Finding of No Significant Impact and Final Environmental Assessment

Caminada Headlands Back Barrier Marsh Creation

CWPPRA PROJECT BA-171

Lafourche Parish, Louisiana

Prepared by: U.S. Environmental Protection Agency, Region 6

February 3, 2017

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FINDING OF NO SIGNIFICANT IMPACT (FONSI)

To All Interested Agencies and Public Groups:

In accordance with the environmental review guidelines of the Council on Environmental Quality at 40 Code of Federal Regulations Part 1500, the U. S. Environmental Protection Agency (EPA) has performed an Environmental Assessment of the following proposed action under the authority of the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) of November 1990, House Document 646, 101st Congress (Public Law 101-646).

Project Name: Caminada Headlands Back Barrier Marsh Creation (BA-171).

Location: Project BA-171, Caminada Headlands Back Barrier Marsh Creation is located within Planning Region 2, Barataria Basin, in the Coast 2050 management unit, Lafourche Parish. The project area is defined as the area south of Louisiana Highway 1 between Belle Pass and Caminada Pass and includes the area in and around Bay Champagne and area to the east and west of Bayou Moreau along the coast of Louisiana.

Sponsors: The U.S. Environmental Protection Agency (EPA) Region 6, and the Coastal Protection and Restoration Authority of Louisiana (CPRA).

Introduction: Louisiana is experiencing a land loss crisis that has claimed 1,880 square miles of land since the 1930s. The 2012 Louisiana Master Plan (Master Plan) characterizes this crisis as "nothing short of a national emergency." The Master Plan estimates that expected annual damages from flooding by 2061 would be almost ten times greater than damages in 2012, from a coast-wide total of approximately $2.4 billion to a coast-wide total of $23.4 billion. Without action to mitigate the factors causing degradation and marsh collapse, coastal Louisiana will continue to experience land loss of up to 1,250 square miles of land under a less-than-optimistic scenario, and increased flooding with resultant flood damage. (Louisiana's Comprehensive Master Plan for a Sustainable Coast, May 23, 2012).

Restoration projects such as the BA-171 project seek to offset losses by slowing or preventing the loss of wetland habitat. The proposed action is part of and consistent with the Louisiana Coastal Wetlands Conservation and Restoration Task Force, and the Wetlands Conservation and Restoration Authority's ecosystem strategies to maintain shoreline integrity, dedicated dredging, and beneficial use of dredged material. CWPPRA provides federal funds for planning and implementing projects that create, protect, restore, and enhance wetlands in coastal Louisiana.

Proposed Action: The goals of the BA-171 project are to: 1) Create and/or nourish 385 acres of back barrier marsh using sediment pumped from an offshore borrow site; 2) Create a platform upon which the beach and dune can migrate, reducing the likelihood of breaching,[1] improving

[1] In a coastal context, a breach is a new opening in a narrow landmass such as a barrier spit or barrier island that allows water to flow between the water bodies on each side (Kraus, Wamsley, 2003).

the longevity of the barrier shoreline, and protecting wetlands and infrastructure to the north and west. The proposed BA-171 project is expected to slow the current trend of degradation in the headland. (CPRA 2016).

Summary of Environmental Consequences: The proposed action may cause short-term temporary impacts associated with the emissions of diesel engines that would power the construction equipment, including but not limited to marsh buggies, dozer, electric generators, backhoe, and watercraft. The duration of the impact is limited as construction is estimated to take approximately eight months. These impacts are minor and would be limited to the construction phase of the project. Equipment emissions will be minimized with appropriate mitigation measures. Emissions will consist primarily of nitrogen oxides, with smaller amounts of carbon monoxide, sulfur dioxide, particulate matter, and volatile organic compounds. (EA Section 4.1.3).

A time-limited impact to water quality through a temporary increase in turbidity near construction activity areas in the borrow and fill areas may occur. Project construction is not anticipated to negatively impact dissolved oxygen levels within the subsegment or contribute to the causes of the current impairment as identified on the LA 2014 303(d) list. Certain long-term benefits to water quality may be realized in the locale of the proposed project as the increased wetland plant acreage has the ability to take up and sequester nutrients - identified as causative agents of depressed dissolved oxygen levels within the subsegment. However, the impacts of this project are not expected to significantly affect nutrient levels in the subsegment as a whole (EA Section 4.1.4).

Barrier system restoration, including interior marsh restoration features of the proposed project, would reduce formation of additional tidal passes as well as closing or narrowing existing tidal passes and overwash areas. This would help slow saltwater intrusion into more northern portions of the Barataria Basin. Restoration of the Caminada Headland would provide an increased level of natural storm buffering, reduction of storm surge heights, and would provide protection for the interior wetlands, bays, and estuaries (EA Section 4.1.5).

The project will create and nourish a marsh platform of 385 acres. Direct impacts of implementing the project would primarily result from construction activities related to placement of borrow material on existing fragmented habitats. Assuming some natural recruitment, approximately half the area, or 192 acres, will be planted with *Spartina patens* and/or *Spartina alterniflora* and *Paspalum vaginatum.* Mangrove is expected to recolonize naturally (EA Section 4.2.1).

The restored and created marsh will provide improved habitat conditions as well as an increase in habitat for fish and wildlife as described in EA Section 3.2.3. The Louisiana Department of Wildlife and Fisheries (LDWF) noted that the project will benefit wildlife resources. After

construction, the restored and created marsh will provide improved habitat conditions as well as an increase in habitat for fish and wildlife as described in Section 3.2.3. The LDWF noted that the project will benefit wildlife resources. All U.S. Fish and Wildlife Service (USFWS) and LDWF recommendations as to birds and other wildlife resources will be followed (EA section 4.2.3).

The project may have a short-term or temporary effect on threatened and endangered species, specifically the piping plover and its critical habitat, the red knot, and the Wilson's plover. The USFWS and LDWF recommend that the project sponsors take precautions to protect the habitat of Threatened and Endangered (T&E) species. The project sponsors have consulted informally with the USFWS, and will do formal consultation for the piping plover, its critical habitat, and the red knot in accordance with section 7 of the ESA. A biological assessment of impacts to those species and critical habitat will be submitted for initiation of formal consultation in accordance with section 7 of the Endangered Species Act (EA Section 4.2.4).

The West Indian manatee rarely occurs in the marine and coastal waters within the project area. Because the USFWS recommendations for avoiding and minimizing impacts to any manatees that may appear in the project work area during summer months will be incorporated into contract work plans, the proposed project is not likely to adversely affect the West Indian manatee. Because sea turtle nesting is very rare within the project area, no impacts to nesting sea turtles are anticipated. Consultation for sea turtles in the marine environment is ongoing with the NMFS (EA, Appendix A).

The proposed project will have no effect on cultural resources. No archeological sites or standing structures eligible for or listed on the National Register of Historic Places are located within the proposed project area. The State Historic Perservation Officer (SHPO) concurred with this finding. No historic properties will be affected by the conveyance of material from the offshore borrow area to the project area during construction. The construction contract for the project will include a plan to address "chance finds," or an unanticipated discoveries clause; the SHPO concurred with the plan (EA Section 4.3.1).

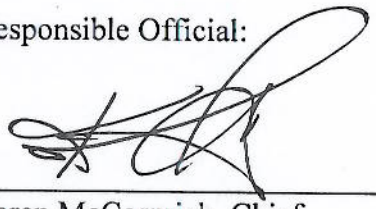
In summary, the EA finds that project BA-171, Caminada Headlands Back Barrier Marsh Creation, will have long-term beneficial impacts in coastal Louisiana and will not result any significant direct, indirect, or cumulative adverse impacts. The EA describes construction-related adverse impacts as minor and not significant due to their limited duration, location, and/or mitigation. Positive impacts are minor to moderate but are not significant. The EA bases this finding on a comprehensive analytic review and relevant literature, site-specific data, project specific engineering and environmental reports, as well as cumulative experience gained through similar restoration projects in South Louisiana. The proposed action is projected to have no significant adverse impacts.

The action has some short-term, localized, adverse impacts and long-term beneficial impacts. These impacts will be mitigated in the short-term through avoidance measures and in the long-term by the restoration and vegetative planting features. No long-term adverse impacts to the affected resources are expected.

Finding: On the basis of the Environmental Assessment of the proposed project, the EPA has determined that the proposed project is not a major Federal action significantly adversely affecting the quality of the human environment, and that the preparation of an Environmental Impact Statement (EIS) is not warranted. The project individually, cumulatively over time, or in conjunction with other actions, will have a beneficial effect on the quality of the environment.

This preliminary Finding of No Significant Impact (FONSI) will become final 30 days after the issuance of the public notice if no new information is received to alter this finding. No administrative action will be taken on this decision during the 30-day comment period. Comments regarding this preliminary decision not to prepare an EIS, requests for copies of the EA, or review of the Administrative Record containing the information supporting this decision may be submitted to the U.S. Environmental Protection Agency, Ecosystems Protection Branch, Marine, Coastal, & Analysis Section, (6WQ-EC), 1445 Ross Avenue, Suite 1200, Dallas, Texas 75202-2733.

Responsible Official:



2/3/2017

Karen McCormick, Chief
Marine, Coastal, & Analysis Section
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U.S. EPA, Region 6

Date

Acronyms

BBBS	Barataria Basin Barrier Shoreline
CBRA	Coastal Barrier Resources Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CPRA	Coastal Protection and Restoration Authority of Louisiana
CRMS	Coastwide Reference Monitoring System
CWA	Clean Water Act
CWPPRA	Coastal Wetlands Planning, Protection and Restoration Act
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
FR	Federal Register
HTRW	Hazardous, Toxic and Radiological Waste
LCA	Louisiana Coastal Area
LCWCRTF	Louisiana Coastal Wetlands Conservation and Restoration Task Force
LDEQ	Louisiana Department of Environmental Quality
LDNR	Louisiana Department of Natural Resources
LDWF	Louisiana Department of Wildlife and Fisheries
LOOP	Louisiana Offshore Oil Port
MSL	Mean Sea Level
MPH	Morris P. Hebert
MPO	Metropolitan Planning Organization
MSA	Metropolitan Statistical Area
MBTA	Migratory Bird Treaty Act
MR	Mississippi River
MSFCMA	Magnuson–Stevens Fishery Conservation and Management Act
NAAQS	National Ambient Air Quality Standards
NAVD 88	North American Vertical Datum of 1988
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NMFS	National Marine Fisheries Service
NPL	National Priority List
NRCS	Natural Resource Conservation Service
O&M	Operations and Maintenance
PPL	Priority Project List (CWPPRA)

PMT	Project Management Team
RSLR	Relative Sea Level Rise
SAV	Submerged aquatic vegetation
SCPDC	South Central Planning and Development Commission
SHPO	State Historic Preservation Office
T&E	Threatened and Endangered Species
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USFWS	U.S. Fish and Wildlife Service
WVA	Wetland Value Assessment

Units of Measure

ac	Acres
ft	Feet
ha	Hectares
lbs	Pounds
mi^2	Square Miles
MSL	Mean Sea Level
ppb	Parts Per Billion
ppm	Parts Per Million
yd^3	Cubic Yards

Part 1. Purpose and Need for Proposed Action

1.1 Introduction

Wetland loss is a well-documented and widespread problem throughout coastal Louisiana. The land area loss rate in Louisiana coastal areas was approximately 17 square miles per year from 1985 to 2010. Some 1,883 square miles were lost from 1932 to 2010 (Couvillion et al., 2011). The causes of wetland loss in Louisiana are varied and complex and include subsidence, erosion, sediment deprivation, saltwater intrusion, altered hydrology, and sea level rise (Turner and Cahoon 1987). The effects of natural processes like subsidence and storms have combined with human actions at large and small scales to produce a system on the verge of collapse (LCWCRTF, 1998).

Congress recognized the ongoing severe coastal wetland losses in Louisiana and the increasing impacts on resources when it passed the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) in 1990 (Public Law 101-646, Title III). CWPPRA established a process to identify, assess, design, and fund the construction of coastal wetland restoration projects. CWPPRA seeks to provide long-term conservation of coastal wetlands through the restoration, creation, protection, and enhancement of wetlands. On a yearly cycle, projects are selected from a list of projects ("priority project lists" or PPLs) to fund planning, engineering and design, and construction.

CWPPRA identified five federal agencies as Task Force members to participate in the program. These include the U.S. Army Corps of Engineers (USACE), the U.S. Environmental Protection Agency (EPA), the U.S. Fish and Wildlife Service (USFWS), the National Marine Fisheries Service (NMFS) and the Natural Resource Conservation Service (NRCS). The other critical partner is the Coastal Protection and Restoration Authority of Louisiana (CPRA), which participates in CWPPRA project selection, planning, analysis, implementation, and funding.

As of February 2016, there were 155 active CWPPRA projects. Two hundred and ten CWPPRA projects have been approved, 102 have been constructed, 20 are under construction, 28 are in the engineering & design phase, five are program support projects and 55 have been deauthorized, inactivated or transferred to another program (Fact Sheet found at www.mvn.usace.army.mil/Missions/Environmental/CWPPRA.aspx).

The EPA is the federal sponsor for the Caminada Headlands Back Barrier Marsh Creation Project (BA-171) and is responsible for oversight of the project, in partnership with the Coastal Protection and Restoration Authority of Louisiana (CPRA). The proposed project BA-171 was approved for construction on the 23rd Priority Project List of the CWPPRA. The Task Force approved Phase I funding in January 2013.

Project BA-171, Caminada Headlands Back Barrier Marsh Creation is located within Planning Region 2, Barataria Basin, in the Coast 2050 management unit Lafourche Parish. The project

area is defined as the area south of Louisiana Highway 1 between Belle Pass and Caminada Pass and includes the area in and around Bay Champagne and area to the east and west of Bayou Moreau along the coast (Figure 1).

The CWPPRA Standard Operating Procedure (SOP) requires compliance with the National Environmental Policy Act (NEPA). A draft Environmental Assessment for the project is submitted with the approval package to the CWPPRA Technical Committee with the request for Phase II construction funding.

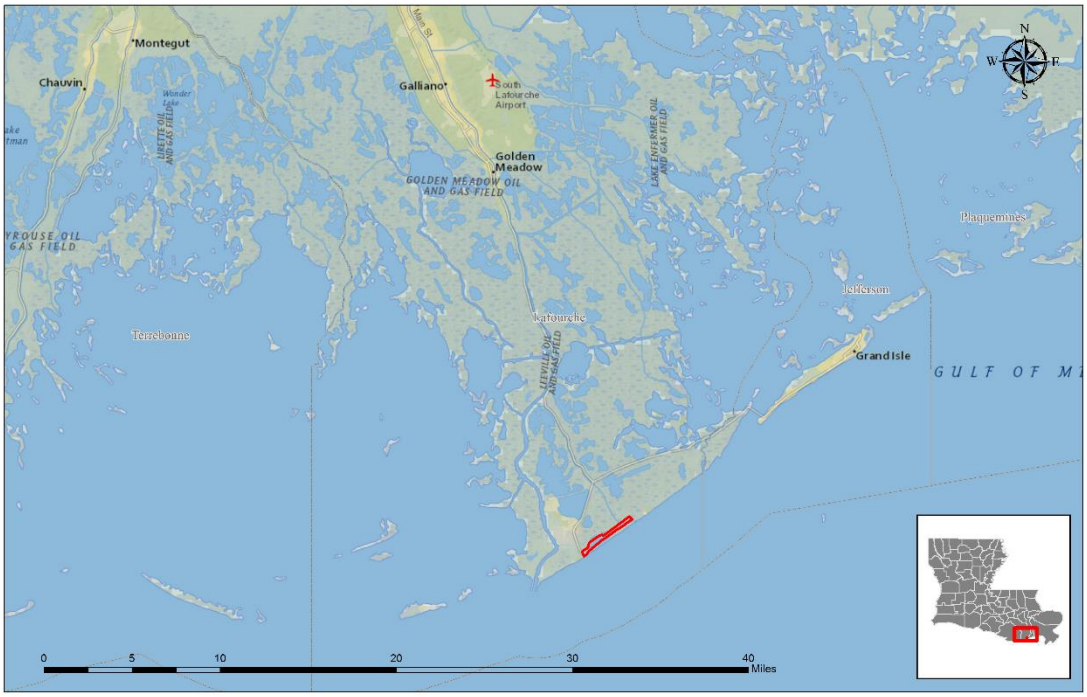

Figure 1. Project Location Phase 0 project footprint for BA-171 indicated in red.

PRIOR REPORTS INCORPORATED BY REFERENCE

The Louisiana Coastal Area (LCA) Barataria Basin Barrier Shoreline (BBBS) Restoration Final Integrated Construction Report and Final Environmental Impact Statement (EIS) was published by the U.S. Army Corps of Engineers in March 2012. The EIS evaluates the restoration of the Caminada Headland and Shell Island through shoreline and marsh restoration.

The purpose of the proposed action described in the EIS is to restore the geomorphic form and function of the barrier shoreline. Restoration of the shoreline and coastal marshes of Caminada Headland and Shell Island (Fig. 2) would restore critical habitat, form and function, and advance long-term sustainability of the barrier shoreline.

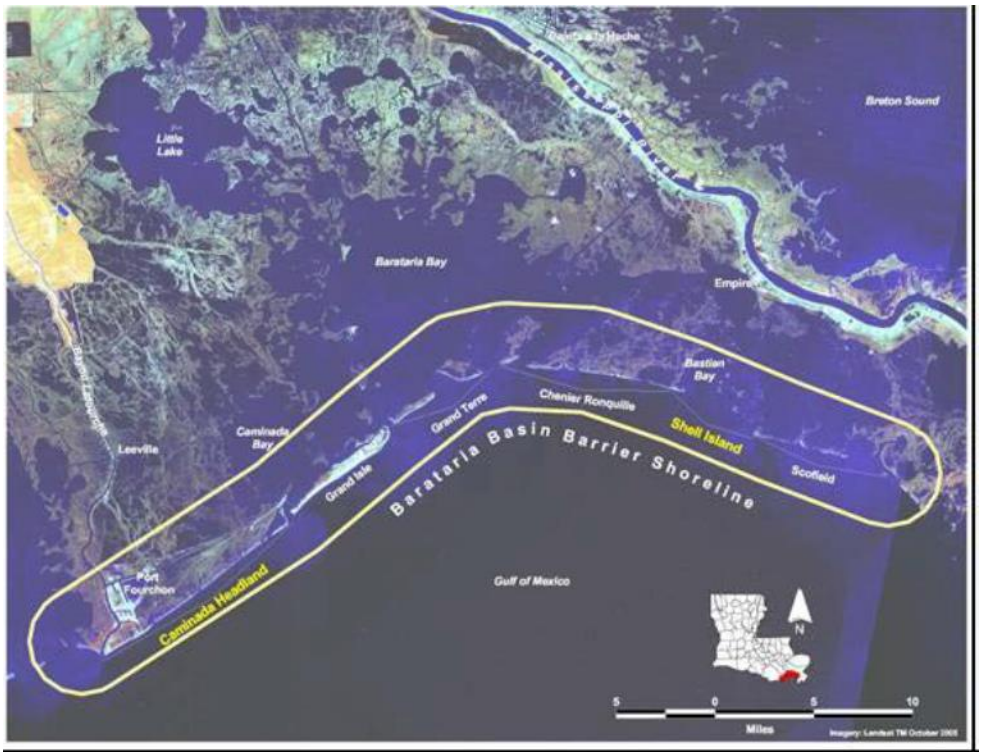

Figure 2. The Caminada Headland forms the western portion of the Barataria Basin barrier system (USACE 2012). BA-171 is in the Caminada Headland reach.

The proposed action to restore approximately 2,849 acres of dune, supratidal, and intertidal habitat on the Caminada Headland in Lafourche and Jefferson Parishes and Shell Island in Plaquemines Parish would help restore the diversity and sustainability of coastal habitats. These barrier landforms, along with their related hydrologic and biological processes, provide unique biologically diverse habitats that are crucial to the viability of migratory birds, commercial and recreational fisheries, and a variety of terrestrial and aquatic species.

The proposed BA-171 project is a smaller footprint contained within the larger area described in the LCA BBBS EIS. The EIS is incorporated into this EA by reference. The BA-171 project, along with a few subsequent back barrier marsh creation projects and the Caminada Headland Beach and Dune Increments I and II Projects (BA-45 and BA-143), will aim to achieve the goals for the Caminada Headland set forth by the LCA BBBS EIS (CPRA 2016a).

1.2 Purpose of Proposed Action

The goals of the BA-171 project are to: 1) Create and/or nourish 385 acres of back barrier marsh using sediment pumped from an offshore borrow site; 2) Create a platform upon which the beach and dune can migrate, reducing the likelihood of breaching,[2] improving the longevity of the

[2] In a coastal context, a breach is a new opening in a narrow landmass such as a barrier spit or barrier island that allows water to flow between the water bodies on each side (Kraus, Wamsley, 2003).

barrier shoreline, and protecting wetlands and infrastructure to the north and west. The proposed BA-171 project is expected to slow the current trend of degradation in the headland. (CPRA, 2016).

Figure 3. Close-up Vicinity Map for BA-171 from the CPRA 30% design report. Green indicates the marsh creation/fill.

1.3 Problem

Louisiana is experiencing a land loss crisis that has claimed 1,880 square miles of land since the 1930s. The 2012 Louisiana Master Plan (Master Plan) characterizes this crisis as "nothing short of a national emergency." The Master Plan estimates that expected annual damages from flooding by 2061 would be almost ten times greater than damages in 2012, from a coast-wide total of approximately $2.4 billion to a coast-wide total of $23.4 billion. Without action to mitigate the factors causing degradation and marsh collapse, coastal Louisiana will continue to experience land loss of up to 1,250 square miles of land under a less-than-optimistic scenario, and increased flooding with resultant flood damage. (Louisiana's Comprehensive Master Plan for a Sustainable Coast, May 23, 2012).

The Barataria Basin had a land area of 1,470 square miles in 1932. By 2010, the land area was 1,024, a loss of 455 square miles, or 30 percent over 78 years (Couvillion et al, 2011).

The Caminada Headland has experienced some of the highest shoreline retreat rates in Louisiana. Historically the shoreline has migrated landward at about 40 feet per year (Penland et al 2005). Between 2006 and 2011, shoreline migration increased dramatically, exceeding 80 feet per year in Bay Champagne and 110 feet per year in the Bayou Moreau area (CEC, 2012). Further loss occurred in the wake of Hurricanes Katrina and Rita in 2005 as the breaches remained open for an extended length of time (Figure 4). The losses were exacerbated by Tropical Storm Fay and Hurricanes Gustav and Ike in 2008 (CEC, 2012; USACE, 2012). Significant prolonged breaches greatly increase the net export of sediment from the headland. (CEC, 2012).

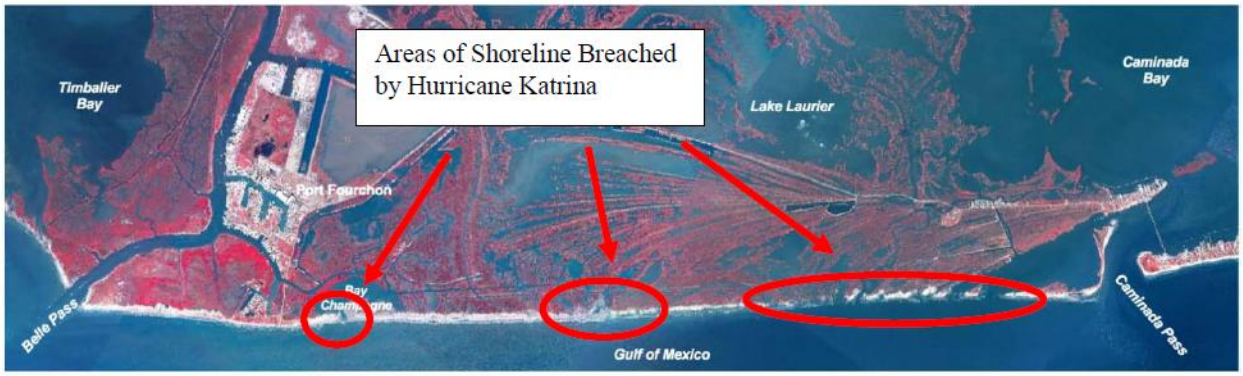

Figure 4.- Caminada Headland Breaches - 2005 Post-Katrina (USACE, 2012)

In addition to the shoreline migration, the area is also experiencing high loss rates of interior marshes. As the beach and dune continue to migrate landward, overwashed sediment will be lost into newly formed open water and land loss rates will increase. The continued deterioration of Caminada Headland threatens thousands of acres of wetland habitat as well as critical infrastructure, including Port Fourchon, LA Highway 1, and the lower Lafourche levee system.

Using a linear regression of land acreages, USGS determined that this area experiences a -1.47 percent land loss annually (Figure 5). For interior marsh loss, USGS evaluated land/water data from 1984 to 2016 within an extended boundary surrounding the project area.

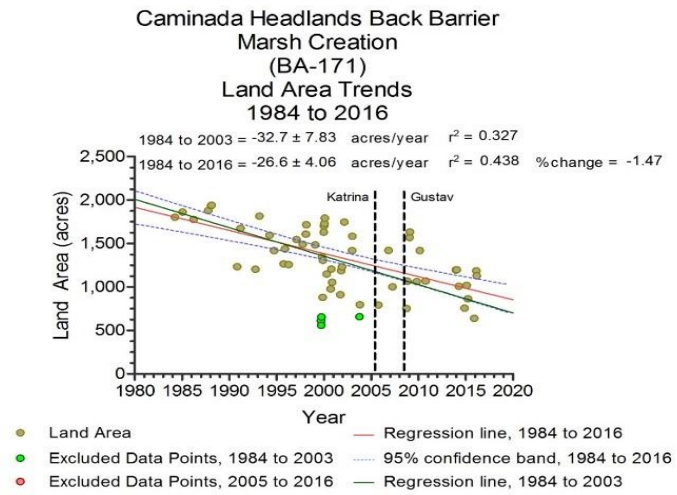

Figure 5. Land Loss Trends 1984 to 2016 (USGS, EPA 2016.)

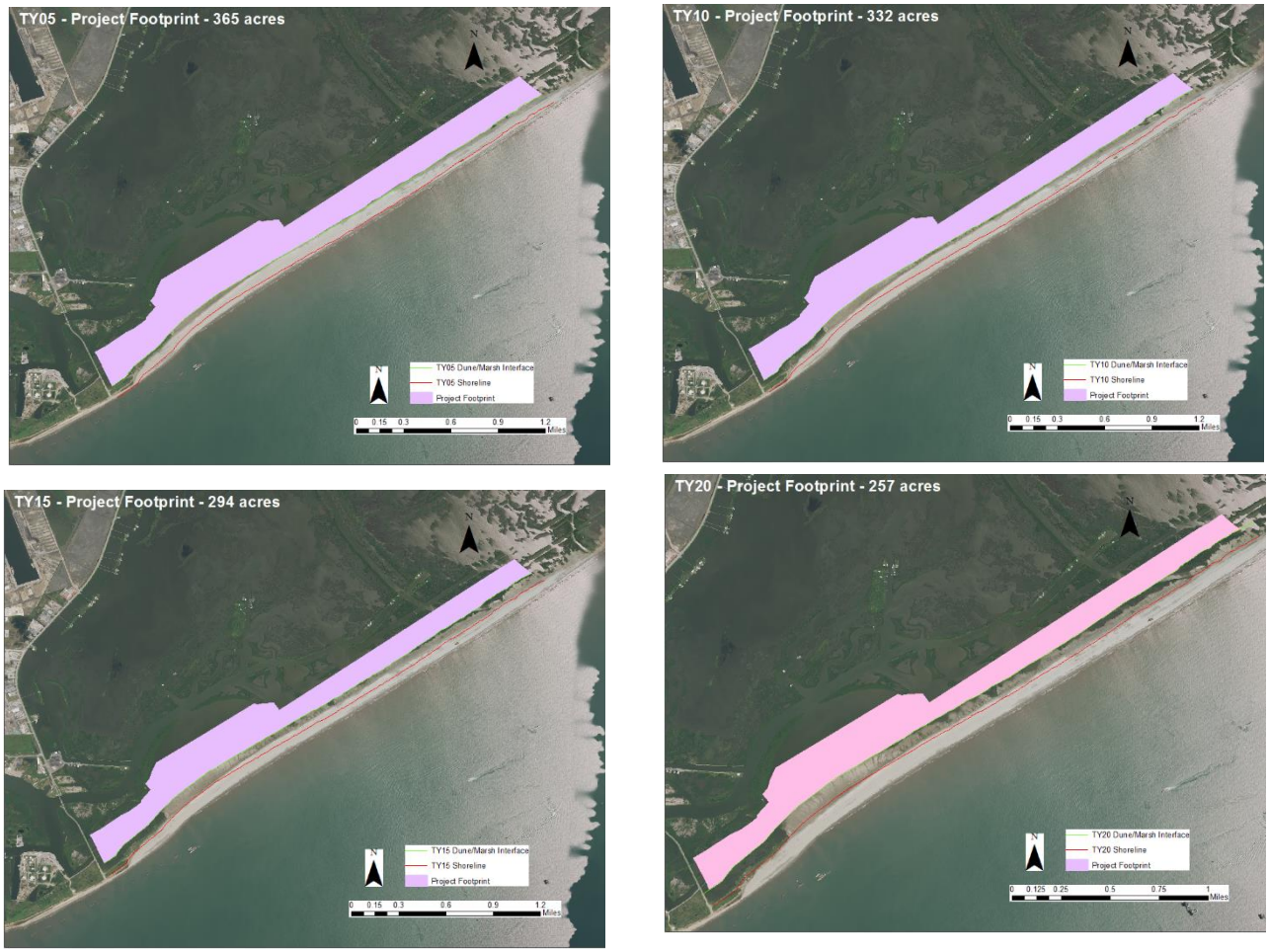

Figure 6. As the beach and dune migrate, the project area will shrink over the 20-yr project life.

Historic Land Loss

The area defined as the Fourchon mapping unit (Figure 7) in Region 2 in the *Coast 2050: Towards a Sustainable Coastal Louisiana* report has undergone rapid land loss rates in the past century. (LCWCRTF 1998).

This area has been classified as saline marsh since 1949, and contains some relict beach ridges covered with live oaks. The area of the Fourchon mapping unit contained 9,740 acres of marsh in 1932. Between then and 1990, about 2,970 acres of marsh were lost. The greatest loss (1,720 acres) took place from 1974 to 1983 and was mainly due to altered hydrology and wind erosion of a large pond. Commercial dredging of sand has also caused loss, and subsidence is high in this unit, ranging from 2.1 to 3.5 feet per century. The shoreline of this unit is retreating at a rate of over 100 feet per year in some places. This is one of the highest landward migration rates in the United States (USACE 2012). The average rate is 44 feet a year. The jetties at the mouth of the navigation channel interrupt longshore drift and are eroding slightly on the east side and much more rapidly on the west side. Sediment eroded off this headland migrates both east toward Grand Isle and west toward East Timbalier Island. (LCWCRFT, 1998, Appendix D).

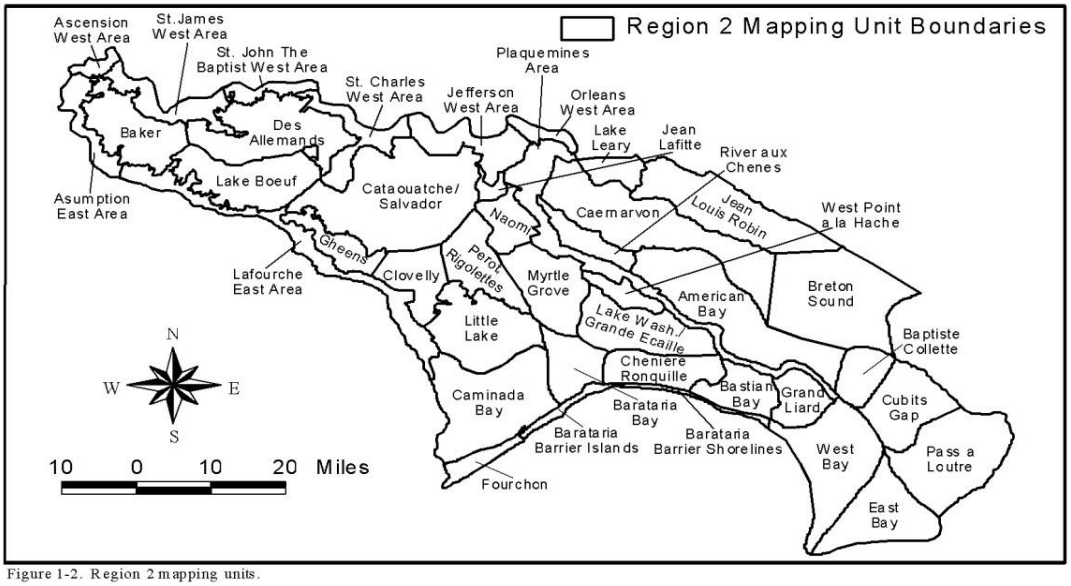

Figure 1-2. Region 2 mapping units.

Figure 7. Mapping Units inside CWPPRA Region 2 (LCWCRTF 1998). The BA-171 project is in the Fourchon Unit, in the lower center area of the map.

Future Land Loss Projections

In 1990, this unit had approximately 6,770 acres of marsh. If nothing is done, an additional 1,790 acres of marsh are projected to be lost by 2050. Although the CWPPRA project at West Belle Pass was estimated to prevent some 330 acres of this loss, 21.6 percent of the 1990 acreage will be lost. Material from dredging the bar channel of Bayou Lafourche was placed on the beach

both east and west of the jetties, and barge loads of rock were placed east of the jetties to help slow erosion. The 1998 Coast 2050 report noted that the material appeared to have some benefit, but noted "the shoreline will continue to erode unless more major work is done" (LCWCRTF 1998, Appendix D of Coast 2050).

Beneficial Functions

The southern end of the Barataria Basin is bounded by a series of barrier headlands, islands, and shorelines (LCWCRTF 1998). Restoration in the area will enhance shrimp, blue crabs, American oysters, and saltwater finfish populations. Restoration actions in the area will strengthen storm-buffering functions for the community of Port Fourchon and its navigational and energy facilities, roads, levees, bridges, and other infrastructure (LCWCRTF 1998, Appendix D of Coast 2050).

1.4 Coordination and Consultation

Coordination has been maintained with all of the CWPPRA Task Force agencies, the Louisiana Department of Natural Resources (LDNR), and the CPRA. Consultation is ongoing with the USFWS and Louisiana Department of Wildlife and Fisheries (LDWF), in accordance with the Endangered Species Act of 1973 and the Fish and Wildlife Coordination Act. The EA has been prepared in coordination with NMFS in determining categories of Essential Fish Habitat (EFH) and associated fisheries species within the project vicinity. Submittal of the EA is provided to initiate formal federal consultation requirements pertaining to EFH under the Magnuson–Stevens Fishery Conservation and Management Act (MSFCMA). Federal, State, Tribal, and local agencies, as well as other interested stakeholders, will receive a copy of this EA. Consultation has also been conducted with the State Historic Preservation Office (SHPO) in accordance with the National Historic Preservation Act of 1966, and Archaeological and Historic Preservation Act of 1974. Consultation has been initiated with Tribes in regards to cultural resource findings. The cultural resources investigation report was shared with interested Tribes.

Under the development of CWPPRA PPL23, the public, parish representatives, and state and federal agencies nominated projects across the nine identified hydrologic basins. Ten candidate projects were selected from the list of nominees proposed in the PPL 23rd planning year. These PPL 23 candidate projects were evaluated to determine the long-term net wetlands benefits based on a 20-year project life. The candidate projects were also evaluated to determine conceptual project designs and cost estimates. Economic analyses were conducted to determine the total fully funded cost estimate for feasibility planning, construction, and 20 years of operations and maintenance. Cost-effectiveness was calculated for each project using the fully-funded cost estimate and net wetland benefits over the 20-year project life.

At the end of the PPL 23 development process, on January 16, 2014, the CWPPRA Task Force accepted the Technical Committee's recommendation and approved the BA-171 proposed project for Phase I funding, engineering and design. The 30 percent Engineering and Design

Review was held in Baton Rouge on July 28, 2016. A 95 percent Engineering and Design Review was held in Baton Rouge on October 28, 2016. The project management team (PMT) requests approval for construction funding at the CWPPRA Technical Committee meeting on December 7, 2016.

The BA-171 PMT has coordinated and consulted with partners and stakeholders - SHPO, Tribes, USFWS, LDWF, USACE, Lafourche Parish, CPRA, and LDNR throughout the process. See Appendix A.

Part 2. Proposed Action and Alternatives

The no-action alternative (Alternative 1) and the proposed action (Alternative 2) are evaluated here. Construction alternatives are designed with a 20-year life span as per the requirements of CWPPRA. The proposed project features and benefits will likely remain after the 20-year life span but detailed analyses beyond the 20-year life span are not completed as a part of this analysis.

There were several alternatives that the project team considered but did not evaluate in greater detail. An explanation of those considered but not evaluated alternatives is given in *Section 2.2, Alternatives Considered But Not Evaluated*.

Surveys

A number of data-gathering tasks and reports inform the alternatives analysis. Topographic, bathymetric, magnetometer, and geophysical survey data were collected within the marsh creation fill area, borrow area, equipment access corridor, and dredge pipeline alignment to facilitate the design of the marsh creation fill area and the borrow areas. Most of the design survey took place from May 2015 to July 2015. The 95 Percent Design Report contains details and results of the surveys (CPRA, 2016).

The magnetometer survey verified three pipelines in the project fill area and three Louisiana Offshore Oil Port (LOOP) pipelines that cross the dredge pipeline alignment offshore. None of the LOOP pipelines are located within the project's marsh fill area. Three pipelines are located within the marsh fill area and all run parallel to the headland. (CPRA 2016b).

As a part of the LCA BBBS study, Goodwin & Associates performed a Cultural Resources Survey on the headland and offshore borrow area. In response to EPA's request for a determination of effect for any Area of Potential Effects, the SHPO issued EPA a letter stating that no known culturally significant sites would be disturbed through the creation of the BA-171 project. (Appendix A).

In addition to the cultural resources survey performed on the headland and borrow area, CPRA tasked MPH to perform a cultural resource survey on the dredge pipeline alignment from the proposed borrow area to the marsh fill areas. One of the three dredge pipeline alignments was found to have potentially culturally significant areas and therefore would need additional investigation to make that alignment viable. This pipeline alignment was removed from the plan design. (CPRA 2016b).

2.1 Alternative 1 No-Action

Under a no-action alternative, the proposed project would not be constructed. Baseline conditions and land loss will continue, with associated losses of marsh and headlands functions. Shoreline migration landward will continue, with further losses exacerbated by future hurricanes and storm surge events. Prolonged breaches will continue to increase the net export of sediment from the headland. As the beach and dune continue to migrate landward, overwashed sediment will continue to be lost into open water and land loss rates will be exacerbated. Critical infrastructure will be lost or damaged. Geomorphic features that isolate the Barataria Basin estuaries from the Gulf of Mexico will continue to degrade, existing breaches will widen and new breaches will form, and portions of the project area will disappear. (USACE 2012).

2.2 Alternatives Considered But Not Evaluated – Earthen Containment Dikes

Three alternatives for constructing the earthen containment dikes were considered based on the given soft soil conditions, marsh creation criteria, water level criteria, and constructability concerns: Alternative 1 – Multiple Lift Construction; Alternative 2 –Dike reinforced with Woven Geotextile Fabric; and Alternative 3 – Sand Base. Alternatives for the earthen containment design that the PMT considered but eliminated without detailed environmental evaluation included Alternatives 1 and 3 (CPRA 2016). Based on constructability and risk evaluation, Alternative 2, Dike Reinforced with Geotextile Fabric, is the preferred alternative (CPRA 2016a).

2.3 Alternative 2 (Proposed Action)

Alternative 2, the proposed action, consists of four (4) design components: the marsh creation fill area, the earthen containment dikes, the dredge borrow area, and the dredge pipeline alignment (Figure 8).

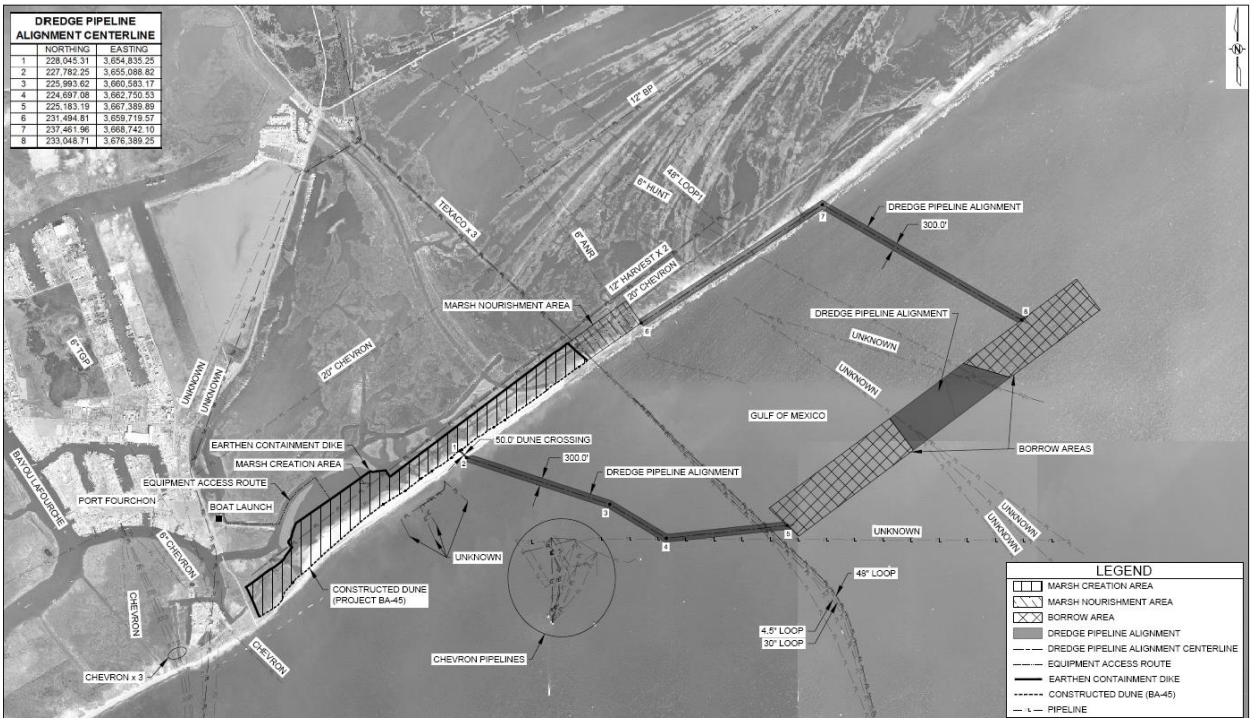

Figure 8. Plan view of the project's design features including marsh creation, borrow area, containment dike, and dredge pipeline alignment (CPRA 2016b).

2.3.1 Marsh Creation Fill Area Design

The primary goal of the marsh creation fill area feature is to address land loss in this area while also providing an overwash platform for the newly-created beach and dune. These goals governed the design configuration of the marsh creation fill area. Once the marsh fill area was determined, a target marsh fill elevation of +1.0 ft NAVD88 was calculated. This elevation was informed by factors including tidal range, percent inundation, healthy marsh elevation, physical properties of the borrow material, and the bearing capacity of the foundation soils in the marsh creation fill area.

To achieve the project goals, the marsh platform will initially have to be pumped to a constructed fill elevation outside of the functional saline marsh range and settle into the range over the design life. To satisfy these conditions, the marsh creation fill area will be pumped to an initial fill elevation of +2.0 ft NAVD88, be allowed to settle for 60 days, and then will again be pumped to a final constructed fill elevation of +2.0 ft NAVD88.

After determining the constructed marsh fill elevations, the project engineers calculated the total volume of the marsh creation fill area. The table below shows the estimated fill volumes (CPRA 2016b).

Fill Area	Constructed Marsh Fill Elevation (ft NAVD88)	Area (Acres)	Cut to Fill	Volume of Fill (yd^3)	Volume of Cut (yd^3)
1	2.0	385	1.5	1,325,405	1,988,108

Table 1: Summary of Creation Acreage and Volume (CPRA 2016b).

The marsh nourishment areas of the proposed project are located within Bay Champagne and extending along the eastern side of the marsh creation fill area. While these areas will be primarily used for decanting supernatant water, there is a potential for sediment fines to be present in this water resulting in potential nourishment for the surrounding marshes. Therefore, these areas will also be permitted for potential marsh nourishment/marsh creation areas to account for any sediment that may escape through the dewatering structures (CPRA 2016b).

2.3.2 Earthen Containment Design

The primary design parameters associated with the earthen containment dike design include crown elevation, crown width, and side slopes. A minimum of one foot of freeboard is needed to contain the dredge slurry within the marsh creation fill area. Therefore, the earthen containment dikes will be constructed to an elevation of +3.0 ft NAVD88 based on the initial constructed fill marsh elevation (CPRA 2016b).

As noted in 2.2.2 above, Alternative 2, Dike Reinforced with Geotextile Fabric, was chosen as the preferred earthen containment design. This option allows for the full earthen containment dike template to be constructed in two lifts while maintaining a minimum safety factor. The dikes will be constructed with a crown width of 5 feet and a side slope of 5H:1V. The material to build the containment dikes will be mechanically dredged from borrow areas on either side of the alignment where allowed and will have a maximum bottom elevation of -10 ft NAVD88. Side slopes within the borrow area will be 2H:1V, and the borrow will be located a minimum of 25 feet from the toe of the containment for stability purposes (CPRA 2016b).

Marsh Creation Area	Design Height (ft NAVD88)	Side Slopes	Crown Width (ft)	Factor of Safety	Minimum Offset (ft)	Cut to Fill	Volume of Fill (yd^3)	Volume of Cut (yd^3)
1	3.0	5H : 1V	5	1.2	25	1.5	74,970	112,455

Table 2: Summary of Earthen Containment Dike Design (CPRA 2016b).

2.3.3 Borrow Area Design

In the LCA BBBS study, a large borrow area was identified approximately 1.5 miles from the shoreline in the Gulf of Mexico. Over 500 acres of the Gulf of Mexico water bottom was investigated for use in marsh creation fill areas. These investigations cleared the entire borrow area of any potentially culturally significant area and helped to identify the presence of multiple pipelines found in the area (SHPO letters, Appendix A).

A cut to fill ratio is applied when placing hydraulically dredged material to account for any material lost during the dredging and dewatering processes. Typically, it takes approximately 1.3 to 1.5 cubic yards of hydraulically removed material to fill 1.0 cubic yards in the placement area. A cut to fill of 1.5 was applied to determine the needed cut volume for the borrow area.

A maximum cut depth of approximately 12 feet will provide adequate volume while also ensuring there would be no impact on the existing shoreline. Cross-sectional areas of each transect in the borrow area were calculated using the data collected in the borrow area survey to compute average end area. The available volume of material within each of the two potential borrow areas was then calculated using these areas (Figure 9).

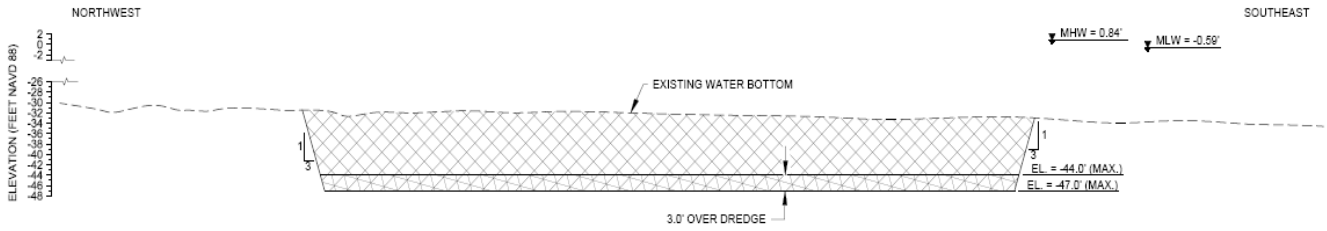

Figure 9. Borrow area, typical section (CPRA 2016b).

2.3.4 Dredge Pipeline Alignment Design

The dredge pipeline alignments were investigated prior to the BA-171 project's inception. During the Caminada Headland Beach and Dune Restoration Increments I and II projects (BA-45 and BA-143, respectivelydredge pump-out areas were surveyed to offer the construction contractor the option to dispose of the dredged material and re-handle it before pumping it on to the headland. Two of these pump-out areas were in close proximity to the borrow area and offered an alignment onto the headland. Just as with the borrow area, these locations were cleared of any culturally significant areas (SHPO correspondence, Appendix A). Along with the two pump-out locations and the corresponding dredge pipeline alignments, a third dredge pipeline alignment was investigated. During the geophysical survey, an area within the alignment was determined to potentially have a culturally sensitive area; that alignment was not pursued.

Due to the presence of the LOOP pipelines within the eastern dredge pipeline alignment, the dredge pipeline will remain floating at all times within the LOOP right of way so as not to disturb the soils above the pipelines (CPRA 2016a).

Part 3. Affected Environment

3.1 Physical Environment

The Caminada Headlands Back Barrier Marsh Creation proposed project is located in the lower Barataria Basin, the Mississippi River Alluvial Plain, Deltaic Coastal Marshes and Barrier Islands ecoregion. Brackish and saline marshes dominate this ecoregion (Daigle et al., 2006).

3.1.1 Topography, Geomorphology, and Soils

Topography

The basin is situated between the Mississippi River and Bayou Lafourche. Elevations range from approximately +15.0 feet mean sea level (MSL) on the flanks of the natural levee of the Mississippi River and gradually decrease away from the river to approximately +1.0 MSL in the swamps and marshes. Elevations gradually increase towards the natural levee of Bayou Lafourche where they again reach +10.0 MSL. The area is laced with several small bayous with natural sand/silt ridges. The average height of these ridges is approximately +5.5 MSL (USDA 2002).

Geomorphology and Soils

The basin is part of coastal Louisiana which was formed by the Mississippi River thousands of years ago as it frequently changed courses. With each course the Mississippi River took, the resulting sedimentation created several distinct delta lobes. The size of the soil particle determined when and where it would settle out of the river water. Sand, being the largest and the heaviest soil component of river water, tended to settle out first in a relatively short time frame. Silt and clay particles were respectively lighter and were carried further away from the main flow of the river channel. These processes determined the type of landform (ridge, swamp, marsh) and the corresponding hydrology and vegetative cover it would eventually have. Figure 10 shows a cross-sectional view of a typical successional pattern of land development for a river delta (USDA 2002).

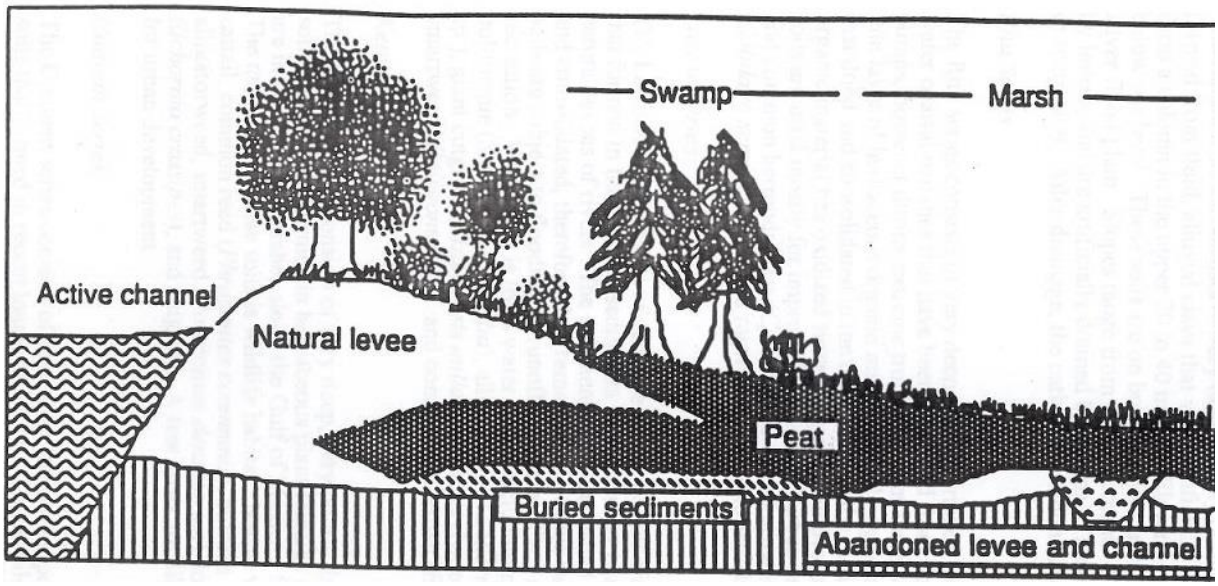

Figure 10. Generalized succession pattern in the delta area (USDA 2002).

The surface and shallow subsurface of the basin is composed of natural levee, marsh, swamp, interdistributary and prodelta deposits. The basin landscape contains a series of old tributary and distributary channels with natural ridges of varying elevations. Sediments deposited as the river overflowed its banks during floods formed these ridges. As these ridges developed and became more elevated, they began to isolate some of the basin areas from regular water movement. These relatively isolated areas became low-energy areas with only seasonal flooding. Floating and submerged aquatic vegetation thrived in these areas and the vegetative remains comprise the fibrous material found in the organic soils.

The soils in the basin are two basic types, organic and mineral. Some organic soils are flotant, or floating soil. This soil is very fragile and is subject to high rates of erosion if increased energy rates are encountered. This could occur when a healthy, protected freshwater, thin mat marsh is subjected to such forces as high winds or strong tidal fluctuations. Mineral soils in the basin are first encountered on the elevated, natural ridges.

This material is usually composed of sand and silt materials. As the ridge progresses down in elevation, loamy soils would be encountered about midway between the swamp areas and the ridge. Finally, the last form of mineral soil would be the heavy clays, which were created by the settling of the fine clay particles in the river water (USDA 2002).

Subsurface conditions vary across the BA-171 project area due to years of gulf swells redistributing sediment loads from Bayou Lafourche. Small interdistributary ridges consisting of sand and fine-grained fluvial sediments are found throughout the back barrier marshes which contribute to the variability of the geology. Generally, the first 15-20 ft below the mudline in the marshes furthest from the headland and in Bay Champagne is soft to medium clay with stiffer clays below the soft to medium clays. In those areas where interdistributary ridges can be found,

the first two to three ft is generally very soft to soft clay; below that, soft clay can be found and dense granular deposits to medium/stiff clay can be found to a depth that ranges from approximately 15-40 ft. Those areas nearest to the beach and dune generally have clayey sand to sand deposits in the first 4-8 ft below the mudline; soft clays are found below those deposits (CPRA 2016).

3.1.2 Climate and Weather

Most of Louisiana has a hot, humid, subtropical climate, and is one of the wettest states, with a yearly average of 57 inches of precipitation. Southern Louisiana has an average January temperature of 55 F˚, and a July average of 82 F˚. Hurricanes sometimes strike the coastal areas of Louisiana, causing loss of life and damage to property. Prevalent winds from the south/southeast bring in warm, moist air from the Gulf, resulting in abundant rainfall (Crowe and Quayle 2000).

The Barataria Basin has long summers which are hot and humid, and mild warm winters occasionally interrupted by incursions of cool air from the north. Rains occur throughout the year with an average annual precipitation of 58 to 62 inches. In winter, the average temperature is 54 degrees F, and the average daily minimum temperature is 44 degrees F. In 50 percent of winters, there is no measurable snowfall, and when snow does occur it is usually of short duration and no more than two to three inches. On occasion, a hurricane impacts the area, which can bring copious amounts of rainfall and strong damaging winds. River fogs are prevalent in the winter and spring, when the temperature of the Mississippi River is somewhat colder than the air temperature (USDA 2002).

3.1.3 Air Quality

National and state ambient air quality standards were developed for specific (criteria) pollutants as a result of the Federal Clean Air Act of 1970. The Clean Air Act Amendments of 1990 mandated a program by which air quality must be improved and maintained so as to meet the National Ambient Air Quality Standards (NAAQS). Under this program, regions are classified as to their attainment status with regard to each criteria pollutant. Lafourche Parish is currently in attainment of all NAAQS. A Clean Air Act general conformity analysis is not required. (40 CFR § 93.153(b)).

3.1.4 Surface Water Resources

The proposed project is in the West Central Louisiana Coastal Watershed. The USGS Hydrologic Unit Code is 08090302. The southern half of the Barataria basin consists of tidally-influenced marshes connected to a large bay system behind barrier islands. The BA-171 project area includes the area in and around Bay Champagne and the area to the east and west of Bayou Moreau along the coast. The area is located in the Louisiana Department of Environmental

Quality (LDEQ) Subsegment Number LA020905_00, described by LDEQ as "Bayou Moreau (Estuarine)."

According to the 2014 and 2016 Integrated Report of Water Quality in Louisiana, Subsegment LA020905_00 fully supports the following designated uses: Primary Contact Recreation; Secondary Contact Recreation; Fish and Wildlife Propagation; and Oyster Propagation. Subsegment LA020905_00 is not identified on either the 2014 or draft 2016 Louisiana List of Impaired Waters (303d list). (LDEQ, Final 2014 Louisiana Water Quality Integrated Report (305(b)/303(d), July 29, 2015).

Jurisdictional Wetlands

In response to EPA's Solicitation of Views of March 2, 2016, the Corps of Engineers, New Orleans District, (USACE) commented in a letter to EPA dated July 6, 2016 (Appendix A), and noted that the project site is jurisdictional wetlands requiring a permit from the USACE under CWA Section 404 and Section 10 of the Rivers and Harbors Act. The USACE also advised that the proposed project is in the Louisiana Coastal Zone, and may require a coastal use permit from the Louisiana Department of Natural Resources. The Phase II request for construction funding will include a completed Joint Permit application to be submitted after funding is approved.

3.1.5 Tidal Datum, Inundation, and Relative Sea Level Rise

The tidal datum is a standard elevation defined by a certain phase of the tide and issued to measure local water levels and establish project design criteria. The tidal datum is used to establish the target construction elevation. Tidal datum is referenced to a fixed point (benchmark) and is expressed in terms of mean high water (MHW), mean low water (MLW), and mean tidal levels (MTL). The tidal datum determination for the BA-171 project area is:

- MHW = 0.84 feet, NAVD88
- MLW = -0.59 feet, NAVD88
- MTL = 0.12 feet, NAVD88

To account for tidal and non-tidal influences, an additional water level determination method, the Percent Inundation Method, is used to determine the optimal marsh elevation range. Percent inundation refers to the percentage of the year a certain elevation of land would be flooded (CPRA 2016a). Saline marshes like those in the BA-171 project area are most productive when flooded between 20 percent and 80 percent of the time (Snedden and Swenson, 2012).

Percent inundation elevations from recent field data are shown in the table below:

10%	1.03
20%	0.74
30%	0.53
40%	0.35
50%	0.17
60%	-0.03
70%	-0.17
80%	-0.47
90%	-0.77

Table 3: Elevation (ft NAVD88) % inundation baseline data (CPRA 2016b).

Relative sea level rise (RSLR) is another parameter taken into account in the design. The rate of Gulf of Mexico regional sea level rise is determined by examining multiple tide gauge records. CPRA's most recent guidance on relative sea level rise has identified a current rate of Gulf regional sea level rise of 2.4 mm/year or 0.00079 ft/year (DeMarco 2012).

In the 95 Percent Design Report, the PMT proposed that accretion will be sufficient to offset subsidence over the project life. Therefore, RSLR will be the only component applied to future conditions. The rate of SLR was used to determine the annual incremental RSLR for the BA-171 project area over the 20-year project life, and ranged from 0.000 to 0.449 ft NAVD88 Geoid12A at 20 years. (CPRA 2016b).

3.2 Biological Environment

The biological environment of coastal Louisiana is of national importance. The estuarine habitats across coastal Louisiana support approximately 735 species of birds, finfish, shellfish, reptiles, amphibians, and mammals at some point during that organism's life cycle (USACE 2004). The biological characteristics of the proposed project area are described below.

3.2.1 Vegetation

Barrier shorelines and associated back marsh areas are dynamic areas with considerable spatial and temporal variation in plant species distribution. The BBBS study area is subjected to varying degrees of natural and human disturbance. Vegetation is an important factor in trapping and retaining sediments in the barrier shoreline system. The zones or communities of barrier island vegetation and the extent of their diversity are related to elevation, degree of exposure to salt

spray, and storm events that cause overwash. These zones often intergrade with each other (USACE 2012).

Estuarine marshes in the study area extend gulfward of the fresh marsh zone to the barrier islands. These marshes are characterized by low to moderate daily tidal energy and by soils ranging from firm mineral soils to semi-floating organic soils. Salinities vary, with peak salinities in the late summer or fall. The lower-salinity estuarine marshes are often classified as intermediate, and then range from brackish to saline with increasing salinity levels. Estuarine marshes are predominantly vegetated with saltmeadow cordgrass, saltmarsh cordgrass, big cordgrass, Olney's bulrush, saltgrass, needlegrass, saltmarsh camphor-weed, seaside goldenrod, cow pea, common reed, marshmallow, perennial saltmarsh aster, and saltmarsh morning-glory. Shallow brackish marsh ponds occasionally support extensive beds of widgeon-grass (Clark 2000).

A plant species list for the LCA BBBS study area which includes the habitats around the BA-171 project area can be found in the EIS, Table 4-13.

The Wetland Value Assessment (WVA) for the proposed project is based on the Coastal Marsh Community Model and discusses variables (V) related to vegetation: emergent vegetation (V1) and submerged aquatic vegetation (SAV) (V2). A description of the model variables in providing habitat to the modeled community based on available, contemporary peer-reviewed scientific literature can be found in the CWPPRA Wetland Value Assessment Methodology, Coastal Marsh Community Model, Version 1.3 (Louisiana Coastal Wetlands Conservation and Restoration Task Force, 2014).

According to the marsh type survey (Sasser *et al*. 2014), the project area is 19 percent shore, 26 percent saline marsh and 55 percent water (Figure 11). Field observations indicate saline marsh dominated by black mangrove (*Avicennia germinans*) and smooth cordgrass (*Spartina alterniflora*) (Figure 12). The project area is entirely classified as saline marsh.
No SAV has been observed in the project area or in nearby marshes (EPA 2016b).

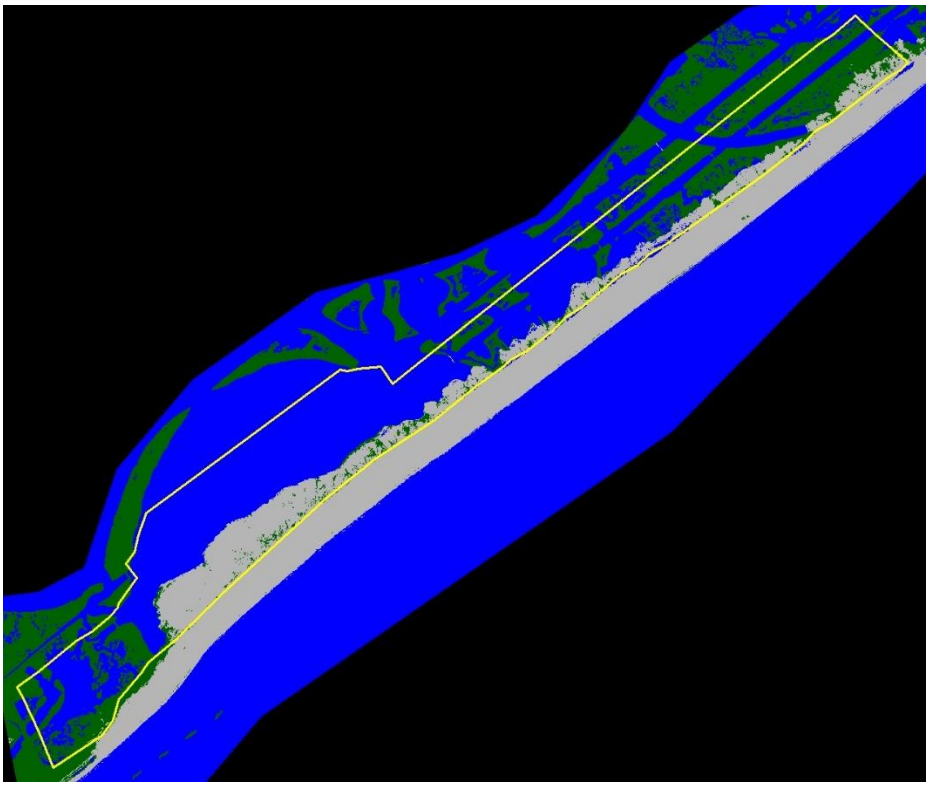

Figure 11. 2016 Marsh Type Survey (from Sasser et. al. 2014).

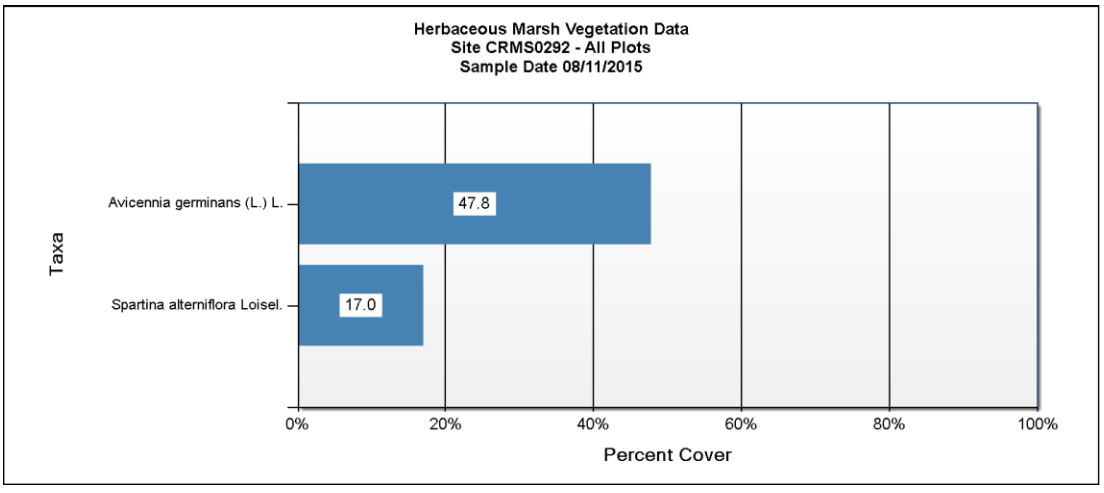

Figure 12. Vegetative Community, August 2015, from Coastwide Reference Monitoring System (CRMS) Site 0292, all plots (EPA 2016).

3.2.2 Essential Fish Habitat

The proposed dredge and marsh creation areas of the project are located in areas designated as essential fish habitat (EFH) under the Magnuson-Stevens Fishery Conservation and Management

Act, P.L. 104-297; 16 U.S.C. 1801 et seq. (Letter from NMFS, March 15, 2016, see Appendix A).

Both dredging and fill placement have the potential to adversely impact EFH. Federally managed fishery species and life stages having EFH in the project areas include red drum, reef fish, coastal migratory pelagic species, and shrimp. Detailed information on these species and their EFH is provided in the 2005 generic amendment of the Fishery Management Plans for the Gulf of Mexico prepared by the Gulf of Mexico Fishery Management Council. The LCA BBBS Study addresses EFH in Section 4.12, to which this EA is tiered (USACE 2012).

3.2.3 Fish and Wildlife Resources

Marine Fishery Resources

The proposed project area serves as a habitat for estuarine species. Estuarine marshes reduce shoreline erosion by dissipating wave and tidal energy. Estuarine marshes within the study area provide nursery and feeding habitat for many commercially and recreationally important fishes and shellfishes. Those marshes support estuarine-dependent species such as blue crab, white shrimp, brown shrimp, Gulf menhaden, Atlantic croaker, red drum, spotted seatrout, black drum, sand seatrout, spot, southern flounder, striped mullet, and others (Clark 2000). Commercial shrimp harvests are positively correlated with the area of tidal emergent wetlands (Turner 1977 and 1982).

Wildlife

Wildlife that utilize estuarine marshes include wading birds (herons, egrets, ibises, and roseate spoonbills), rails, migratory waterfowl (green-winged teal, blue-winged teal, mottled duck, gadwall, American widgeon, and lesser scaup), raptors, and songbirds. Brackish marshes with submerged aquatic vegetation often support large numbers of puddle ducks (dabbling ducks such as mallards and pintails). Shorebirds utilizing estuarine marshes include killdeer, American avocet, black-necked stilt, American oystercatcher, common snipe, and various species of sandpipers. Seabirds supported by those habitats include white pelican, brown pelican, black skimmer, herring gull, laughing gull, and several species of terns. Other nongame birds such as boat-tailed grackle, red-winged blackbird, seaside sparrow, olivaceous cormorant, northern harrier, belted kingfisher, and sedge wren also utilize estuarine marshes (Clark 2000).

According to both USFWS and LDWF, bird nesting colonies may occur in the project area. Both agencies recommend that the project team conduct a field survey to look for evidence of nesting colonies. If colonies are found, further consultation with USFWS and LDWF will be required. The USFWS requests that certain restrictions on construction activities be observed to minimize disturbance to colonial nesting birds. (LDWF and USFWS letters in Appendix A).

Estuarine marsh mammals include swamp rabbit, nutria, muskrat, mink, river otter, raccoon, white-tailed deer, and coyote. Reptiles are limited primarily to the American alligator in intermediate and brackish marshes, and the diamond-backed terrapin and gulf salt marsh snake in brackish and saline marshes. Juvenile sea turtles may occasionally utilize bays and saline marsh ponds adjacent to the Gulf. (Clark 2000).

3.2.4 Threatened and Endangered Species

Section 7 of the Endangered Species Act, 16 U.S.C. §1536, outlines the requirements for interagency cooperation under the Act. Specifically, Section 7(a)(1), 16 U.S.C. 1536(a)(1), directs Federal agencies to assist in the conservation of endangered species and Section 7(a)(2), 16 U.S.C. 1536(a)(2), requires agencies, through consultation with the USFWS, to ensure their activities are not likely to jeopardize the listed species or adversely affect their critical habitat. In compliance with these statutes (Endangered Species Act of 1973, 87 Stat. 884, as amended, 16 U.S.C. 1531 et seq.; the Fish and Wildlife Coordination Act, 48 Stat. 401, as amended, 16 U.S.C. 661 et seq.; and the Migratory Bird Treaty Act (MBTA), 40 Stat. 755, as amended, 16 U.S.C. 703 et seq.), CPRA will perform a biological assessment and request formal consultation and a biological opinion from the USFWS as described in 50 CFR 402.12.

The USFWS noted in a letter to EPA dated August 22, 2016, that the following threatened and endangered species (T&E) occur in the project area:

West Indian Manatee **(***Trichechus manatus***)**: Endangered; have been observed in the canals adjacent to rivers in southeastern Louisiana

Piping Plover (*Charadrius melodius*): Threatened; both the piping plover and its designated critical habitat occur along the Caminada Headland and in the vicinity of the proposed project.

Red Knot (*Calidris canutus rufa*): Threatened; occurs along the Caminada Headland and in the vicinity of the proposed project (Figure 13).

Figure 13. Red knots on the beach at Grand Isle. Photo credit: Barbara Keeler

Sea Turtles: Two species, the threatened loggerhead sea turtle (*Caretta caretta*), and the endangered Kemp's ridley (*Lepidochelys kempii*) may nest in Louisiana May to November. Recent data indicate rare loggerhead nesting attempts in Lafourche Parish (USFWS, 2016, Appendix A).

The LDWF noted that the piping plover (*Charadrius melodus*) and the Wilson's plover (*Charadrius wilsonia*) may occur in the project area. The piping plover is federally listed as threatened with its critical habitat along the Louisiana coast. The piping plover (Figure 14) winters in Louisiana feeding at intertidal beaches, mudflats, and sand flats with sparse emergent vegetation. Primary threats to this species are destruction and degradation of winter habitat, habitat alteration through shoreline erosion, and human disturbance of foraging birds.

Figure 14. Piping plovers in winter plumage (top) and breeding plumage on Grand Isle. Photo credit: Barbara Keeler.

3.3 Other Environmental Considerations

3.3.1 Cultural Resources

As a part of the USACE's BBBS survey, R. Christopher Goodwin & Associates performed a cultural resources survey on the Caminada Headland and offshore borrow area. The EPA consulted with the SHPO regarding the BA-171 project, requesting a determination of effect for the previously surveyed borrow area and the previously recorded archaeological sites within the project fill area. After reviewing the survey, the SHPO issued letters to EPA stating that no known culturally significant sites would be disturbed through the creation of the BA-171 project (Appendix A).

In addition to the cultural resources survey performed on the headland and borrow area, CPRA tasked Morris P. Hebert (MPH) to perform a cultural resource survey on the dredge pipeline alignment from the proposed borrow area to the marsh fill areas. One of the three dredge pipeline alignments was found to have potentially culturally significant areas (archaeological site 16LF274) that would need additional investigation to make that pipeline corridor viable (CPRA 2016). The PMT decided to remove that pipeline alignment from the project design to avoid potential effects to archaeological site 16LF274.

Consultation was initiated with Tribes. The Choctaw Nation of Oklahoma and the Jena Band of Choctaw Indians had no concerns (Appendix A). The Chitimacha Tribe had concerns with human remains and cultural artifacts. On June 18, 2014, the PMT met with the Chitimacha Tribal Historic Preservation Officer, Ms. Kimberly Walden. After further consultation, Ms. Walden noted that after a review of the final archaeological report, the Chitimacha had no unaddressed concerns since the previously proposed alignment will no longer be used in order to avoid impacts to archaeological site 16LF274 (email from Ms. Walden to Barbara Aldridge, May 5, 2016, Appendix A).

3.3.2 Socioeconomics and Environmental Justice

According to the 2010 Census of the United States, the population of Lafourche Parish is 96,318. The 2015 estimate is 98,325, which reflects a 1.8 percent gain of population from 2010. The Parish population demographic profile is:

White	79.4 percent
Black or African-American	13.9 percent
Asian-American	0.7 percent
American Indian	2.8 percent
Hispanic or Latino	3.8 percent
Two or more races	1.8 percent
White alone, not Hispanic or Latino	78.0 percent

The percent of the population living below the Census definition of poverty was 17.6 percent in 2010-2014, compared with 19.1 percent for the state of Louisiana. The median household income for 2010-2014 was $50,396. This compares to $44,991 for the state of Louisiana.

The Lafourche Parish land area is approximately 1,068.21 square miles, with a population density of 90.2 persons per square mile. In comparison, the population density of Louisiana is 104.9 (US Census Bureau, 2010).

For a project-specific summary report, a one-mile buffer was added around the proposed project area boundary using EPA's "EJScreen" mapping tool. The results showed a population in the buffered proposed project area of zero (USEPA, 2016).

The area around Port Fourchon is sparsely populated. Despite the potential hazards related to the energy industry's infrastructure associated with the port, the area is not one of significant environmental justice concern. The town of Larose has a relatively large population and is thus the most vulnerable area in the region. (Hemmerling and Colten, 2004). However, Larose is approximately 35 miles northwest of the project site.

3.3.3 Infrastructure

Substantial oil and gas activity presently occurs, and has historically occurred since the early 1900's, in coastal Louisiana. Oil and gas industry activities related to seismic exploration,

drilling, production, pipeline infrastructure, spill control and cleanup, and well site closure have greatly impacted the wetlands of coastal Louisiana. Oil and gas activities negatively affect wetland functions by altering marsh habitat and hydrologic regimes and increasing erosion (USEPA 1989).

The continued deterioration of the Caminada Headland threatens the critical infrastructure of Port Fourchon which plays a strategic role in furnishing the United States with about 18 percent of its oil supply. In addition to its domestic energy significance, Port Fourchon is the land base for the Louisiana Offshore Oil Port (LOOP) which handles 10 to 15 percent of the nation's domestic oil, 10 to 15 percent of the nation's foreign oil, and is connected to 50 percent of U.S. refining capacity. The LOOP is the only U.S. deep water port capable of offloading 'Very Large Crude Carriers' and 'Ultra Large Crude Carriers.' Nine of the top ten Lafourche Parish taxpayers operate from and/or utilize Port Fourchon (Greater Lafourche Port Commission website 2016).

The magnetometer survey identified three pipelines parallel to the shore and three pipelines perpendicular to the shore just east of the project area. One pipeline (20-inch Chevron pipeline) was positioned in the southernmost canal running parallel to the shoreline. This pipeline has an average depth of cover of approximately eight (8) feet along the pipeline canal. Two other pipelines running parallel to the shoreline were identified in a canal just north of the Chevron pipeline, which contains two 12-inch Arrowhead/Harvest pipelines. These pipelines have depths of cover that varied across the length of the canal. At their deepest, the pipelines have depths of cover of approximately five feet; however, areas of the pipelines in the vicinity of Bay Champagne were exposed. Since the magnetometer survey was taken, Arrowhead/Harvest buried their pipeline further in order to maintain a depth of cover of at least four feet. Three other pipelines were identified as pipelines associated with LOOP, and were located east of the marsh creation fill area. These pipelines had an approximate depth of cover of seven feet and ran perpendicular to the shoreline (CPRA 2016).

3.3.4 Noise

Noise, or unwanted sound, may be objectionable in terms of the nuisance, health, or well-being effects it may have upon humans and the human environment, as well as upon the animals and ecological systems in the natural environment (Kryter 1994). Generally, noise is a localized phenomenon. There are many different sources of noise throughout the study area including: operation of commercial and recreational boats, water vessels, air boats, and other recreational vehicles; automobiles and trucks, and all-terrain vehicles; aircraft; operation of machinery and motors; and human industry-related noise, such as oil and gas facilities near the project location (USACE 2012).

3.3.5 Hazardous, Toxic, and Radioactive Waste

The discharge of dredged material into waters of the United States is regulated under the Clean Water Act (CWA). The USACE Engineer Regulation, ER 1165-2-132, Hazardous, Toxic and

Radioactive Waste, states that dredged material and sediments beneath navigable waters proposed for dredging qualify as HTRW only if they are within the boundaries of a site designated by the EPA or a state for a response action (either a removal or a remedial action) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), or if they are a part of the National Priority List (NPL) site under CERCLA. No portion of the project area is under a CERCLA response action or included in the NPL.

A Hazardous, Toxic, and Radioactive Waste (HTRW) assessment of the proposed borrow area soils was performed by Gulf Engineers & Consultants, Inc. (GEC). Analysis performed on the three core samples included water quality tests, visual analysis of the cores, and laboratory analysis for a select number of constituents of concerns (GEC 2015). The findings were that the constituents of concern within the proposed borrow area were within acceptable limits and would not have any adverse effects on plants, aquatic life, and human exposure. Detailed results of the analysis are in appendix G of the 30% Design Report (CPRA 2016a).

Part 4. Environmental Consequences

Part 4 evaluates the anticipated environmental impacts that would result from the alternatives evaluated. It includes an analysis of the direct, indirect, and cumulative impacts of the proposed project alternatives, including the No-Action Alternative. Alternatives that were considered but not evaluated in Part 2 are not evaluated in Part 4.

Each component of the Affected Environment is evaluated across an appropriate spatial and temporal scale (i.e. short term and long term) to determine the environmental impacts associated with each alternative. These impacts are classified as *Direct*, *Indirect* and *Cumulative*. *Direct* and *Indirect* impacts were listed for each alternative and can either be designated as *no impact*, *not significant impact* or *significant impact*.

The assessment of environmental consequences (i.e. impacts) is based upon a review of the best available information and relevant reference materials. Quantitative and qualitative information is used in the assessment. Factors that influence the assessment of impacts include, but are not limited to, the duration of the impact and the abundance or scarcity of the resource.

4.1 Physical Environment

This section describes potential impacts to the physical environment described in Section 3.1, Physical Environment. Areas discussed include geomorphology, soils and topography, air quality, climate and weather, tidal datum, inundation, relative sea-level rise, and surface water resources.

4.1.1 Topography, Geomorphology, and Soils

Alternative 1 No Action

Under the no action alternative, there would be no construction activity. The topography of the proposed project area would continue to change as land is lost and converted to open water.

Alternative 2 (Proposed Action)

Direct Impacts: Table 4 shows line items for construction activities and equipment (CPRA, 95% Report, Cost Estimate, 2016b).

Work or Material	Quantity	Unit
Mobilization/Demobilization	1	Lump Sum
Surveys	1	Lump Sum
Grade Stakes	150	Each
Settlement Plates	8	Each
Earthen Containment Dikes	112,455	Cubic Yards
Hydraulic Dredging (Marsh Creation)	1,988,108	Cubic Yards
Woven Geotextile Fabric	169,990	Square Yards

Table 4. Construction Activities and Equipment

No significant direct impacts are expected from these activities of short duration. The deposition of sediments to build the marsh platform will preserve the topography of the project area and prevent land loss to open water.

Indirect Impacts: It is unlikely that there will be any indirect impacts on topography, geomorphology, and soils resulting from Alternative 2.

4.1.2 Climate and Weather

Neither Alternative will impact climate or weather. The scientific record suggests that the improved marsh health from the action alternative may have a beneficial effect to help create a carbon sink and reduce atmospheric carbon dioxide (Burkett and Kusler 2000; Bridgham et al. 2006).

4.1.3 Air Quality

Alternative 1 No Action

The No Action Alternative would not result in any changes in the existing air quality in the area.

Alternative 2 (Proposed Action)

Direct Impacts: Impacts resulting from Alternative 2 would be associated with the emissions of diesel engines that would power the construction equipment, including but not limited to marsh buggies, dozer, electric generators, backhoe, and watercraft. The duration of the impact is limited as construction is estimated to take approximately eight months. Emissions would consist primarily of nitrogen oxides, with smaller amounts of carbon monoxide, sulfur dioxide, particulate matter, and volatile organic compounds.

Lafourche Parish is currently in attainment of all National Ambient Air Quality Standards (NAAQS). The proposed project is unlikely to affect the Parish's attainment status. However, Lafourche Parish is represented by the South Central Planning and Development Commission (SCPDC), the metropolitan planning organization (MPO) for the area. The South Central area is at risk for being designated as non-attainment for ozone and particulate matter (PM) NAAQS in the next few years. Due to the sensitivity of ozone and PM levels in the area, the SCPDC has applied to and been accepted by EPA into the EPA Ozone Advance and PM Advance programs. The Advance programs are a collaborative effort between EPA, states, and local governments to enact expeditious emission reductions to help near non-attainment areas remain in attainment of the NAAQS.

The EPA recommends that to reduce potential short-term air quality impacts associated with construction activities, the agencies responsible for the project should also include a Construction Emissions Mitigation Plan and adopt this plan in the Record of Decision (ROD). In addition to all applicable local, state, or federal requirements, the EPA recommends that the specific mitigation measures be included in the Construction Emissions Mitigation Plan in order to reduce impacts associated with emissions of NOx, CO, PM, SO_2, and other pollutants from construction-related activities (40 CFR § 1502.14(f) & 1502.16(h)). Construction emissions will be addressed and minimized with appropriate mitigation measures such as:

Fugitive Dust Source Controls:

- Stabilize open storage piles and disturbed areas by covering and/or applying water or chemical/organic dust palliative where appropriate at active and inactive sites during workdays, weekends, holidays, and windy conditions;
- Install wind fencing and phase grading operations where appropriate, and operate water trucks for stabilization of surfaces under windy conditions; and
- Prevent spillage when hauling material and operating non-earthmoving equipment and limit speeds to 15 miles per hour. Limit speed of earth-moving equipment to 10 mph.

Mobile and Stationary Source Controls:

- Plan construction scheduling to minimize vehicle trips;
- Limit idling of heavy equipment to less than 5 minutes and verify through unscheduled inspections;
- Maintain and tune engines per manufacturer's specifications to perform at EPA certification levels, prevent tampering, and conduct unscheduled inspections to ensure these measures are followed;
- If practicable, utilize new, clean equipment meeting the most stringent of applicable Federal or State Standards. In general, commit to the best available emissions control technology. Tier 4 engines should be used for project construction equipment to the maximum extent feasible;
- Lacking availability of non-road construction equipment that meets Tier 4 engine standards, the responsible agency should commit to using EPA-verified particulate traps,

oxidation catalysts and other appropriate controls where suitable to reduce emissions of diesel particulate matter and other pollutants at the construction site; and
- Consider alternative fuels and energy sources such as natural gas and electricity (plug-in or battery).

Administrative controls:

- Prepare an inventory of all equipment prior to construction and identify the suitability of add-on emission controls for each piece of equipment before groundbreaking;
- Develop a construction traffic and parking management plan that maintains traffic flow and plan construction to minimize vehicle trips; and
- Identify sensitive receptors in the project area, if any, such as children, elderly, and infirm, and specify the means by which impacts to these populations will be minimized (e.g. locate construction equipment and staging zones away from sensitive receptors and building air intakes).

Indirect Impacts: It is unlikely that there will be any indirect impacts on air quality resulting from Alternative 2.

4.1.4 Surface Water Resources

Alternative 1 No Action

The No Action Alternative would not have any direct impacts on surface water resources. Present conditions would continue and the headland and the backbarrier marsh would continue to deteriorate.

Alternative 2 (Proposed Action)

Direct Impacts: With implementation of the Proposed Action, it is expected that there would be a temporary and duration-limited increase in turbidity near construction activity areas in the borrow and fill areas.

Indirect Impacts: Alternative 2 is not anticipated to negatively impact dissolved oxygen levels within the subsegment or contribute to the causes of the current impairment as identified on the LA 2014 303(d) list. Certain long-term benefits to water quality may be realized in the locale of the proposed project as the increased wetland plant acreage has the ability to take up and sequester nutrients - identified as causative agents of depressed dissolved oxygen levels within the subsegment. However, the impacts of this project are not expected to significantly affect nutrient levels in the subsegment as a whole.

4.1.5 Tidal Datum, Inundation, and Relative Sea Level Rise

Alternative 1 No Action

Under the No Action Alternative, the shoreline will continue to migrate, and interior marshes will continue to be lost. As the beach and dune continue to migrate landward, overwashed sediment will be lost into newly formed open water and land loss rates will increase.

Land subsidence and sea level rise is assumed to continue. The natural and human-induced land loss processes on the Caminada Headland would likely continue at the present rates. Marine influences and tropical storm events would be the primary factors affecting land loss of these features. As this land loss trend continues, hydrologic connections between the gulf and interior areas would increase and exacerbate land loss and conversion of habitat type within the interior wetland communities. The continued loss of these coastal barrier systems would result in the reduction and eventual loss of the natural protective storm buffering of these barrier systems (USACE 2012).

Alternative 2 (Proposed Action)

Direct Impacts and Indirect Impacts: Barrier system restoration, including interior marsh restoration features, would likely alter the tidal prism, thereby reducing formation of any additional tidal passes as well as "healing" (closing or narrowing) existing tidal passes and overwash areas. This would help slow saltwater intrusion into more northern portions of the Barataria Basin. Restoration of the Caminada Headland would provide an increased level of natural storm buffering, reduction of storm surge heights, and would provide protection for the interior wetlands, bays, and estuaries (USACE 2012).

4.2 Biological Environment

This section describes potential impacts to the biological environment described in Section 3.2 Biological Environment, which includes vegetation, essential fish habitat, fish and wildlife resources, and threatened and endangered species. The threatened and endangered species section, concurrently with Part 2 and Section 3.2.5 serves as a biological assessment as described in 50 CFR 402.12.

4.2.1 Vegetation

Alternative 1 No Action

Under the No Action Alternative, the project area will continue to degrade, and interior marshes will continue to be lost. Vegetation in the project area will continue to degrade and convert to open water.

Alternative 2 (Proposed Action)

Direct Impacts: Under Alternative 2, a marsh platform of 385 acres will be created and nourished. Direct impacts of implementing the Proposed Action would primarily result from construction activities related to placement of borrow material on existing fragmented habitats (USACE 2012). Assuming that there will be some natural recruitment, approximately half the area, or 192 acres, will be planted with *Spartina patens* and/or *Spartina alterniflora* and *Paspalum vaginatum.* Mangrove is expected to recolonize naturally.

No significant adverse impacts are expected.

Indirect Impacts: Under Alternative 2, there would be a net increase of acreage of vegetated habitats used by fish and wildlife for life cycle requirements; increased vegetation growth and productivity; reduced conversion of these habitats to open water habitat; and higher quality EFH, especially nursery habitat. Vegetative plantings would contribute to re-establishment of a variety of wetland species that would further aid in sediment trapping. Vegetative productivity would likely increase due to increased vegetated acres of barrier habitats. Important stopover habitats used by migrating neo-tropical birds would be restored and sustained for future use. Compared to the No Action Alternative, the Proposed Action would delay the conversion of vegetated habitats to open water habitats (USACE 2012).

4.2.2 Essential Fish Habitat

As noted in 3.2.2, the proposed dredge and marsh creation areas of the project are located in areas designated as essential fish habitat (EFH) and have the potential to adversely impact EFH. (NOAA's NFMS letter dated March 15, 2016 (Appendix A).

Alternative 1 No Action

The No Action Alternative, not implementing the project, would have no direct impacts on EFH. Existing conditions would continue. As noted in the BBBS Study, the continued loss of barrier and wetland habitats throughout the study area would continue to adversely impact essential spawning, nursery, nesting, and foraging habitats for commercially and recreationally important species of finfish and shellfish, as well as other aquatic organisms (USACE, 2012).

Alternative 2 (Proposed Action)

Direct and indirect impacts: Under Alternative 2, construction of the proposed BA-171 project would restore shallow open water and fragmented habitats to higher quality and more continuous transitional barrier habitats. This increase in habitat acreage would provide important and essential transitional wetland habitats used by fish and wildlife for spawning, nursery, foraging, cover, and other life requirements. Increased vegetation growth and productivity would also reduce inter- and intra- specific competition between resident and migratory fish and wildlife species for limited coastal vegetation resources. Direct impacts of construction activities would result in the conversion of existing shallow open water and fragmented barrier wetland EFH into more continuous transitional emergent wetlands thereby increasing the quality of EFH in the Caminada Headland.

Increases in turbidity, coupled with a slight increase in temperature and biological oxygen demand (BOD), and decreased dissolved oxygen associated with construction activities would be temporary and localized. Although existing EFH would be initially negatively impacted, such impacts would be offset by the restoration of transitional barrier habitats, which are considered a higher-quality EFH (USACE 2012).

4.2.3 Fish and Wildlife Resources

Alternative 1 No Action

Under the No Action Alternative, the proposed project would not be constructed. There would be a continuation of conditions in the proposed project area and land loss would be expected to continue. Vegetative productivity in the project area would continue to decrease as land eroded or subsided and would negatively impact the habitats of the fish and wildlife species which utilize the project area. Continued degradation of the habitat to eventual unvegetated increasingly open water areas would diminish the habitat value to all species. Future commercial harvests of shrimp and other fishes and shellfishes could be adversely impacted by continued losses in estuarine marsh habitat (Turner 1982).

Alternative 2 (Proposed Action)

Under this Alternative 2, if the proposed project is constructed, the restored and created marsh will provide improved habitat conditions as well as an increase in habitat for fish and wildlife as described in Section 3.2.3. The LDWF noted that the project will benefit wildlife resources. The USFWS and LDWF request that a bird survey be performed prior to start of construction to look for evidence of nesting colonies. If colonies are found, further consultation with the USFWS and LDWF will be initiated (Appendix A). A bird abatement plan will be developed in the event project construction will occur during migratory bird nesting season, as per USFWS recommendations.

4.2.4 Threatened and Endangered Species

The USFWS identified West Indian manatee, piping plover and its critical habitat, red knot, and listed sea turtles, (threatened loggerhead and the endangered Kemp's ridley), while the LDWF identified piping plovers and Wilson's plovers as threatened or endangered species that may occur within the proposed project area boundary, as noted in Section 3.2.4 of this EA. The CPRA will perform a biological assessment and request formal consultation and a biological opinion from the USFWS as described in 50 CFR 402.12.

Alternative 1 No Action

Under the No-Action Alternative, no direct or indirect impacts are anticipated for threatened and endangered species as site conditions would remain the same. No avoidance measures will be required.

Alternative 2 (Proposed Action)

For Alternative 2, the project may have a short-term or temporary effect on threatened and endangered species, specifically the piping plover and its critical habitat, red knot, and the Wilson's plover. Bird survey data gathered in the area of the Caminada Beach Dune and Headland Restoration projects (BA-45 and BA-143 respectively) indicates that construction activities have had little impact to wintering piping plovers and red knots and caused no

"incidental take." Piping plover on the construction sites were observed foraging directly along the Gulf shoreline with Wilson's plover, snowy plover, black-bellied plover, and sanderlings in an area where water was slowly seeping from the dredge outfall area, approximately 91 meters from major construction activities (DeMay et al, 2015). The USFWS and LDWF recommend that the PMT take the necessary precautions to protect the habitat of T&E species. The PMT has consulted informally with the USFWS, and will do formal consultation for the piping plover, its critical habitat, and the red knot in accordance with section 7 of the ESA when required (Appendix A). At that time a biological assessment of impacts to those species and critical habitat will be submitted for initiation of formal consultation in accordance with section 7 of the ESA.

The West Indian manatee rarely occurs in the marine and coastal waters within the project area. Because the USFWS recommendations for avoiding and minimizing impacts to any manatees that may wander into the work area during summer months will be incorporated into contract work plans, the proposed project is not likely to adversely affect the West Indian manatee. Because sea turtle nesting is very rare within the project area, no impacts to nesting sea turtles are anticipated. Consultation for sea turtles in the marine environment is ongoing with the NMFS (Appendix A).

4.3 Other Considerations

4.3.1 Cultural Resources

No-Action Alternative 1

The No-Action Alternative will not significantly affect cultural resources.

Alternative 2 (Proposed Action)

Alternative 2 will have no effect on cultural resources. No archeological sites or standing structures eligible for or listed on the National Register of Historic Places are located within the proposed project area. (R. Christopher Goodwin & Associates, Inc. 2015). The SHPO concurred with this finding (Appendix A).

No historic properties will be affected by the conveyance of material from the offshore borrow area to the project area during construction. The construction contract for the project will include a plan to address "chance finds," or an unanticipated discoveries clause. Dredging activities will be stopped if cultural material is identified in the dredged material and procedures as outlined in 36 CFR §800.13 (post-review discoveries) will be implemented. The SHPO concurred with the proposed Unanticipated Discoveries Plan (Appendix A). Unanticipated discoveries language will also be incorporated into the contract requirements and communicated to interested bidding parties.

4.3.2 Socioeconomics and Environmental Justice

Alternative 1 No Action

In the No-Action Alternative, the proposed project area would continue to degrade. Fishery habitat lost in the proposed project area may have an adverse impact on commercial fishery as well as recreational and subsistence fishermen.

Alternative 2 (Proposed Action)

Direct Impacts: Alternative 2 may beneficially impact the local economy, Louisiana and some of the neighboring towns. Contractor(s) hired to construct the proposed project may need to hire workers locally. Also, the local economy may receive an economic benefit because the workers will likely spend money locally to purchase personal items, food and lodging.

Indirect Impacts: Alternative 2 may help buffer the Caminada Headland from tropical storm impacts.

Alternative 2 will have no significant adverse impact and may have a minor beneficial economic impact on the local area. No environmental justice populations will be disproportionately affected by the proposed Action.

4.3.3 Infrastructure

Alternative 1 No Action

If the project is not constructed, the infrastructure in the proposed project area would continue to be at risk because of the continued deterioration of the Caminada Headland.

Alternative 2 (Proposed Action)

Under Alternative 2, there will be no significant negative impacts on infrastructure. Existing infrastructure as described in Section 3.3.3 will be protected since there will be more land between the gulf and the structures. The pipelines in the proposed project area will be positively affected since there will be an increase in soil depth covering and securing their pipelines. No direct negative impacts are expected due to construction activities since there will be no digging within the rights of way for each pipeline. Pipeline representatives will be asked to be on site during all construction activities to ensure compliance with the rights of way and safety of their lines.

4.3.4 Noise

Alternative 1 No Action

The No-Action Alternative would not cause any change in the existing noise conditions in the proposed project area. There would be no impact to noise levels.

Alternative 2 (Proposed Action)

Under Alternative 2, short-term increases in noise associated with construction activities and equipment use would occur. There would be no long-term changes in the ambient noise levels associated with this project. Hearing protection may be required for construction crew and visitors to the construction site. Noise impacts are limited to the immediate project area. The closest noise-sensitive receptor is an elementary school in Golden Meadow, about 20 miles north of the project area. The duration of construction is limited. Construction is estimated at approximately one year from mobilization to demobilization, with the time to fill the marsh creation area of approximately six months (CPRA 2016b).

4.3.5 Hazardous, Toxic and Radioactive Waste

Alternative 1 No Action and Alternative 2 Proposed Action

The No-Action Alternative 1 and Alternative 2 will not significantly impact Hazardous, Toxic and Radioactive Waste, as noted in Section 3.3.5 and appendix G of the 30% Design.

4.4 Cumulative Impacts

The cumulative impacts of restoration projects similar to this proposed project are discussed fully in the Louisiana Coastal Wetlands Restoration Plan and the Louisiana Coastal Area Programmatic EIS documents (LCWCRTF 1993; USACE 2004). This EA is tiered to that programmatic EIS which can be found at: http://lacoast.gov/reports/cwcrp/1993/1993lcwrp-all.pdf. To reiterate the problem, coastal Louisiana has been losing land at approximately 70 km^2 per year (Barras et al. 2008). The reasons for this rate of loss include natural subsidence, reduction of riverine inputs of sediment due to the construction of levees and dams (upriver), hurricanes, and hydrologic modification through channelization of marsh habitats. Restoration projects such as the proposed project BA-171 seek to offset this land loss through various methods, including marsh creation.

Agencies are focusing their restoration efforts in the coastal areas as described in Louisiana's 2012 Coastal Master Plan in an effort to maximize the limited amount of resources available to restore coastal Louisiana (CPRA, 2012).

4.5 Unavoidable Adverse Impacts

The unavoidable adverse impacts of Alternative 2 are related to construction activities. Construction activities will generate noise and air emissions but their impact is limited in scope and temporary in duration. Assuming construction of the containment dikes will be completed prior to dredging, the time to fill the marsh creation area would be approximately six months using a 30-inch hydraulic cutter head dredge and incorporating weather days. The estimated total construction time from mobilization to demobilization is approximately one year (CPRA, 2016b).

4.6 Relationship of Short-Term Uses and Long-Term Effects

Alternative 2, the proposed action alternative, will have some short-term, localized, adverse impacts in the form of lost or disturbed freshwater wetlands and long-term beneficial impacts. These impacts will be mitigated in the short-term through avoidance measures and in the long-term by the creation of additional acres of wetlands. No long-term adverse impacts to the affected resources are expected.

Beneficial impacts in the mid and long-term will be realized by the proposed project. These benefits are expected to be sustained for the duration of the 20-year project life.

Part 5. Conclusion

5.1 Conclusion

Coastal Louisiana is losing wetlands at a rate of approximately 70 km^2 per year due to natural and anthropogenic causes (Barras et al 2008). Restoration projects, such as the one proposed, seek to offset these losses in an attempt to slow or prevent the loss of wetland habitat in the future.

This EA finds that the Caminada Headlands Back Barrier Marsh Creation (BA-171) proposed project would have long-term beneficial impacts in coastal Louisiana and would not result in any significant direct, indirect, or cumulative adverse impacts. Construction-related adverse impacts are considered to be minor to moderate and not significant due to their limited duration and best management practices to minimize adverse impacts. This conclusion is based on a comprehensive review of relevant literature, site-specific data, project-specific engineering and environmental reports, as well as cumulative experience gained through other restoration projects in coastal Louisiana. The proposed action is projected to have no significant impacts.

5.2 Interagency Coordination

Coordination in development of the proposed action and its alternative, and the selection of the proposed action has been maintained with each CWPPRA Task Force agency. The project was vetted publicly through the CWPPRA process, which provides opportunities for the public and CWPPRA agencies to comment on the proposed project. Coordination with USFWS, NMFS and LDWF ensures that potential impacts to threatened or endangered species are evaluated. Coordination with NMFS confirmed that impacts to EFH were evaluated. The PMT has prepared a Joint Permit Application with supporting documentation to submit to the USACE. The Louisiana State Historic Preservation Office (SHPO) provided guidance on the presence of any historic or cultural resources that may be impacted by the project area, and has reviewed and concurred with the findings of the cultural resources investigation. Consultation with Tribes was

initiated and completed. Further consultation with the Chitimacha Tribe has been completed. The EPA is coordinating with USFWS for a determination on an exemption for the project under the Coastal Barrier Resources Act (CBRA), as the BA-171 project is located in CBRA Caminada Unit S03. The EPA received the Overgrazing Determination letter from the NRCS on October 4, 2016. (Appendix A).

5.3 Compliance with Applicable Laws and Regulations

Applicable federal, state and local laws and regulations were taken into account during the development of the proposed action to ensure compliance with these laws and regulations.

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U.S. Army Corps of Engineers, Fact Sheet at http://www.mvn.usace.army.mil/Missions/Environmental/CWPPRA.aspxU.S. Army Corps of Engineers, USACE, July 6, 2016. Letter in response to Solicitation of Views.

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U.S. Environmental Protection Agency, USEPA. 2016a. EJSCREEN Census 2010 Summary Report for BA-171 with 1-mile buffer.

U.S. Environmental Protection Agency, USEPA**,** 2016b, Final Project Information Sheet for Wetland Value Assessment (WVA), October 1, 2016.

U.S. Geological Survey, USGS. 2011. Caminada Headlands Back Barrier Marsh Creation Marsh Creation (BA-171) Land/Water analysis.

Appendix A:
Coordination and Consultation Correspondence

Choctaw Nation of Oklahoma

P.O. Box 1210 • Durant, OK 74702-1210 • (580) 924-8280

Gregory E. Pyle
Chief

Gary Batton
Assistant Chief

June 26, 2014

United States Environmental Protection Agency
Region 6
Attn: Adrian Chavarria, Environmental Engineer (6WQ-EC)
Marine and Wetlands Section
1445 Ross Ave., Suite 1200
Dallas, TX 75202-2733

RE: Caminada Headlands Back Barrier Marsh Creation (BA-171), Lafourche Parish, LA

Dear Adrian Chavarria:

The Choctaw Nation of Oklahoma thanks the United States Environmental Protection Agency, Region 6, for the correspondence regarding the above referenced project. Lafourche Parish, LA lies outside of the Choctaw Nation of Oklahoma's area of historic interest. The Choctaw Nation of Oklahoma respectfully defers to the other Tribes that have been contacted. If you have any questions, please contact our office at 580-924-8280 ext. 2631.

Sincerely,

Dr. Ian Thompson, Ph.D., RPA
Tribal Historic Preservation Officer
Tribal Archaeologist, NAGPRA Specialist

By: Lindsey Bilyeu

Lindsey Bilyeu
NHPA Senior Section 106 Reviewer
lbilyeu@choctawnation.com
Choctaw Nation of Oklahoma
P.O. Drawer 1210
Durant, OK 74701

Jena Band of Choctaw Indians

P. O. Box 14 • Jena, Louisiana 71342-0014 • Phone: 318-992-2717 • Fax: 318-992-8244

July 29, 2014

EPA Region 6, 6WQ-EC
Attn: Adrian Chavarria
1445 Ross Avenue
Dallas, TX 75202

Re: Caminada Headland Back Barrier Marsh Creation Project

To Whom It May Concern:

In order to properly comment on the above-mentioned project, The Jena Band of Choctaw Tribal Historic Preservation Office is requesting any cultural and historic site files that may be available in terms of the project area. Also, please explain the undertaking and any ground disturbance that will occur. Thank you for your cooperation in this matter.

Sincerely,

Dana Masters
JBC THPO
P.O. Box 14
Jena, LA 71342-0014
(318)-992-1205

Prepared By:
Alina J. Shively
Alina J. Shively, Deputy THPO
jbc.thpo106@aol.com

Chavarria, Adrian

From: Dana Masters <danammasters@aol.com>
Sent: Friday, September 05, 2014 3:24 PM
To: Chavarria, Adrian
Subject: CAMINADA HEADLAND BACK BARRIER MARSH CREATION PROJECT

Thank you for providing information associated to this projects. We have reviewed all of the information and concur with the determinations found within the reports provided. Thanks again for your efforts in helping us protect our cultural resources.

Dana Masters
Jena Band of Choctaw Indians
Tribal Council Member
THPO/ Cultural Director
318-992-1205 (o)
318-374-0268 (c)
318-992-8244 fax
P.O. Box 14
Jena, La 71342

Chavarria, Adrian

From: Kimberly Walden <kim@chitimacha.gov>
Sent: Thursday, May 05, 2016 2:23 PM
To: Aldridge, Barbara
Cc: Renee Bennett (CPRA); Chavarria, Adrian; Elizabeth Davoli
Subject: RE: Caminada Headlands Back Barrier Marsh Creation (BA-171) CWPPRA project consultation

Dear Ms. Aldridge,

Thank you for following up. As I explained on the phone earlier, we have had our share of technical and staffing issues lately and are currently working to clear the resulting backlog.

I was able to find the letter and report you referenced. After review, we have no unaddressed concerns since the "previously proposed access corridors will no longer be used in order to avoid impacts to archaeological site 16LF274" and the borrow and fill areas have been surveyed.

Should any unanticipated discoveries be made, please contact me immediately.

Please keep in touch regarding start and completion dates. We have not yet reburied the human remains that need to be returned. If your project "may be years in the future", we may choose to rebury them prior to the start of this project.

Please let me know if you need anything else.

Sincerely,
Kimberly S. Walden

From: Aldridge, Barbara [mailto:aldridge.barbara@epa.gov]
Sent: Tuesday, April 26, 2016 8:26 AM
To: Kimberly Walden
Cc: Renee Bennett (CPRA); Chavarria, Adrian; Elizabeth Davoli
Subject: FW: Caminada Headlands Back Barrier Marsh Creation (BA-171) CWPPRA project consultation

Dear Ms. Walden,
Just a follow-up reminder – the project team would like to set up a conference call with you. Please let me know your availability to have a call. We look forward to hearing from you.
Thank you,

Barbara J Aldridge
Barbara J. Aldridge, CWPPRA Team, NEPA Coordinator
Marine, Coastal, & Analysis Section, 6WQ-EC
Ecosystems Protection Branch, Water Division
U.S. Environmental Protection Agency (EPA) Region 6
1445 Ross Avenue, Dallas TX 75202
(214) 665-2712 Office; (214) 310-6217 Work Cell

From: Aldridge, Barbara
Sent: Thursday, March 17, 2016 2:59 PM
To: Kim Walden <kim@chitimacha.gov>
Cc: Chavarria, Adrian <chavarria.adrian@epa.gov>; Renee Bennett (CPRA) <renee.s.bennett@la.gov>; 'Elizabeth Davoli'

<Elizabeth.Davoli@LA.GOV>; McCormick, Karen <McCormick.Karen@epa.gov>
Subject: Caminada Headlands Back Barrier Marsh Creation (BA-171) CWPPRA project consultation

Ms. Walden,

The EPA recently sent out a Solicitation of Views, dated March 2, 2016, requesting comments on the CWPPRA project, "Caminada Headlands Back Barrier Marsh Creation," (BA-171). By way of background, the project management team had a call with you back on June 18, 2014, to discuss your concerns (notes attached). On June 19, 2014, Ms. Renee Bennett, CPRA project manager, sent you a map by email showing the project footprint with an overlay of previously recorded archaeological sites. On June 10, 2014, Adrian Chavarria, EPA project manager, sent you a letter requesting your comments on potential issues in the project area (attached). We have no further correspondence with you or the Chitimacha Tribe in our records.

Previous consultation with the Chitimacha Tribe was undertaken in 2014 in regard to repatriation of human remains. The EPA is the federal sponsor for the next increment of Caminada Headlands Marsh, BA-193, (adjacent and to the east of the BA-171 project), which was recently approved for engineering and design by the CWPPRA Task Force. Both EPA and CPRA recommend that the Chitimacha not wait for either Caminada project constructions to be completed before repatriating remains, as that may be years in the future.

We are sending you, under separate cover, a copy of the final archaeological report for the conveyance corridors. Please note one of the previously proposed access corridors will no longer be used in order to avoid impacts to archaeological site 16LF274. The borrow area was previously surveyed by R. Christopher Goodwin and Associates and the fill area was previously surveyed by Coastal Environments, Inc. for USACE's LCA project (see attached letters).

After you receive the archaeological report, the BA-171 project management team would like to set up a follow-up call with you to make sure that we have addressed all the Chitimacha Tribe's concerns in order to complete consultation under Section 106.

Please let me know your availability to have a call. Please feel free to contact me if you have any questions or need any more information. I look forward to hearing from you.

Thank you,

Barbara J Aldridge
Barbara J. Aldridge, CWPPRA Team, NEPA Coordinator
Marine, Coastal, & Analysis Section, 6WQ-EC
Ecosystems Protection Branch, Water Division
U.S. Environmental Protection Agency (EPA) Region 6
1445 Ross Avenue, Dallas TX 75202
(214) 665-2712 Office; (214) 310-6217 Work Cell

Kimberly Walden

Cultural Director / Tribal Historic Preservation Officer
3287 Chitimacha Trail
P.O. Box 661
Charenton, Louisiana 70523
Phone:(337) 923-9923
Fax: (337) 923-6848
Email: kswalden@chitimacha.gov
Website: http://www.chitimacha.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

PHIL BOGGAN
INTERIM ASSISTANT SECRETARY

21 September 2015

Adrian Chavarria
Environmental Engineer
EPA Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

Re: Draft Report
La Division of Archaeology Report No. 22-5051
Geohazard and Archaeological Assessment for Caminada Headlands Back Barrier Marsh Creation Project, Lafourche, Louisiana

Dear Mr. Chavarria:

We acknowledge receipt of your letter dated 8 September 2015 and two copies of the above-referenced report. We have completed our review of this report and offer the following comments.

Our office concurs that no historic properties will be impacted by construction and use of the West Access Area, and we have no further concerns for this area.

We also concur that in the North Access Area magnetic anomalies M04 through M10 should be avoided by a 300 foot buffer unless they are investigated by a diver to determine the nature of the anomaly. If diver investigations are conducted, we request the opportunity to review the diver's report and evaluate whether the anomaly is a cultural resource or a modern object.

Of greater concern is the potential for the North Access Area to cross a submerged archaeological site. Our office maintains an online GIS with the location of known archaeological sites plotted; site 16LF274 appears to lie within the project area. Furthermore, the "Hard Return" mapped under the Sand Waves on Figure 8 of the Archaeological Analysis report appears to be positioned approximately where the site is reported. This hard return is likely a shell deposit (see page 40 of the report) and may represent a prehistoric shell midden. Numerous artifacts wash up on the modern Caminada beach (site 16LF282), including occasional human remains, and it is our opinion that they are being eroded from a site currently submerged offshore. This is mostly likely 16LF274 situated on a now submerged natural levee of Bayou Moreau. The fact that the hard return lies in close proximity to a buried channel just to the north further suggests the return represents a cultural deposit associated with the former Bayou Moreau. Our office recommends that the North Access Area be moved to avoid the location of 16LF274, or if this is not possible, that additional investigations be undertaken to determine whether the site lies in the project area, if so, whether any intact deposits are present, and whether it is eligible for nomination to the National Register of Historic Places.

Our office requests a revised report that addresses the location of sites 16LF274 and 16LF282, and their position relative to the proposed North Access Area and to potential archaeological deposits mapped by the sub-bottom profiler data.

We concur with the proposed Unanticipated Discoveries Plan.

We look forward to receiving two copies of the revised 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,

Phil Boggan
Deputy State Historic Preservation Officer

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS TX 75202-2733

2014-08-14

Ms. Pam Breaux
State Historic Preservation Officer
Division of Archeology
Louisiana Office of Cultural Development
P.O. Box 44247
Baton Rouge, LA 70804-4247

No known historic properties will be affected by this undertaking. This effect determination could change should new information come to our attention.

Pam Breaux 8-28-14
Pam Breaux Date
State Historic Preservation Officer

Dear Ms. Breaux:

The U.S. Environmental Protection Agency (EPA), Region 6 is requesting consultation for the proposed borrow site for the Caminada Headland Back Barrier Marsh Creation Project (BA-171) provided for under the authority of the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA). The proposed borrow site for BA-171 was previously evaluated for the Louisiana Coastal Area (LCA) Barataria Basin Barrier Shoreline Restoration Project.

The primary goal of the project is to create/nourish 430 acres of back barrier marsh behind 3.5 miles of the Caminada beach using material dredged from a previously approved borrow site for the Louisiana Coastal Area (LCA) Barataria Basin Barrier Shoreline Restoration Project, located in the Gulf of Mexico. This project will create a platform upon which the beach and dune can migrate, reducing the likelihood of breaching, improving longevity of the barrier shoreline, and protecting wetlands and infrastructure to the north and west of the project area.

The U.S. Army Corps of Engineers (USACE) New Orleans District evaluated a 520 acre (210.4 hectare) borrow area located 4.7 miles (7.6 km) southwest of Caminada Pass in LaFourche Parish as part of the investigations conducted for the Louisiana Coastal Area (LCA) Barataria Basin Barrier Shoreline Restoration project. The borrow area was surveyed by R. Christopher Goodwin and Associates (Goodwin) in 2006. Goodwin's survey included data collection with a *Trimble* AG132 differential global positioning system, a *Marine Sonic* 600 kHz digital side scan sonar, a *Geometrics* digital marine cesium magnetometer, an *Imagenex* 1030F digital sub bottom profiler, and a *Cetrek* digital echosounder. A total of 30 transects spaced at 50-foot intervals were surveyed for a total of 453,000 linear feet (138,074.4 linear meters). The survey registered a total of 100 magnetic anomalies, 40 acoustic anomalies, and 19 sub-bottom profiler anomalies; all of the identified anomalies appeared to represent modern debris and/or geological features. Your office concurred with results documented in Goodwin's report on September 20, 2007.

A copy of the survey titled *Phase I Underwater Remote Sensing Survey of The Caminada Headlands Borrow Area for the Louisiana Coastal Area Barrier Shoreline Restoration Project*, prepared by R. Christopher Goodwin and Associates, has been enclosed along with the approval

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS TX 75202-2733

Ms. Pam Breaux
State Historic Preservation Officer
Division of Archeology
Louisiana Office of Cultural Development
P.O. Box 44247
Baton Rouge, LA 70804-4247

The proposed undertaking will have no adverse effect on historic properties. This effect determination could change should new information come to our attention.

Pam Breaux 5-26-15
Pam Breaux Date
State Historic Preservation Officer

Dear Ms. Breaux:

The U.S. Environmental Protection Agency (EPA), Region 6 is requesting consultation for the proposed fill areas that are to receive sediment dredged from an offshore borrow site for the Caminada Headland Back Barrier Marsh Creation Project (BA-171) provided for under the authority of the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA). The proposed borrow site for BA-171 was previously evaluated for the Louisiana Coastal Area (LCA) Barataria Basin Barrier Shoreline Restoration Project.

The primary goal of the project is to create/nourish 430 acres of back barrier marsh behind 3.5 miles of the Caminada beach using material dredged from a previously approved borrow site for the Louisiana Coastal Area (LCA) Barataria Basin Barrier Shoreline Restoration Project, located in the Gulf of Mexico. This project will create a platform upon which the beach and dune can migrate, reducing the likelihood of breaching, improving longevity of the barrier shoreline, and protecting wetlands and infrastructure to the north and west of the project area.

The U.S. Army Corps of Engineers (USACE) New Orleans District evaluated a 10,345 acre (4,186.62 hectare) of land and water situated between Caminada Pass to the east and Belle Pass to the west, between Louisiana Highway No. 1 (LA 1) on the north and the Gulf of Mexico on the south.

Coastal Environments, Inc. conducted a cultural resource survey within the study area of the Caminada Headlands. A total of 1,006 acres of the 10, 345 acre project area was examined during the survey. The survey began on March 6, 2006 and was completed on April 19, 2006 and included data collection of all relict chenier ridges and natural levees within the marsh creation and ridge restoration portion of the study area, an examination of the study area slated for shoreline restoration and additional marsh creation, and an examination of known sites, possible sites and newly discovered sites in the study area in an effort to acquire information on each site's size, condition and possible cultural affiliation. A total of four new archeological sites 16LF271, 272, 273, and 274, were recorded during the current survey.

A copy of the survey titled *Cultural Resources Survey of the Caminada Headlands Restoration Feasibility Study, LaFourche and Jefferson Parishes, Louisiana*, prepared by Coastal Environments, Inc., has been enclosed for your reference.

Thank you for your assistance in this matter. Should you require further information, please feel free to contact me at (214) 665-3103 or email at chavarria.adrian@epa.gov.

Sincerely,

3/27/15

Adrian Chavarria
Environmental Engineer (6WQ-EC)
Marine and Wetlands Section

Enclosures: 2

USDA

United States Department of Agriculture

October 4, 2016

Mr. Adrian Chavarria
Environmental Engineer (6WQ-EC)
U.S. Environmental Protection Agency
Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

Dear Mr. Adrian:

RE: Caminada Headland Back Barrier Marsh Creation (BA-171)

I am in receipt of your request for an overgrazing determination for Caminada Headland Back Barrier Marsh Creation (BA-171). I contacted our local district conservationist and our state grazing land specialist to discuss the grazing in the project area. Currently, livestock are not grazing in the area, nor do we see a potential for grazing once the project is installed. Therefore, it is our opinion, overgrazing is not a problem in this project area. If you have any questions please let me know.

Sincerely,

W. Britt Paul
Assistant State Conservationist/Water Resources

Cc: (electronic distribution only)
Randolph Joseph, Assistant State Conservationist/Field Operations, Lafayette, Louisiana
John Boatman, District Conservationist, Donaldsonville, Louisiana
Richard Rice, State Grazing Land Specialist, Alexandria, Louisiana

Natural Resources Conservation Service
State Office
3737 Government Street
Alexandria, Louisiana 71302
Voice: (318) 473-7751 Fax: (318) 473-7626

JOHN BEL EDWARDS
GOVERNOR

State of Louisiana
DEPARTMENT OF WILDLIFE AND FISHERIES

CHARLES J. MELANCON
SECRETARY

March 16, 2016

Ms. Karen McCormick, Section Chief
Marine, Coastal, & Analysis Section
United States Environmental Protection Agency
1445 Ross Avenue
Dallas, TX 75202

RE: *Application Number: BA-171*
Applicant: Environmental Protection Agency
Notice Date: March 4, 2016

Dear Ms. McCormick:

The professional staff of the Louisiana Department of Wildlife and Fisheries (LDWF) has reviewed the above referenced notice for the proposed Caminada Headland Back Barrier Marsh Creation project located in Lafourche Parish, Louisiana. Based upon this review, the following has been determined:

It is anticipated that this proposed Coastal Wetlands Planning, Protection and Restoration Act project will benefit wildlife resources; therefore, Ecological Studies has no objection.

Louisiana Natural Heritage Program:
The piping plover (*Charadrius melodus*) may occur within one mile of the project area. This species is federally listed as threatened with its critical habitat designated along the Louisiana coast. Piping plovers winter in Louisiana feeding at intertidal beaches, mudflats, and sand flats with sparse emergent vegetation. Primary threats to this species are destruction and degradation of winter habitat, habitat alteration through shoreline erosion, woody species encroachment of lake shorelines and riverbanks, and human disturbance of foraging birds. For more information on piping plover critical habitat, visit the U.S. Fish and Wildlife website: http://endangered.fws.gov.

Our database also indicates that Wilson's Plover (*Charadrius wilsonia*) may occur in your project area. This species holds a state rank of S1S3B, S3N and is considered critically imperiled to rare in Louisiana. This species is found year round in Louisiana, breeding along the Gulf coast and wintering in southwest Louisiana. This colonial nester has a breeding season that begins in early April and extends into August, and is commonly found on beaches, sand flats, and fresh dredged-material. Threats to Wilson's plover include habitat loss/degradation due to coastal development, beach stabilization and re-nourishment, sediment diversion, disturbance by humans, environmental contaminants, and un-naturally high populations of predators. We recommend that you take the necessary precautions to protect the breeding/wintering habitat of this species. If you have any questions or need additional information, please call Louisiana Natural Heritage Program at 225-763-3554.

Our database indicates the presence of bird nesting colonies within one mile of this proposed project. **Please be aware that entry into or disturbance of active breeding colonies is prohibited by the Louisiana Department of Wildlife and Fisheries (LDWF). In addition, LDWF prohibits work within a certain radius of an active nesting colony.**

Nesting colonies can move from year to year and no current information is available on the status of these colonies. If work for the proposed project will commence during the nesting season, conduct a field visit to the worksite to look for evidence of nesting colonies. This field visit should take place no more than two weeks before the project begins. If no nesting colonies are found within 400 meters (700 meters for brown pelicans) of the proposed project, no further consultation with LDWF will be necessary. If active nesting colonies are found within the previously stated distances of the proposed project, further consultation with LDWF will be required. In addition, colonies should be surveyed by a qualified biologist to document species present and the extent of colonies. Provide LDWF with a survey report which is to include the following information:

1. qualifications of survey personnel;
2. survey methodology including dates, site characteristics, and size of survey area;
3. species of birds present, activity, estimates of number of nests present, and general vegetation type including digital photographs representing the site; and
4. topographic maps and ArcView shapefiles projected in UTM NAD83 Zone 15 to illustrate the location and extent of the colony.

Please mail survey reports on CD to: Louisiana Natural Heritage Program
La. Dept. of Wildlife & Fisheries
P.O. Box 98000
Baton Rouge, LA 70898-9000

To minimize disturbance to colonial nesting birds, the following restrictions on activity should be observed:

- For colonies containing nesting wading birds (i.e., herons, egrets, night-herons, ibis, roseate spoonbills, anhingas, and/or cormorants), all project activity occurring within 300 meters of an active nesting colony should be restricted to the non-nesting period (i.e., September 1 through February 15).

- For colonies containing nesting gulls, terns, and/or black skimmers, all project activity occurring within 400 meters (700 meters for brown pelicans) of an active nesting colony should be restricted to the non-nesting period (i.e., September 16 through April 1).

The Louisiana Department of Wildlife and Fisheries submits these recommendations to the U.S. Army Corps of Engineers in accordance with provisions of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.). Please do not hesitate to contact Habitat Section biologist Zachary Chain at 225-763-3587 should you need further assistance.

Sincerely,

Kyle F. Balkum
Biologist Director

zc/cm

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

REPLY TO
ATTENTION OF

JUL 0 6 2016

Operations Division
Operations Manager,
Completed Works

Ms. Barbara Aldridge
US EPA Region 6
1445 Ross Avenue
Dallas, Texas 75202

Dear Ms. Aldridge:

This is in response to your Solicitation of Views request dated March 02, 2016, concerning the Caminada Headland Back Barrier Marsh Creation in Lafourche Parish, Louisiana.

We have reviewed your request for potential Department of the Army regulatory requirements and impacts on any Department of the Army projects.

We do not anticipate any adverse impacts to any Corps of Engineers projects.

We have reviewed your project as proposed and determined that a Department of the Army (DA) permit under Section 404 of the Clean Water Act and a DA permit under Section 10 of the Rivers and Harbors Act will be required.

You are advised that this approved jurisdictional determination is valid for a period of 5 years from the date of this letter unless new information warrants revision prior to the expiration date or the District Commander has identified, after public notice and comment, that specific geographic areas with rapidly changing environmental conditions merit re-verification on a more frequent basis.

Please be advised that this property is in the Louisiana Coastal Zone and a Coastal Use Permit may be required prior to initiation of any activities on this site. For additional information, contact Ms. Christine Charrier, Office of Coastal Management, Louisiana Department of Natural Resources at (225) 342 7953.

Off-site locations of activities such as borrow, disposals, haul-and detour-roads and work mobilization site developments may be subject to Department of the Army regulatory requirements and may have an impact on a Department of the Army project.

You should apply for said permit well in advance of the work to be performed. The application should include sufficiently detailed maps, drawings, photographs, and descriptive text for accurate evaluation of the proposal.

Please contact Mr. Robert Heffner, of our Regulatory Branch by telephone at (504) 862-1288, or by e-mail at Robert.A.Heffner@usace.army.mil for questions concerning wetlands determinations or need for on-site evaluations. Questions concerning regulatory permit requirements may be addressed to Mr. John Herman by telephone at (504) 862-1581 or by email at John.M.Herman@usace.army.mil.

Future correspondence concerning this matter should reference our account number MVN-2016-00784-SA. This will allow us to more easily locate records of previous correspondence, and thus provide a quicker response.

Sincerely,

Karen L. Clement

Karen L. Clement
Solicitation of Views Manager

Copy Furnished:

Ms. Christine Charrier
Coastal Zone Management
Department of Natural Resources
Post Office Box 44487
Baton Rouge, Louisiana 70804-4487

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

March 15, 2016 F/SER46/RH:jk
225/389-0508

Ms. Barbara Aldridge,
NEPA Coordinator
US Environmental Protection Agency
Region 6, 6WQ-EC
1445 Ross Avenue
Dallas, Texas 75202

Dear Ms. Aldridge:

NOAA's National Marine Fisheries Service (NMFS) has received the March 2, 2016, Solicitation of Views (SOV) notice pertaining to the preparation of a draft Environmental Assessment (EA) for the Caminada Headland Back Barrier Marsh Creation (BA-171) Project funded under the auspices of the Coastal Wetlands Planning Protection and Restoration Act (CWPPRA). The purpose of the project is to create and nourish 430 acres of marsh using sediment dredged from offshore borrow sources for placement behind the Caminada shoreline in Lafourche Parish, Louisiana. This letter provides our recommendations on issues and resources NMFS believes should be addressed in the draft EA for the project.

Both the area to be dredged and the marsh creation sites are located in areas designated as essential fish habitat (EFH) under provisions of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). Both dredging and fill placement have the potential to adversely impact EFH. The Magnuson-Stevens Act requires federal agencies proposing to undertake any action which could adversely impact EFH to coordinate with NMFS on the impacts of their actions and evaluate less damaging alternatives. The NMFS has a findings with the CWPPRA program that coordination requirements of the Magnuson-Stevens Act would be fulfilled through our review and comment on documents completed in compliance of NEPA.

The NMFS recommends the EA completed for this project include a section entitled "Essential Fish Habitat" which describes the federally managed fishery species and life stages having EFH in the project areas, and the habitat categories potentially impacted by project implementation. Detailed information on federally managed fishery species and their EFH is provided in the 2005 generic amendment of the Fishery Management Plans for the Gulf of Mexico prepared by the Gulf of Mexico Fishery Management Council. The generic amendment was prepared as required by the Magnuson-Stevens Act. The EFH section should analyze the potential impacts and benefits of the project on federally managed species and life stages utilizing these categories of EFH and fully evaluate alternative measures to avoid, minimize, and offset adverse impacts to EFH and marine fishery species. The evaluation of impacts should quantify acreages of all habitat categories impacted by project implementation as well as categories to be created. Descriptive and analytical information, coupled with a statement of the agency's conclusions regarding the effects of the

action on EFH and marine fishery species would provide the basic details necessary for an EFH assessment pursuant to the requirements of 50 CFR 600.920(e).

The draft EA also should contain a section entitled "Marine Fishery Resources" which describes the use of borrow and fill sites by economically important shellfish and finfish not being managed under provisions of the Magnuson-Stevens Act, as well as aquatic resources supportive of the aquatic food web. Similar information on impacts to habitat categories as provided for the EFH section should be provided in this section of the EA as well.

While NMFS supports the use of dredged material to create marsh, we are concerned about the potential for project implementation to result in the conversion of water bottoms and water column categorized as EFH to upland habitats. Such a loss of EFH would occur if supratidal elevations resulted from fill placement. The draft EA should identify initial and final elevations which are based on geotechnical analyses of site conditions from both borrow and marsh creation areas. The draft EA should provide a general description of the methodology supporting the geotechnical analysis. Additionally, the draft EA should discuss adaptive management actions which may be taken if fill placement results in elevations exceeding those of the target elevations.

The draft EA also should discuss the temporal loss of EFH resulting from the construction of containment dikes around the marsh creation area, if such features are planned. The project design should not assume the containment dikes would breach naturally and at the appropriate places to restore drainage, tidal connectivity, and marine fishery access to the project area. Rather, the document should identify the design and method of construction of containment dikes and discuss how, when, and where the dikes would be breached to restore tidal influence to the project area.

Please note that our Protected Resources Division is responsible for all issues regarding threatened and endangered species and marine mammals for which NMFS is responsible. The draft EA should analyze the potential impacts of the proposed project on endangered species and fully evaluate alternative measures to avoid adverse impacts to those species. For information regarding those resources and alternatives to minimize adverse impacts, please coordinate with Mr. David Bernhart of the NMFS' Protected Resources Division at (727) 824-5312.

We appreciate the opportunity to comment on this SOV notice. If you wish to discuss our comments further, please contact Richard Hartman of our Habitat Conservation Division, Baton Rouge Office at (225) 389-0508, extension 203.

Sincerely,

Virginia M. Fay
Assistant Regional Administrator
Habitat Conservation Division

c:
FWS, Lafayette, Clark
EPA, Dallas, McCormick
NRCS, Paul
F/SER46, Swafford
Files

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TEXAS 75202 – 2733

June 29, 2018

Mr. Joseph A. Ranson
Field Supervisor
U.S. Fish and Wildlife Service
Louisiana Ecological Services Office
646 Cajundome Blvd., Suite 400
Lafayette, LA 70506

SUBJECT: Caminada Headlands Back Barrier Marsh Creation project (BA-171) funded by the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA), Endangered Species Act, Section 7 Determination

Dear Mr. Ranson:

The Environmental Protection Agency Region 6 requests the U.S. Fish and Wildlife Service's concurrence on our determination that the Caminada Headlands Back Barrier Marsh Creation project (BA-171) "may affect, but is not likely to adversely affect" the West Indian manatee (*Trichechus manatus*), Kemp's Ridley sea turtle (*Lepidochelys kempii*), Loggerhead sea turtle (*Caretta caretta*), Red Knot (*Calidris canutus rufa*), and the Piping Plover (*Charadrius melodus*) or its designated critical habitat.

A description of the project, as well as information related to potential impacts to threatened/endangered species or critical habitat, is enclosed. If you require further assistance or have questions regarding our determination, please contact Dr. Sharon L. Osowski (214-665-7506; Osowski.sharon@epa.gov) of my staff.

Sincerely,

for David F. Garcia, P.E.
Acting Director
Water Division

Enclosures

This project has been reviewed for effects to Federal trust resources under our jurisdiction and currently protected by the Endangered Species Act of 1973 (Act). The project, as proposed,
( ) Will have no effect on those resources
(X) Is not likely to adversely effect these resources

Joseph A. Ranson 12 Jul 18
Supervisor Date
Louisiana Ecological Services Office
U.S. Fish and Wildlife Service

Project Description

BA-171 is a backbarrier marsh creation project funded through CWPPRA where EPA is the federal sponsor and CPRA is the State partner. The Caminada Headland is defined as the area south of Louisiana Highway 1 between Belle Pass and Caminada Pass (Figure 1). The project is located directly behind the Caminada headland beach covering areas in and around Bay Champagne and areas east of Bayou Moreau, in Lafourche Parish, Louisiana. The Caminada Headland consists of a sand dune, beach berm, barrier marshes, and chenier ridges interspersed with mangrove thickets, coastal dune shrub thickets, lagoons, and small bayous.

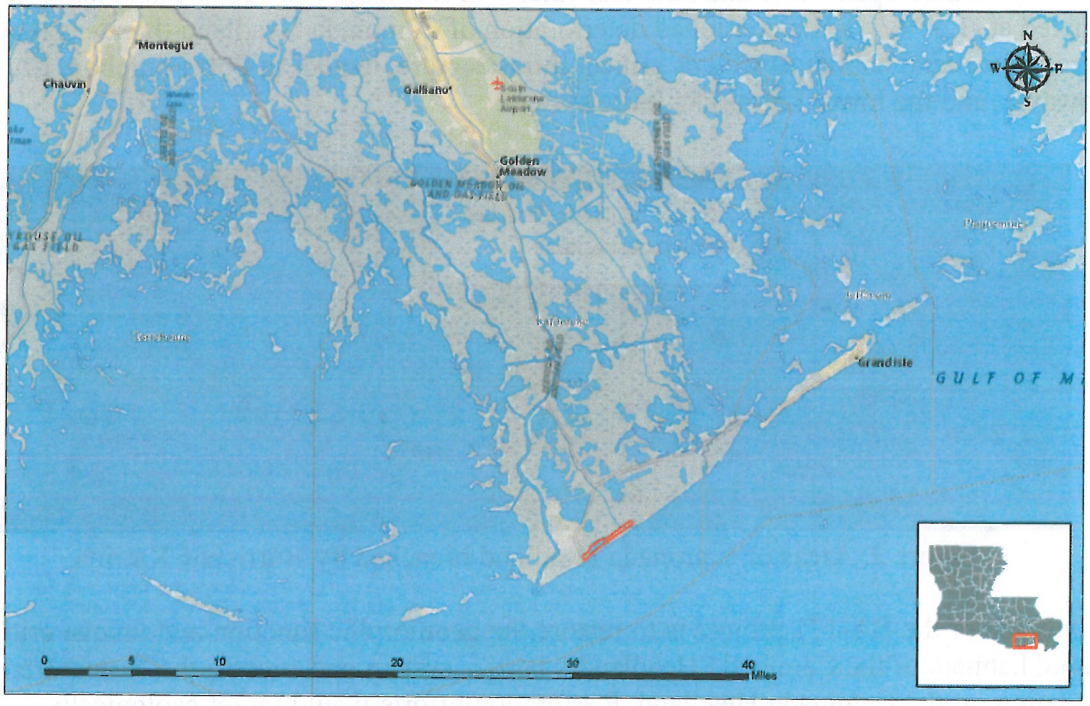

Figure 1. BA-171 project location.

Caminada Beach and Dune Restoration Increment 1 (BA-45), funded through a combination of State Coastal Impact Assistance Program (CIAP) and State surplus funds was completed in 2014. It is expected that the restored beach will greatly reduce the likelihood of breaching and reduce historical shoreline migration rates. BA-171 (Figure 2) is designed to work synergistically with BA-45 further decreasing the likelihood of breaches and improving the longevity of the shoreline.

BA-171 is located in an especially dynamic area of the Louisiana Coast. The landward shoreline migration of the beach will significantly impact the project area over the 20-year life of the project. Historic shoreline migration rates average 41.4 ft/year over the last century (Williams et al. 1992; Penland et al. 2005; and Martinez et al. 2009).

The Caminada Headland has experienced some of the highest shoreline retreat rates in Louisiana, measuring between 55 and 65 ft per year from 1998-2010. Historically the shoreline has migrated landward at about 40 ft per year (Penland et al. 2005). Between 2006 and 2011

shoreline migration increased dramatically, exceeding 80 ft per year near Bay Champagne and 110 ft per year in the Bayou Moreau area (CEC 2012). The increased losses occurred in the wake of Hurricanes Katrina and Rita in 2005 as the breaches remained open for an extended length of time (Figure 2). The losses were exacerbated by Tropical Storm Fay and Hurricanes Gustav and Ike in 2008 (CEC 2012; USACE 2012). Significant prolonged breaches greatly increase the net export of sediment from the headland (CEC 2012).

In addition to the shoreline migration, the area is also experiencing high loss rates of interior marshes. As the beach and dune continue to migrate landward, overwashed sediment will be lost into newly formed open water and land loss rates will increase. The subunit land loss rate is estimated at -1.47%/yr. The continued deterioration of Caminada Headland threatens thousands of acres of wetland habitat as well as critical infrastructure, including Port Fourchon, LA Highway 1, and the lower Lafourche levee system.

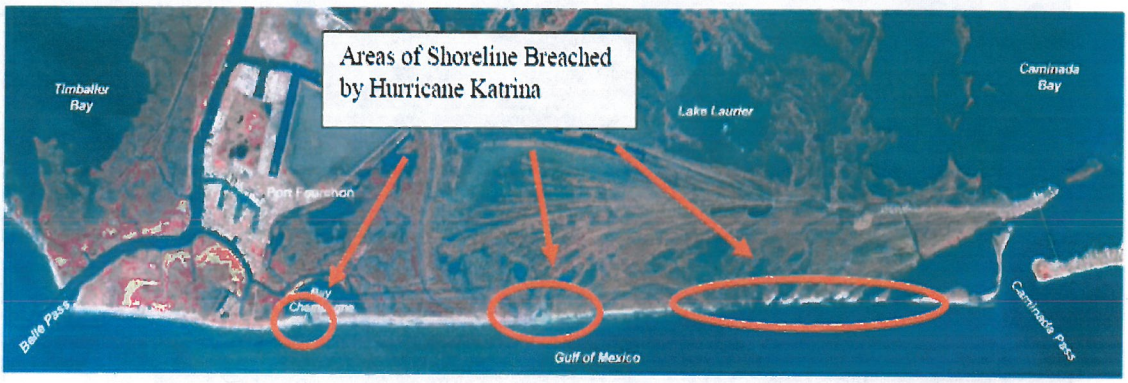

Figure 2. Areas of Caminada Headland breached by Hurricane Katrina.

The purpose of the BA-171 project is to restore the geomorphic function and unique critical and essential habitats of the Caminada Headland's barrier system and reverse the current trend of degradation on the Caminada Headland. Restoration efforts would target ecologically distinct, critical, high priority areas that would increase sustainability with essential form and function of the natural barrier ecosystem. The goals and objectives for the BA-171 project restoring the Caminada Headland back barrier marsh include:

- Create 248 acres and nourish 137 acres of emergent back barrier marsh by pumping sediment from a borrow site approximately 1.5 miles offshore
- Create a platform upon which the beach and dune can migrate, reducing the likelihood of breaching, increasing the retention of overwashed sediment, improving the longevity of the barrier shoreline, and protecting wetlands and infrastructure to the north and west.
- Slow the current trend of degradation in the headland.

The marsh creation and nourishment cells were designed to minimize impacts on existing marsh and mangroves. Assuming that there would be some natural recruitment, vegetative plantings are not planned until years 1 and 3 and will be at a density of 50%. Containment dikes will be degraded or gapped by year 3, as needed, to allow access for estuarine organisms. The marsh creation design was broken into four (4) components: the marsh creation fill area, the earthen containment dikes, the dredge borrow area, and the dredge pipeline alignments (Figure 3).

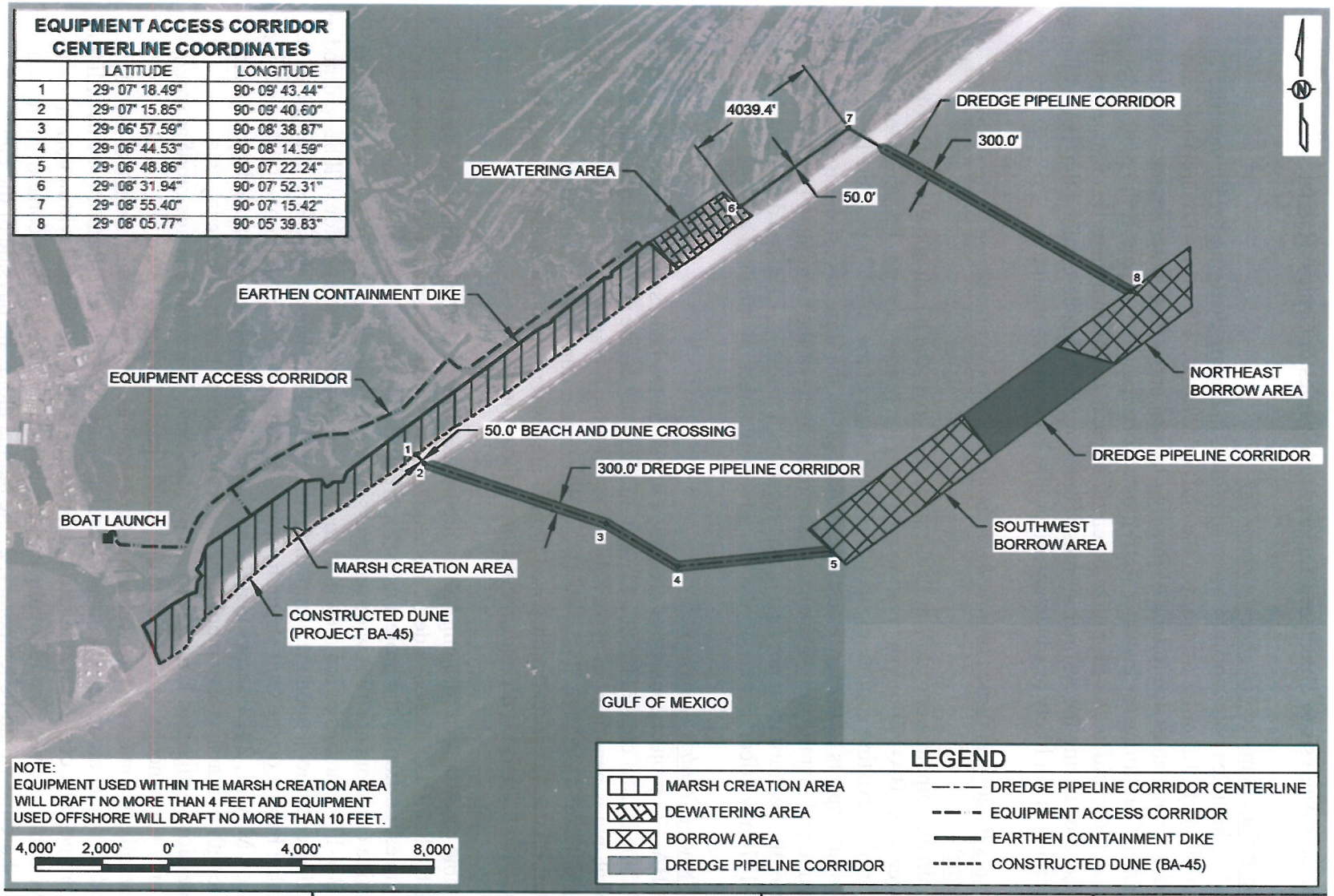

Figure 3. BA-171 Project layout, June 2018.

Potential Impacts Analysis to Threatened/Endangered Species or Critical Habitat

West Indian manatee (*Trichechus manatus)*

BA-171 includes both land and water activities, including dredging for fill material approximately 1.5 miles offshore in the Gulf of Mexico. EPA does not anticipate any impacts to manatees due to lack of foraging habitat and a freshwater source. Standard Manatee Conditions for In-water Activities will be included as part of the project design and should avoid and/or minimize potential impacts to any manatees that may enter the project area during the warmer months. Therefore, EPA has determined that BA-171 may affect, but is not likely to adversely affect, the West Indian manatee.

Kemp's Ridley sea turtle (*Lepidochelys kempii*) and Loggerhead sea turtle (*Caretta caretta*)

The dredge pipeline corridors are 50 ft wide and cross the beach and dune area of BA-45 to access the BA-171 marsh creation area from the borrow source. This corridor will be returned to existing conditions upon the completion of the BA-171 project. The area of potential impacts to sea turtle nesting is small, given the limited corridor for the dredge pipeline and that the turtles have access to other areas of the Caminada Headland. Currently, sea turtles do not nest in this location. Therefore, EPA has determined that BA-171 may affect, but is not likely to adversely affect, nesting sea turtles.

Red Knot (*Calidris canutus rufa*)

The BA-171 project consists of creating a marsh on the back side of the existing beach and dune habitat created by BA-45. BA-171 will not create additional beach or dune habitat, but is beneficial to those habitats by creating a platform for the beach and dune material to roll back on. Thus, the BA-45 beach and dune material is not lost to open water. Figure 4 depicts the proposed project area where open water areas would be converted to marsh with implementation of the project.

Suitable roosting and foraging habitat are located on the Gulf shoreline, and the only suitable habitat on the bayside of the headland is a relatively small mudflat area in the southwest portion of the project area (Figure 4) (less than 0.25 acres). The dredge pipeline corridors are 50 ft wide and cross the beach and dune area of BA-45 to access the BA-171 marsh creation area from the borrow source. That corridor will be returned to existing conditions upon the completion of the BA-171 project; thus, any impacts to suitable habitat on the Gulf shoreline would be temporary. In addition, a field visit to the area on May 11, 2018, shows that the habitat on the bayside of the created dune (along the length of marsh creation polygon) has vegetated so that it is currently in a successional stage that is not preferred by red knots. The small bayside mudflat would be the only permanently affected area of suitable habitat, which if avoided, would also eventually become vegetated and no longer suitable. Given the abundance of nearby suitable habitat along the Caminada Headland and at West Belle Pass, any birds utilizing the project area could disperse into nearby habitats that are located within normal daily movement patterns. The following conditions exist: 1) the pipeline corridor along the Gulf shoreline would be temporary, 2) the habitat along the bayside of the dune is in a non-preferred successional stage, 3) the small mudflat would eventually become

vegetated (and thus, unsuitable), and 4) birds would not be forced to disperse beyond normal daily movement patterns. Because of these listed conditions, EPA has determined that BA-171 may affect, but is not likely to adversely affect, the red knot.

Piping Plover (*Charadrius melodus*) or its designated critical habitat

The BA-171 project consists of creating a marsh on the back side of the existing beach and dune habitat created by BA-45. BA-171 will not create beach or dune habitat, but is beneficial to those habitats by creating a platform for the beach and dune material to roll back on. Thus, the BA-45 beach and dune material is not lost to open water. Figure 4 depicts the proposed project area where open water areas would be converted to marsh with implementation of the project.

Suitable roosting and foraging habitat are located on the Gulf shoreline, and the only suitable habitat on the bayside of the headland is a relatively small mudflat area in the southwest portion of the project area (Figure 4) (less than 0.25 acres). The dredge pipeline corridors are 50 ft wide and cross the beach and dune area of BA-45 to access the BA-171 marsh creation area from the borrow source. That corridor will be returned to existing conditions upon the completion of the BA-171 project; thus, any impacts to suitable habitat on the Gulf shoreline would be temporary. In addition, a field visit to the area on May 11, 2018, shows that the habitat on the bayside of the dune (along the length of marsh creation polygon) has vegetated so that it is currently in a successional stage that is not preferred by piping plovers. The small bayside mudflat would be the only permanently affected area of suitable habitat, which if avoided, would also eventually become vegetated and no longer suitable. Given the abundance of nearby suitable habitat along the Caminada Headland and at West Belle Pass, any birds utilizing the project area could disperse into nearby habitats that are located within normal daily movement patterns. The following conditions exist: 1) the pipeline corridor along the Gulf shoreline would be temporary, 2) the habitat along the bayside of the dune is in a non-preferred successional stage, 3) the small mudflat would eventually become vegetated (and thus, unsuitable), and 4) birds would not be forced to disperse beyond normal daily movement patterns. Because of these listed conditions, EPA has determined that BA-171 may affect, but is not likely to adversely affect, the piping plover.

The BA-171 project area occurs within Unit LA-5 of designated critical habitat for the piping plover. Piping plover critical habitat consists of primary constituent elements (PCEs) that provide for piping plover life-history processes and are essential for conservation of the species. PCEs of wintering piping plover critical habitat include sand or mud flats (or both) with no or sparse emergent vegetation. Adjacent unvegetated or sparsely vegetated sand, mud, or algal flats above high tide are also important PCEs for roosting piping plovers. PCEs of the beach/dune ecosystem include surf-cast algae, natural wrack, sparsely vegetated back beach and salterns, spits, and over-wash areas. Over-wash areas are broad, unvegetated zones, with little or no topographic relief, that are formed and maintained by the action of hurricanes, storm surge, or other extreme wave action.

As stated in the earlier paragraph, the only mudflat habitat within the project area is a small area (less than 0.25 acres) (Figure 4) in the southwest portion of the BA-171 marsh creation polygon where current conditions demonstrate that it is vegetating into a successional stage that is not preferred piping plover habitat. In addition, other areas of the polygon (as indicated by the earlier paragraph) are currently in transition to a successional stage of non-preferred habitat because of the increase in vegetation. In this case, the PCEs for piping plover habitat do not exist or are in such small amounts that piping plovers would move to other, more preferred areas of the beach and dune to roost and forage. Effects of the pipeline corridor on the Gulf shoreline would consist of the necessary equipment and personnel required to install the dredge pipeline, maintain it during construction, and then remove it post-construction. Disturbance to natural wrack would be kept to a minimum to maintain the beach in natural conditions. The pipeline corridor would then be returned to pre-project conditions to the maximum extent practicable. Thus, any impacts to the beach and dune would be temporary and would not disrupt or permanently affect the natural coastal processes that maintain PCEs of critical habitat. Therefore, EPA has determined that BA-171 may affect, but is not likely to adversely affect, designated critical habitat for the piping plover.

References

Coastal Engineering Consultants, Inc. (CEC) 2012. Caminada Headland Beach and Dune Restoration (BA-45), Headland Restoration Template Alternatives Analysis Report. CPRA Contract No. 2503-10-16. Submitted to the Office of Coastal Restoration and Protection, Jan. 27, 2012.

Martinez, L., S. O'Brien, M. Bethel, S. Penland, & M. Kulp. 2009. Louisiana Barrier Island Comprehensive Monitoring Program (BICM). Vol. 2: Shoreline Changes and Barrier Island Land Loss 1800's – 2005. USGS and Pontchartrain Institute for Environmental Sciences, University of New Orleans. 32 pp.

Penland, S., P. F. Connor, Jr., A. Beall, S. Fearnley, & S. J. Williams. 2005. Changes in Louisiana's Shoreline: 1855 – 2002. *J. Coastal Research, Special Issue* (44): 7-39.

U.S. Army Corps of Engineers. (USACE) 2012. "Integrated Construction Report and Final Environmental Impact Statement for the Barataria Basin Barrier Shoreline Restoration" Marsh (BBBS Report). 2012. p3-71

Williams, S. J., S. Penland, & A. H. Sallenger, Jr., (eds.), 1992. Atlas of Shoreline Changes in Louisiana. Reston, Virginia. US Geological Survey, Miscellaneous 1-2150-A. 103 pp.

Figure 4. BA-171 Marsh Creation Polygon. The green circle indicates the approximate location of the mudflat under current conditions as of May 11, 2018.

Endangered Species Act (ESA) Project Review and Guidance for Other Federal Trust Resources Report

Instructions

Based on the information provided, this project requires further review. You may submit your project information to lafayette@fws.gov.

Please include the following information with your submission:

- a copy of this report
- project contact name and number
- project location in latitude and longitude, including staging areas if appropriate
- approximate date for project to begin and end
- full project description of work to be completed
- any other information that may be helpful for our review process

Contact the Louisiana Ecological Services Office at (337) 291-3100 for further assistance.

Project Description: Caminada Headlands Back Barrier Marsh Creation #1 (BA-171)

Requesting Agency: Environmental Protection Agency (EPA)

Project Coordinates: Latitude: Longitude:

Point of Contact: Sharon Osowski

Address: 1445 Ross Ave

City: Dallas **State:** Texas **Zip Code:** 75202

Phone Number 1: 214-665-7506 **Phone Number 2:** _____

Email Address: osowski.sharon@epa.gov

Does the proposed action only involve telecommunication structure(s)?

No

Would the proposed action occur entirely within an existing footprint or rights-of-way (ROW)?

No

Would any portion of the proposed action occur within one of these areas of interest?

Yes

Red Knot

Would the proposed action involve human disturbance or ground disturbance (such as foot traffic, vehicles, tracked equipment, excavating, grading, placing fill material, etc.)?

Yes

Would the proposed action result in impacts to foraging habitat (sandy beaches, tidal mudflats, salt marshes, and peat banks) or roosting habitat (for example reefs, high sand flats, or sites protected from high tides)?

Yes

Would the proposed action result in long-term impacts (effects lasting up to 6 months or more) to foraging or roosting habitat?

Yes

Conclusion:
May affect, send project in for further review

West Indian Manatee

Does the proposed action fall within the manatee consultation zone, excluding the Mississippi River (see map), and involve in-water activities, with depths of at least 2 feet, during the months of June through November?

Yes

Is the proposed action's footprint entirely on land?

No

Would the proposed action involve in-water activities, with depths of at least 2 feet, during the months of June through November?

Yes

Would the following Standard Manatee Conditions for in-Water Activities be included within the project design?

Yes

Standard Manatee Conditions for In-water Activities

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".
- 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.

Conclusion:
We have determined that the proposed action is not likely to adversely affect the West Indian Manatee.

_____ _____

Project Representative *Date*

Piping Plover

Would the proposed action involve human disturbance or ground disturbance (such as foot traffic, vehicles, tracked equipment, excavating, grading, placing fill material, etc.)?

Yes

Would the proposed action result in impacts to foraging habitat (intertidal beaches, sand, mud, or algal flats, between annual low tide and annual high tide) or roosting habitat (unvegetated or sparsely vegetated dune systems, sand, mud, or algal flats above high tide)?

Yes

Would all, or portions of, the proposed action be located in piping plover critical habitat (see map)?

Yes

Would the proposed action result in long-term impacts (effects lasting up to 6 months or more) to piping plover critical habitat?

Yes

Conclusion:
May affect, send project in for further review

Sea Turtles

Would the proposed action result in long-term impacts (effects lasting up to 6 months or more) to nesting habitat (sandy beaches)?

No

Would the proposed action be conducted during the sea turtle nesting season (April 15 – October 31)?

Yes

Conclusion:
May affect, send project in for further review

Migratory Bird Conservation Recommendations

Bald Eagle

The proposed project area may provide nesting habitat for the bald eagle (*Haliaeetus leucocephalus*), which was officially removed from the List of Endangered and Threatened Species as of August 8, 2007. However, the bald eagle remains protected under the Bald and Golden Eagle Protection Act (BGEPA) (54 Stat. 250, as amended, 16 U.S.C. 668a-d) and theMigratory Bird Treaty Act (MBTA) (40 Stat. 755, as amended; 16 U.S.C. 703 et seq.) The Louisiana Department of Wildlife and Fisheries (LDWF) has not collected comprehensive bald eagle survey data since 2008, and new active, inactive, or alternate nests may have been constructed within the proposed project area since that time.

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/migratorybirds/pdf/management/nationalbaldeaglenanagementguidelines.pdf

In southern Louisiana parishes, eagles typically nest in mature trees (e.g., baldcypress, sycamore, willow, etc.) near fresh to intermediate marshes or open water. Bald eagles may also nest in mature pine trees near large lakes in central and northern Louisiana. 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: https://www.fws.gov/southeast/our-services/eagle-technical-assistance. Following completion of the evaluation, that website will provide a determination of whether additional consultation is necessary.

Colonial Waterbirds

In accordance with the Migratory Bird Treaty Act of 1918 (as amended), please be advised should the project area be located in or near wetland habitats which may be inhabited by colonial nesting waterbirds and/or seabirds, additional restrictions may be necessary.

Colonies may be present that are not currently listed in the database maintained by the Louisiana Department of Wildlife and Fisheries. That database is updated primarily by (1) monitoring previously known colony sites and (2) augmenting point-to-point surveys with flyovers of adjacent suitable habitat. Although several comprehensive coast-wide surveys have been recently conducted to determine the location of newly-established nesting colonies, we recommend that a qualified biologist inspect the proposed work site for the presence of undocumented nesting colonies during the nesting season because some waterbird colonies may change locations year-to-year. To minimize disturbance to colonial nesting birds please refer to our colonial nesting waterbird guidance on the LESO Webpage https://www.fws.gov/lafayette/Migratory_Birds/MigBird.html.

Additional Migratory Bird Conservation Recommendations

During the project impact analysis process developers should identify project-related impacts to migratory birds and the conservation measures that will be used to mitigate them. For additional Migratory Bird Conservation recommendations, guidance and tools to help reduce impacts to birds and their habitats please visit the LESO webpage https://www.fws.gov/lafayette/Migratory_Birds/MigBird.html and the Service's Migratory Bird Program Webpage (https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds/collisions/communication-towers.php).

MEMORANDUM

DATE: July 03, 2018

TO: Caminada Headlands Back Barrier Marsh Creation (BA-171) Project File

FROM: Sharon L. Osowski, Ph.D.; Marine, Coastal, and Analysis Section (6WQ-EC)

SUBJECT: Determination Regarding Sea Turtles Near Water Operations for BA-171

The Environmental Protection Agency Region 6 has made the determination, that the Caminada Headlands Back Barrier Marsh Creation project (BA-171) "may affect, but is not likely to adversely affect the Kemp's Ridley sea turtle (*Lepidochelys kempii*) and the Loggerhead sea turtle (*Caretta caretta*).

The Caminada Headlands Back Barrier Marsh Creation project proposes to restore the geomorphic function, essential habitats, and reverse the current trend of degradation. The goals and objectives for BA-171 include:

- Create 248 acres and nourish 137 acres of emergent back barrier marsh by pumping sediment from a borrow site approximately 1.5 miles offshore
- Create a platform upon which the beach and dune can migrate, reducing the likelihood of breaching, increasing the retention of overwashed sediment, improving the longevity of the barrier shoreline, and protecting wetlands and infrastructure to the north and west.
- Slow the current trend of degradation in the headland.

The marsh creation design was broken into four (4) components: the marsh creation fill area, the earthen containment dikes, the dredge borrow area, and the dredge pipeline alignments. This memo addresses potential impacts to sea turtles in or near the dredge borrow area and dredging operations (i.e., using hydraulic cutterhead dredges).

Our determination that BA-171 will not adversely affect the two species of sea turtles is based on information that hydraulic cutterhead dredges have never been implicated in sea turtles "takes" and information found in a NOAA Consultation and Biological Opinion (BO) from 2003 (Number F/SER/2003/01247). EPA believes that the proposed activities associated with BA-171 are consistent with the BO and the "may affect, not likely to adversely affect" determination.

The specific section of the BO that applies to the BA-171 project is found on page 36 of the Consultation/Biological Opinion and is cited below:

> "The primary direct effect of the proposed action is hopper-dredging activities on sea turtles. Hydraulic cutterhead pipeline dredges have never been implicated in turtle takes, presumably because the slow moving cutterhead is readily discerned and easily avoided by these species. Additionally, numerous previous opinions issued by NMFS to the COE since 1991 in both the South Atlantic and Gulf of Mexico COE districts, hydraulic cutterhead pipeline dredge use has been determined to be unlikely to adversely affect any listed species under NMFS' purview; therefore, hydraulic cutterhead dredges will not be considered further in this opinion. This opinion will only consider hopper-dredging effects on listed species potentially present during the Ship Shoal proposed action.[3]"

Footnote 3: “Hopper dredges, which are frequently used in ocean bar channels and sometimes in harbor channels and offshore sand mining areas, move relatively rapidly and can entrain and kill sea turtles, presumably as the drag arm of the moving dredge overtakes the slower moving turtle. In contrast to hopper dredges, pipeline dredges are relatively stationary, and therefore act on only small areas at any given time. In the 1980s, observer coverage was required by NMFS at pipeline outflows during several dredging projects deploying pipeline dredges along the Atlantic coast.

No turtles or turtle parts were observed in the outflow areas. Additionally, the COE’s South Atlantic Division (SAD) office in Atlanta, Georgia, charged with overseeing the work of the individual COE Districts along the Eastern Seaboard from North Carolina through Florida, provided documentation of hundreds of hours of informal observation by COE inspectors during which no takes of listed species were observed. Additional monitoring by other agency personnel, conservation organizations, and the general public has never resulted in reports of turtle takes by pipeline dredges (NMFS 1991a).”