but overall we note that the purchase of credits has no negative short or long term impact on the environment, unlike the proposed action. In fact, the proposed action has a negative effect on the environment (increased temporal loss of aquatic resources) compared to purchasing already-constructed and already approved and released mitigation credits. We note that at the summation of Section 4, the Corps lists a summary for No Action and Proposed Action, but did not provide a summary for Mitigation Bank Credit Purchase action.	If construction does not begin in 2016, USACE has committed to evaluating whether additional mitigation should be required to compensate for temporal losses. Adverse impacts due to construction are anticipated to be minimal and to last only during the construction period.
		Section 6 of the EA is a list of the Compliance with Environmental Laws and Regulations. We do not see where this EA lists Section 2036 of WRDA 07 and describes how it complies with that law.	Please see section 2.3.2 of SEA #546.
		Appendix D lists the Wetland Valuation Assessment for the Proposed Action. We question whether the WVA properly evaluates the 5 years which the Proposed Action will be above the tidal interaction and therefore not the appropriate type of marsh desired to be restored.	Disagree. The WVA does properly evaluate this period.

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		USFWS Comment Letter dated May 24, 2016. The draft EA includes a support letter from USFWS - dated May 24, 2016 - that stated the following: "We are concerned that the Corps is continuing to evaluate a mitigation concept that would rely on bank credits from mitigation banks that are currently not approved by the Interagency Review Team. Because this concept does rely on banks that are not approved and functioning and could result in further delays in mitigation implementation the Service cannot support any alternative that would rely on this concept at this time. "At the time this letter was signed, Chef Menteur Mitigation Bank in fact had sufficient released AAHUs on the ledger, approved by the Interagency Review Team, to satisfy all of the 18.4 AAHUs for brackish marsh mitigation; while the FONSI proposes to instead to mitigate by a Corps-constructed addition to the already planned New Zydeco Ridge project. The USFWS statement is simply inaccurate.	USFWS has revised the wording you reference in their final CAR which has been reflected in the final SEA #546.
		Requested Action. We therefore request that you address properly the requirements of Section 2036 of WRDA 07 and FIRST consider the Mitigation Bank alternative since credits are approved for use by the New Orleans District.	Following guidelines established in the Water Resources Development Act (WRDA) of 2007 Section 2036(c)(1) in carrying out a water resources project involving wetlands mitigation and impacts that occur within the service area of a mitigation bank, USACE, where appropriate, would first consider the use of the mitigation bank if the bank contains sufficient available credits to offset the impact and the bank is approved in accordance with the Federal guidance for the establishment, use, and operation of mitigation banks. WRDA 2007 does not direct the USACE to only consider the use of mitigation banks to satisfy it's mitigation obligation. In SEA #546, the CEMVN has considered the purchase of mitigation bank credits as an alternative for satisfying the LPV HSDRRS general brackish marsh impacts in addition to the reasonable alternative of expanding the NZR project.
6/27/2016	Bennett, Renee Sanders	FONSI - Page 4, 2nd paragraph - Dates are ## - replace with actual dates.	Text has been changed
		FONSI - Page 4, Environmental Design Commitments, first bullet - Clarify the statement. Does the statement refer to implementation within one year of an approved FONSI?	No, within one year of the last coordination. Text has been revised.
		FONSI - Page 4, Environmental Design Commitments, 3rd and 4th bullet - Fix Section XX to actual section #	Text has been changed
		EA - Page 8, Section 2.2 - There is no language describing how the two habitats (marsh and BLH) impact each other. For Design 1, please provide any analysis performed or language as to why having two habitat types is beneficial. For Design 2, please provide language as to why breaking up the habitat from marsh to BLH back to marsh is beneficial. If there is no difference in positive or negative impacts between the two designs with respect to habitat interaction, then please state.	Please refer to the last paragraph under section 2.2.1 that addresses this comment.
		EA - Page 19, Table 2 - Replace "They" statements with the specific item being referenced. Instead of "They are a critical element", replace with "Wildlife is a critical element...", "Fisheries are critical elements ... " Also revise to "The high priority that the public places on the aesthetic, recreational and commercial value of wildlife", etc.	Text has been changed
		EA - Page 20, Table 3 - The first footnote is unclear. NHPA is one of the laws/regulations that falls under the NEPA umbrella.	Comment noted
		EA - Page 21, Section 3.4.1 "Bottlenose dolphins..." first paragraph - Would consider dolphins under protected as they are protected under MMPA and not generic wildlife like deer.	Comment is vague. Paragraph states that bottlenose dolphins are protected under the MMPA of 1972.
		EA - Page 21, Section 3.4.1 - Consider revising. "Lake Pontchartrain has a semi-resident population of dolphins that are generally found on the eastern side of the lake, which has a higher salinity level. Dolphins feed on estuarine fish and shellfish. They are unlikely to occur in the project area due to shallow water and SAV." They either occur or do not occur (not appears to have) and they do feed on fish and shellfish. Remove language such as "appears to" and "likely" when describing known information.	Partially concur. Text has been changed to remove "likely".
		EA - Page 21, Section 3.4.2 - First sentence - move the period to after Table 4 "threatened (Table 4)."	Text changed
		EA - Page 21, Section 3.4.2 - Revise to "Designated Critical Habitat for the Gulf Sturgeon is located with St. Tammany Parish."	Non-concur. Text is drafted to encompass all T&E species with Gulf Sturgeon in parenthesis as an example of one of the species represented.
		EA - Page 21, Section 3.4.2, manatee, third paragraph - Recommend bulleting the SOPs developed by USFWS.	Concur. Text changed
		EA - Page 26, Section 3.4.7 - Much of this discussion is cumulative impacts or environmental consequences (no action). Recommend keeping the discussion only to existing conditions, not what would happen with land loss.	Comment noted
		EA - Page 30, Section 4.3, second to last paragraph - Update date for USFWS email.	Text changed
		EA - Page 43, Section 5 - Please add CPRA to the list of agencies.	Included
		EA - Page 52-53, Section 2.3 and 3.0 - Costs identified are for Bonnet Carre BLH mitigation project. What are the AM costs for this project?	Concur. Text has been changed
		EA - Page 43, Adaptive Management Plan - Adaptive Management Plan seems to be for a different project (Bonnet Carre Swamp and BLH) - this is mentioned several times but nothing about this project specifically. CPRA Management Plan requests additional time to review and comment on the Adaptive Management Plan once it's been revised specifically for this site and this habitat.	Adaptive management information has been updated
		EA - Page 7, Section 2.1 - Change "HSDRSS" to "HSDRRS"	Changed
		EA - Page 16, 37 - Section 2.4.1, Section 2.4.2, and Section 4.12 - Per Section 2.4.1, " ... mitigation requirement would be satisfied elsewhere in the watershed," and Section 2.4.2, " ... USACE, Section 2.4.1, Section where appropriate, would first consider the use of the mitigation bank ... " Please add 4.12 additional language and justification in Sections 2.4.2 and 4.12 to explain specific reason(s) as to why mitigation banks were removed as the preferred alternative.	The following text has been added to section 2.2. "Of the alterntives considered, the expansion of the NZR project was selected as the proposed action based on it's performance under cost effectiveness and other cost considerations criteria. The purchase of mitigation bank credits based on cost estimates provided by the bank in the watershed show the purchase of mitigation bank credits would be many times more expensive than the proposed expansion of the existing NZR project. Additionally, the expansion would be built on public lands and provide benefits to the general public in the form of additional recreational opportunities."
		EA - Page 39, Section 7 - CPRA requests adequate time to review and comment on a site specific OMRR&R Plan for this project prior to issuing the NCC and/or turnover of this project to the NFS.	Noted
		EA - Page 48 - 49, Figures 5-6 - Please revise Figures 5 and 6 to ensure language in the cells of the figure is readable.	Comment vague. Language in texts is readable.