ROCKEFELLER REFUGE
GULF SHORELINE STABILIZATION
SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT
Fed No. ME-18

Cameron Parish, Louisiana

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service

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ACRONYMS

AAHU	Average Annual Habitat Units
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CPRA	Louisiana Coastal Protection and Restoration Authority
CWPPRA	Coastal Wetlands Planning, Protection, and Restoration Act
EA	Environmental Assessment
EFH	Essential Fish Habitat
EPA	Environmental Protection Agency
FONSI	Finding of No Significant Impact
LCWCRTF	Louisiana Coastal Wetlands Conservation and Restoration Task Force
LDWF	Louisiana Department of Wildlife and Fisheries
LWAC	Lightweight Aggregate Core
MHW	Mean High Water
NAVD88	North American Vertical Datum of 1988
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service, U.S. Department of Commerce
NOAA	National Oceanic and Atmospheric Administration, U.S. Department of Commerce
NRCS	Natural Resources Conservation Service, U.S. Department of Agriculture
SEA	Supplemental Environmental Assessment
SHPO	State Historic Preservation Office
USACE	U.S. Army Corps of Engineers, U.S. Department of the Army
U.S.C.	United States Code
USFWS	U.S. Fish and Wildlife Service, U.S. Department of Interior
USGS	U.S. Geological Survey, U.S. Department of the Interior

UNITS OF MEASURE

ft	feet
%	percent

EXECUTIVE SUMMARY

Project: Rockefeller Refuge Gulf Shoreline Stabilization (ME-18)

Sponsor: National Marine Fisheries Service (NMFS) and Louisiana Coastal Protection and Restoration Authority (CPRA)

Contact: Cecelia Linder; 1315 East-West Hwy, Silver Spring MD 20910; ph 301-427-8675

Project Size: 450 acres

Location: Rockefeller Wildlife Refuge, 5476 Grand Chenier Hwy, Grand Chenier, Louisiana

Need: Reduce the current loss of marsh, resulting from a shoreline erosion rate of 46 feet per year, projected to be 325 acres of saline marsh over the next 20 years.

Purpose: Protect saline marsh habitat and enhance fish and wildlife habitat via shoreline protection. In 20 years, 256 net acres of saline marsh would be preserved.

Proposal: Construct 3 miles of breakwater along the −3.5 ft contour about 150 ft offshore westward from Joseph's Harbor Canal, incorporating existing breakwaters with gaps every 1,500 ft.

Public Participation:
State resource agencies, Federal resource agencies, and local government coordinated throughout project development. A draft version of the Supplemental EA is to be available at http://www.habitat.noaa.gov/pdf/rock_ME_18_draft_supplemental_EA.pdf.

Summary of statement and conclusions:
Long-term benefits to Louisiana coastal resources without substantial long-term adverse environmental impacts are expected of the preferred alternative. Construction-related adverse impacts are considered minor and insubstantial because they are temporary or reversible. Benefits are moderate and sustained. This conclusion is based on a review of relevant literature, site-specific data, and project-specific engineering reports related to biological, physical, and cultural resources, and experience gained through more than a decade of coastal restoration in Louisiana. The action would protect marsh and shoreline habitat that would convert to shallow Gulf open water without action.

Potential adverse impacts: None

Issues to be resolved: None

1 INTRODUCTION

The National Marine Fisheries Service (NMFS) proposes the continuation of the Rockefeller Refuge Gulf Shoreline Stabilization Project (ME-18) for which a previous Environmental Assessment (EA) was completed in 2006 (NMFS 2006). The Finding of No Significant Impact (FONSI) for ME-18 was signed on August 29, 2006. The purpose of this Supplemental EA (SEA) is to determine if there are significant new circumstances or information bearing on the proposed action or its impacts that were not addressed in the 2006 EA. This SEA incorporates by reference the entire 2006 EA. The proposed continuation action has the same name, needs, goals, and location as the previously assessed action.

The proposed project is authorized under the Coastal Wetlands, Planning, Protection and Restoration Act (CWPPRA) of 1990 (16 United States Code [U.S.C.] §777c, 3951-3956), which stipulates that five federal agencies and the State of Louisiana jointly develop and implement a plan to reduce the loss of coastal wetlands in Louisiana (16 U.S.C. §3952(b)(2)). Federal agencies that make up the CWPPRA Task Force are the U.S. Army Corps of Engineers (USACE); the U.S. Fish and Wildlife Service (USFWS), Department of the Interior; the National Marine Fisheries Service (NMFS), Department of Commerce; the Natural Resources Conservation Service (NRCS), Department of Agriculture; and the U.S. Environmental Protection Agency (EPA). The Louisiana Coastal Protection and Restoration Authority (CPRA) is the non-federal local sponsor and cost-share partner.

The CWPPRA Task Force selected this project through a publicly vetted process for engineering and design (Louisiana Coastal Wetlands Conservation and Restoration Task Force [LCWCRTF] 2003). This project was on the Tenth Priority Project List, approved by the CWPPRA Task force in 2001.

The NMFS and CPRA are providing funding through CWPPRA to construct an approximately 3-mile-long gapped breakwater in nearshore waters to protect the Gulf shoreline and interior marshes. As the federal sponsor for the project, the NMFS is responsible for project oversight, including National Environmental Policy Act (NEPA) compliance, as required under the CWPPRA program guidelines. Through their responsibilities under Sections 401 and 404 of the Clean Water Act, the USACE will review the preferred alternative prior to issuing a Department of the Army permit for project construction.

This SEA and the 2006 EA specifically evaluate the impacts on the human environment associated with the proposed action and alternatives. These EAs provide the required analysis to determine whether the proposed action and alternatives have the potential to cause significant impacts to the human environment. Only short-term adverse impacts are anticipated related to construction and are considered minor and reversible; while benefits are anticpated to be moderate and sustained. This conclusion is based on a review of relevant literature, site-specific data, and project-specific engineering reports related to biological, physical, and cultural resources. The natural resource benefits anticipated from implementing the preferred alternative would include protection of shoreline and saline marsh habitats within the proposed project area. The maintenance of the quality and acreage of fisheries habitat would be expected to have long-term beneficial effects on the local economy. This SEA provides information on measures that would be taken to avoid and minimize potential adverse impacts to existing resources, such as threatened and endangered species. This SEA complies with the NEPA of 1969 and Council on Environmental Quality (CEQ) regulations for implementation of NEPA (Title 40 *Code of Federal Regulations* [CFR] Parts 1500 through 1508 [CEQ 1992]).

1.1 PROJECT LOCATION

The proposed action is located in nearshore Gulf of Mexico (Gulf) waters off Cameron Parish, Louisiana along the Rockefeller Wildlife Management Area and Game Preserve (Rockefeller Refuge). The refuge is

located in southwestern Louisiana, approximately 45 miles southeast of Lake Charles, Louisiana. The refuge is owned by the State of Louisiana and maintained by the Louisiana Department of Wildlife and Fisheries (LDWF). The proposed action will be located along three miles of nearshore Gulf waters west of the entrance of Joseph Harbor Bayou (Figure 1).

1.2 PURPOSE AND NEED

1.2.1 Purpose

The purpose of this proposed action is to support the coastal restoration objectives of CWPPRA by stabilizing the Gulf of Mexico shoreline and preventing the loss of coastal wetlands in the project area. The goals of this project are to: (1) halt Gulf shoreline retreat and direct marsh loss along three miles of nearshore Gulf waters west of the entrance of Joseph Harbor over the 20-year life of the project, (2) protect saline marsh habitat, and (3) enhance fish and wildlife habitat (NMFS 2006).

1.2.2 Need for Action

In order to achieve these goals, NMFS needs to consider alternative methods to provide necessary shoreline stabilization and habitat protection. From an ecological standpoint, the proposed action is needed due to the rapidly degrading environmental conditions at the project site and the necessity to preserve the structural integrity of the shoreline and saline marsh habitat in the project area (Figure 1). On average, 46 ft of shoreline erode annually from the western portion of the Refuge (US Geological Survey [USGS] 2013). The Refuge originally encompassed 86,000 acres; however, only about 71,000 acres remain due to erosion and land loss. The shoreline change from 1998 to 2010 in the project area is presented in Figure 2. A healthy coastal marsh provides nursery habitat for shellfish and finfish; furnishes habitat for waterfowl, wading birds, small mammals, and numerous amphibians and reptiles; protects interior lands from storm surges; helps maintain water quality; and provides other services. Louisiana's coastal wetlands are essential to sustain renewable fisheries resources integral to the local, state, and national economies. Of the nearly1.4 billion pounds of fisheries landings reported for the Gulf Coast in 2013, nearly 75% were landed in Louisiana (NOAA 2014). Marshes provide nursery, foraging, and spawning habitat for numerous marine and estuarine species of commercial and recreational importance. Coastal shorelines and marshes also help protect the habitat, infrastructure, and communities inland by reducing storm surge.

1.2.3 NEPA Requirements and the Scope of the NEPA Analysis

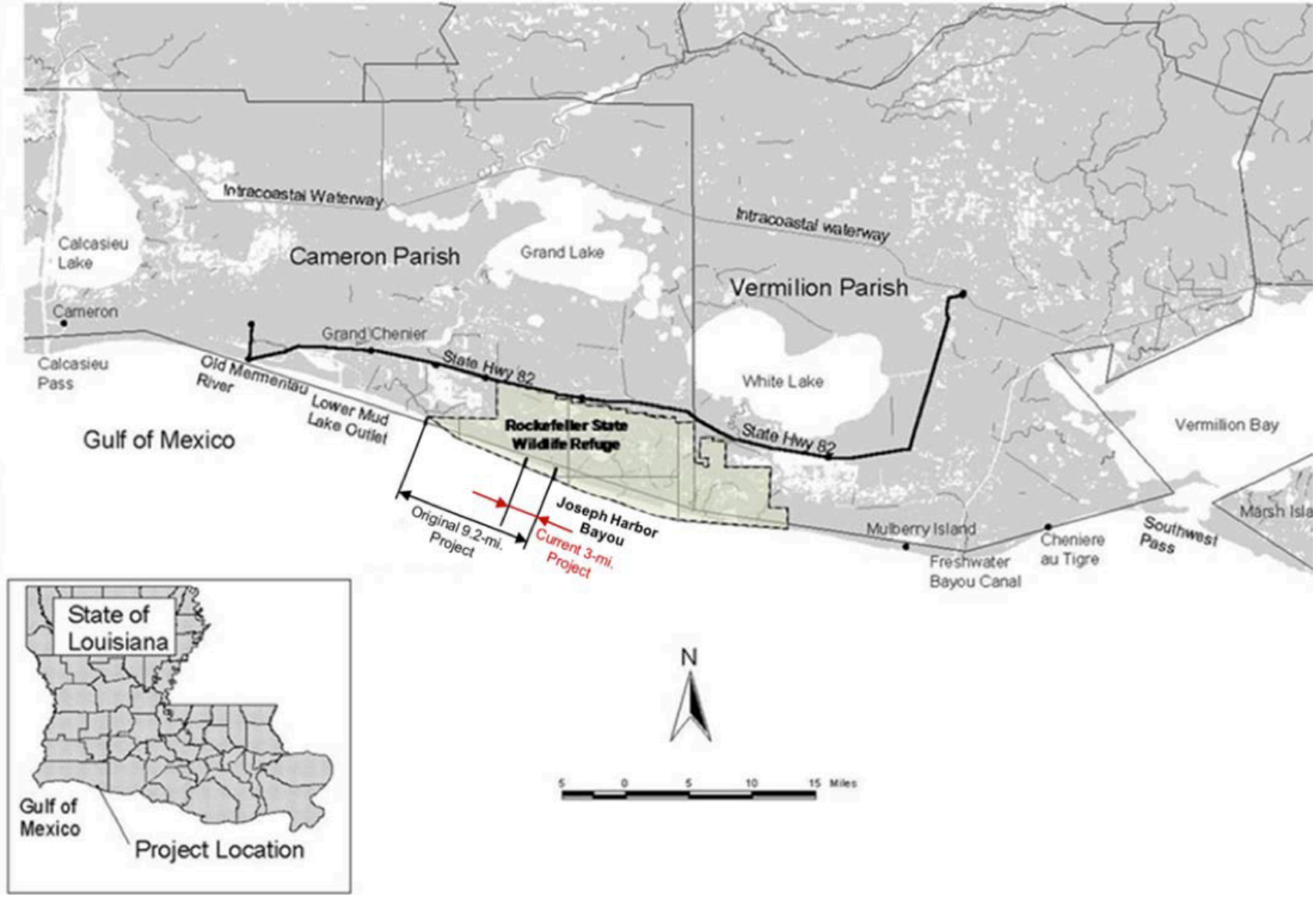
The 2006 EA and this SEA disclose information on and analyze the direct, indirect, and cumulative impacts on the human environment likely to result from the continuation of the Rockefeller Refuge Gulf Shoreline Stabilization Project (ME-18) proposed action. These EAs are needed to inform the decision of whether or not to fund and authorize this project, including the proposed action and alternatives, and to determine whether the proposed shoreline stabilization project has the potential for significant impacts to the human environment.

1.2.4 Description of the Proposed Action

The original ME-18 project was intended to protect a 9.2-mile area from Beach Prong to Joseph Harbor (Figure 1). The 2006 EA considered more than 80 alternatives, and variations of these alternatives, to address shoreline losses. Foundation soils along the Refuge shoreline are extremely soft with a high potential for excessive settlement. Four alternatives, plus the no-action alternative, were retained for further evaluation in the 2006 EA.

However, because of the unique geophysical conditions along the Refuge shoreline, the innovative nature of the proposed alternatives, and the lack of definitive methodology, test sections of the three most

Figure 1. Rockefeller Refuge Gulf Shoreline Stabilization (ME-18) Project Location



promising alternatives (gravel beach fill, reef breakwater, and reef breakwater with lightweight aggregate core [LWAC]) were implemented as part of a demonstration project to evaluate effectiveness and determine a preferred alternative for the full project.

The demonstration project was constructed in 2009, with funding by the State of Louisiana, through the Coastal Impact Assistance Program. After construction, the test sections were monitored for average shoreline change, settlement, hydraulic stability, and wave attenuation, to determine the breakwater with the best performance for constructing the full project. The reef breakwater with LWAC lost only 3 feet of shoreline over the 11-month monitoring period, compared to the control area, which lost 45.3 ft (Table 1). The average wave transmission coefficients were 0.03 for the LWAC reef breakwater and 0.27 for the reef breakwater. The LWAC reef breakwater was better able to attenuate waves and reduce shoreline recession; therefore, it was recommended for construction along the full project shoreline. This breakwater also performed well in accommodating the soft foundation soils and displayed adequate hydraulic stability despite the potential destabilizing effects of the LWAC (HDR Engineering, Inc. 2014). Therefore, the proposed action and preferred alternative is funding construction of the LWAC reef breakwater.

Table 1. Average Shoreline Change (in feet) from February 2010 to March 2011 for Design Alternatives Evaluated in the 2006 EA

Alternatives Evaluated from 2006 EA	Average Shoreline Change (ft)
Control area (no action)	−45.3
Beach fill	−84.4
Reef breakwater	−17.8
LWAC reef breakwater	−3.0
Source: HDR Engineering, Inc. 2014	

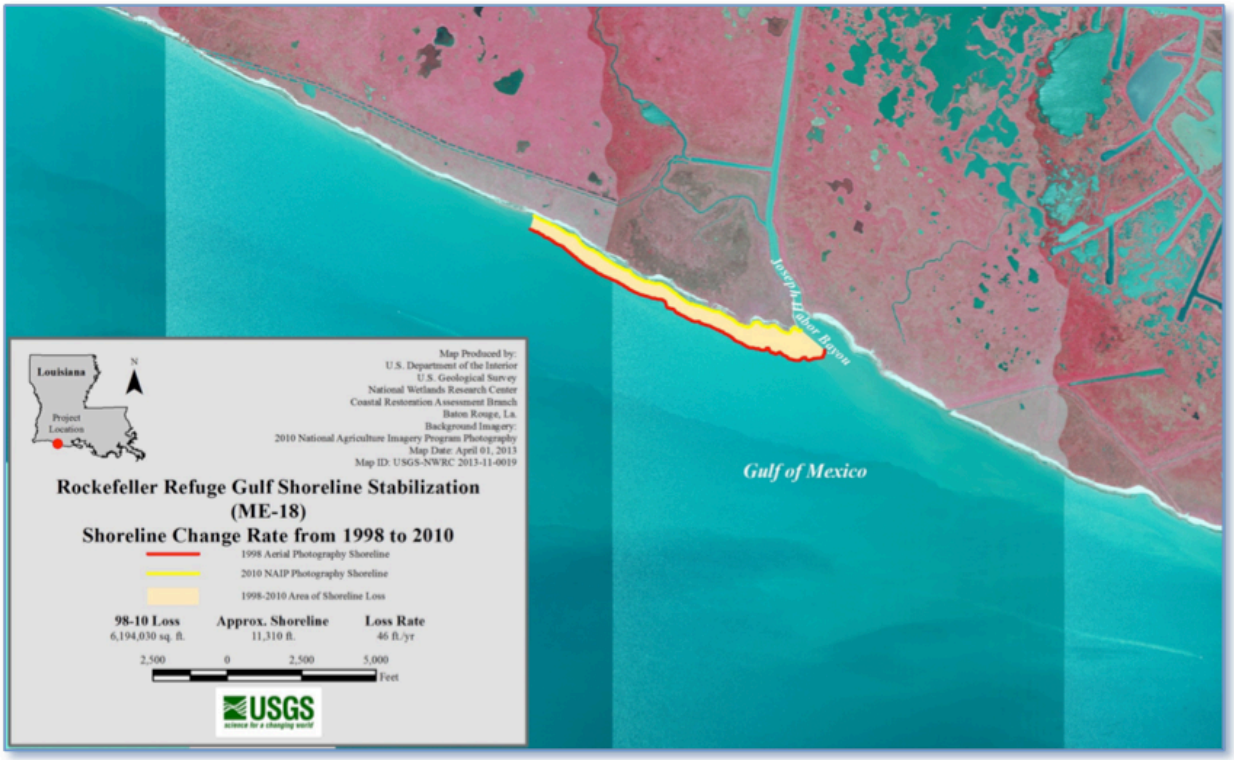
Additional testing and modeling was conducted to determine the best design for construction of the full project. As expected, shoreline recession had the greatest reduction shoreward of the center of each breakwater and recession increased towards the breakwater ends (HDR Engineering, Inc. 2014). It was therefore recommended to construct the full project as continuous as feasible with minimal gaps. Different gap configurations and methods to tie into the existing breakwaters were also evaluated (HDR Engineering, Inc. 2014).

The overall stabilization project is intended to protect the 9.2-mile portion of the Refuge west of Joseph Harbor Bayou; however, due to the cost, protection for this effort is only proposed for about 3 miles of the most critically eroded shoreline west of the bayou (Figure 1). The average annual shoreline loss estimate of 46 ft is equivalent to a loss of approximately 17 acres per year over the 3-mile project area (USGS 2013). The shoreline change from 1998 to 2010 is provided in Figure 2.

2 ALTERNATIVES EVALUATED

As noted in the section above, 80 alternatives, and variations of these alternatives, were considered in the NMFS (2006) EA. The 2006 EA report evaluated four build alternatives; three of these alternatives were constructed as a demonstration project in 2009 and performance was assessed by HDR Engineering, Inc. (2014). The preferred alternative (reef breakwater with LWAC) was selected and designed based on results of the demonstration project; geotechnical studies; coastal process assessments; and topographic, bathymetric, and magnetometer surveys. The other alternatives evaluated in the 2006 EA are incorporated by reference and will not be further analyzed in this SEA.

Figure 2. Shoreline Change Rate from 1998 to 2010 at the Proposed Project Location



Source: USGS

2.1 PREFERRED ALTERNATIVE

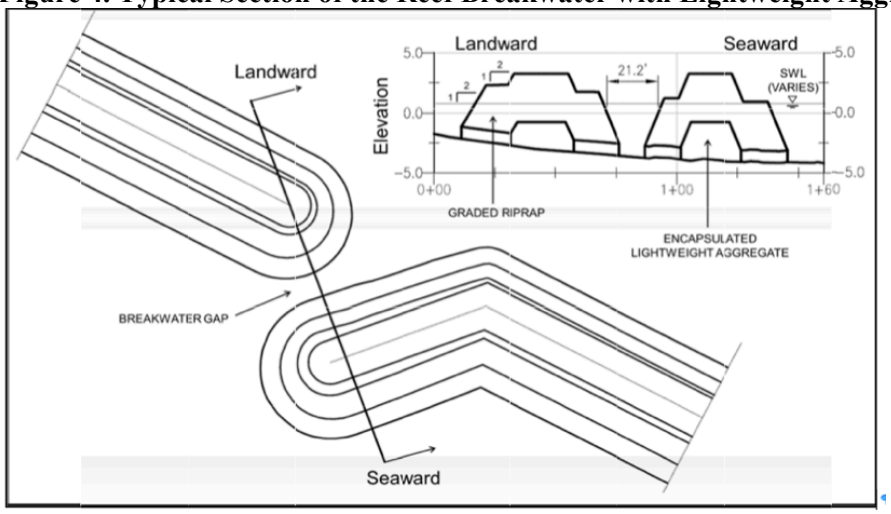
The LWAC is an encapsulated lightweight expanded shale or clay product that is almost neutrally buoyant; this decreases the bearing pressure and allows greater crest elevations and increased wave attenuation. The greater crest elevation is intended to eliminate the need for secondary protection via beach fill. The LWAC also has lower permeability and less wave transmission through the structure, although armor stone stability may decrease with decreased permeability.

As noted above, although the overall stabilization project is intended to protect 9.2 miles of shoreline; the effort proposed under this SEA would stabilize only the 3 most critically eroded shoreline miles west of Joseph Harbor Bayou. A reef breakwater with LWAC would be constructed along the approximate −3.5 ft North American Vertical Datum of 1988 (NAVD88) contour, approximately 150 ft offshore, and would generally follow the shape of the shoreline. Due to high erosion rates at the mouth of Joseph Harbor Bayou and to prevent erosion behind the breakwater, the breakwater would extend from 830 ft into the mouth of the inlet to approximately three miles west along the shoreline. The breakwater would have a crest width of 18 ft and would be constructed to an initial height of +3.25 ft NAVD88 (Figures 3, 4) and is expected to settle to +1.90 ft NAVD88 over the project life. The breakwater design incorporates the existing demonstration projects.

Figure 3. Construction of the Test Section of Reef Breakwater with Lightweight Aggregate Core (LWAC) in 2009

Source: HDR Engineering, Inc. 2014

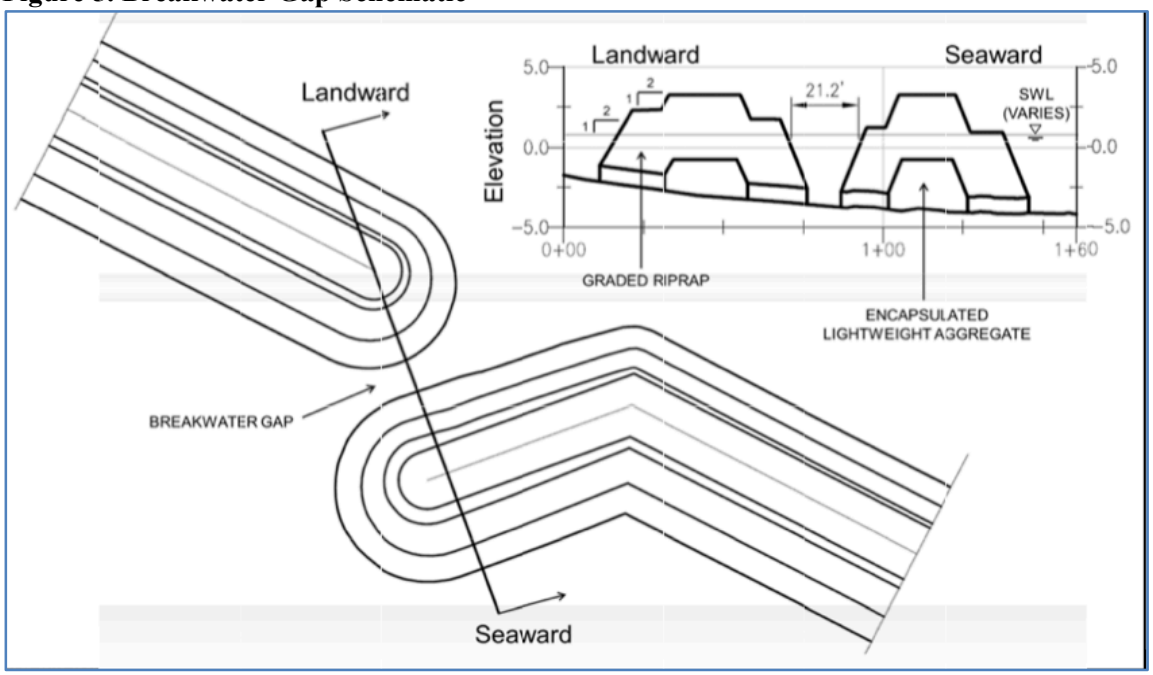
Figure 4. Typical Section of the Reef Breakwater with Lightweight Aggregate Core (LWAC)



Source: HDR Engineering, Inc. 2014

Material and organism linkages would be maintained by gapping the breakwater about every 1,500 ft. The gap configuration (Figure 5) was designed to transmit the least amount of wave energy and still allow circulation. The design includes 7 breakwater gaps about 11 ft wide at the toe of the breakwater and about 21 ft wide at mean high water (MHW). In addition, openings would be left between the breakwater and the two existing rock demonstration breakwaters. The two bio-engineered oyster reef demonstration project breakwaters would serve as gaps and the breakwater would be constructed in the area between the oyster reefs. All gaps (except for the two oyster ring features that would remain as they were constructed) would be lined with geo-fabric and bedding stone to minimize scour.

Figure 5. Breakwater Gap Schematic



Source: HDR Engineering, Inc. 2014

Construction and material transportation would be water-based and is expected to take 600 days (HDR Engineering, Inc. 2014). A temporary flotation channel may be necessary for construction to ensure sufficient water depths to allow boats and barges access to the planned contour elevation of −3.5 ft (Figures 6, 7). However, a flotation channel was not needed during test section construction. If necessary, the flotation channel would be about 80 ft wide by 7 ft deep; requiring the dredging of approximately 30,000 cubic yards of material. Dredged material would be stockpiled by side-casting seaward of the channel and backfilled after use. Some of the dredged material would be lost through wave action (HDR Engineering, Inc. 2014).

2.2 NO-ACTION ALTERNATIVE

NEPA refers to the no-action alternative as the continuation of baseline conditions without implementation of the proposed action. Evaluation of the no-action alternative is required by the CEQ regulations implementing NEPA to provide a baseline analysis against which the potential impacts of the action alternatives can be compared. Under this alternative, no additional steps would be taken to protect the shoreline along the refuge except the features that were previously constructed in the two demonstration projects. The no-action alternative does not meet the purpose and need of the project, but is considered here for comparative purposes.

Figure 6. Layout of Proposed Shoreline Protection with Flotation Channel

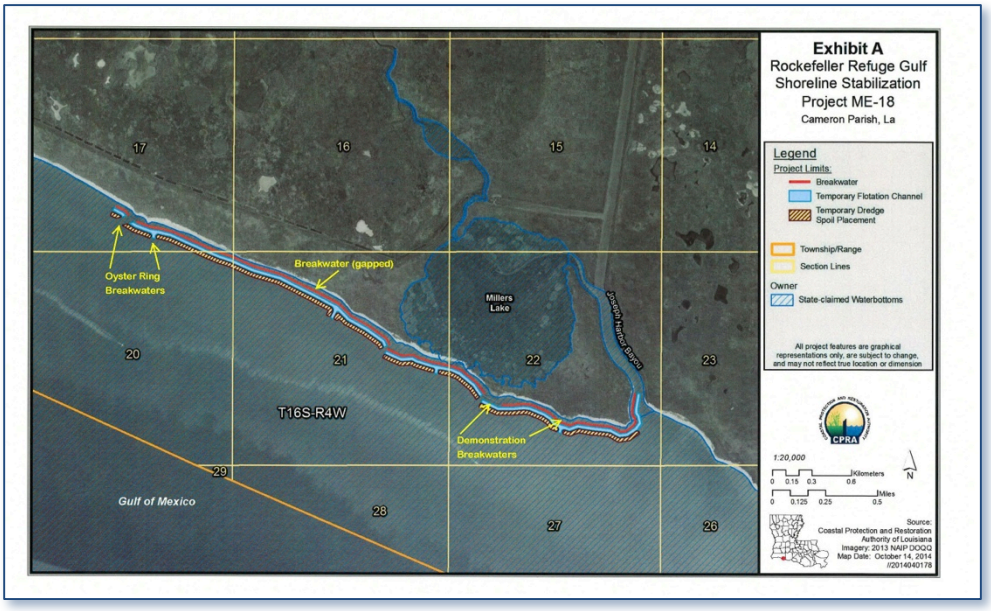
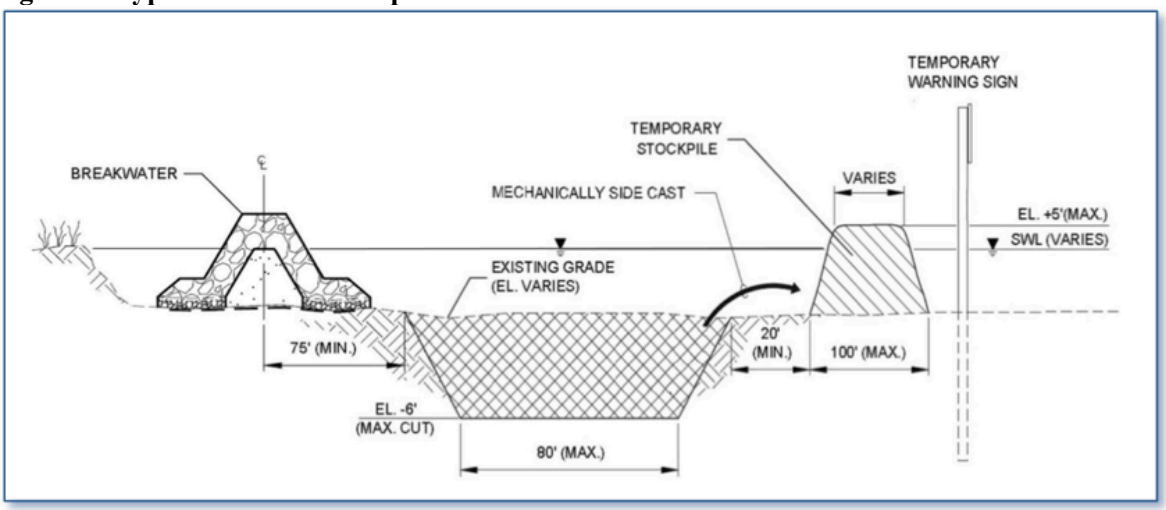


Figure 7. Typical Section of Proposed Shoreline Protection with Flotation Channel



Source: HDR Engineering, Inc. 2014

2.3 COMPARISON OF ALTERNATIVES

The major features of the preferred alternative were detailed in Section 1.2.4. Consequences of the preferred and no-action alternatives from the 2006 EA and this SEA are described in Table 2. Section 4.0 (Environmental Effects) includes a more detailed discussion of the impacts of these alternatives on resources that changed since the 2006 EA or were evaluated more thoroughly for this SEA.

Table 2. Comparison of the Alternatives

Resource	No Action	Preferred
PHYSICAL ENVIRONMENT		
Geology, Soils, and Topography	Land loss and erosion continues, average shoreline erosion rate is estimated to be 46 ft per year; demonstration project breakwaters reduce shoreline erosion and land loss in areas under their influence until failure in year 10; erosion over 20-year project life estimated to be 325 acres	Most impacts would consist of disturbing waterbottom during construction; long-term direct, beneficial impacts by protecting shoreline; breakwater is expected to reduce shoreline erosion by 93% until year 11 and 75% until year 20; net with-project benefit is 256 acres
Air Quality	No impacts	Localized, minor adverse impacts from emissions over 600 days; emissions would quickly dissipate
Surface Water Resources	No direct impacts; indirectly, loss of land and shoreline retreat could increase vulnerability to storm surge of surrounding areas	Short-term, minor, adverse impacts at the rock placement site and temporary increase in turbidity during flotation channel dredging and placement; reduction in turbidity shoreward of breakwater; long-term, moderate, beneficial impacts would result from preservation of filtering action of marsh, wave cessation at location of breakwater, and wave reduction to shoreline; over 95 percent of wave energy would be deferred away from shoreline by breakwater down to 75 percent at year 11 when settling occurs
BIOLOGICAL ENVIRONMENT		
Vegetative Communities	Reduction in saline marsh, shoreline, and shallow water habitat, as shoreline erodes and land subsides; erosion over 20-year project life estimated to be 325 acres over 20 years	No adverse impact to existing saline marsh and long-term, direct, moderate benefits to saline marsh and shoreline vegetation; net acreage at year 20 is 256 acres and 79 net Average Annual Habitat Units
Fish and Wildlife	Continued increase in open water, and reduction in less common sandy and marsh habitat; marsh habitat supports 70% of estuarine species	Long-term, direct, minor adverse impacts by: coverage of shallow water habitat by rock placement and burial of non-motile organisms by dredging activities; moderate benefits through protection of shoreline, marsh habitat, and sandy benthos; increase of diversity possible by rock placement; gaps will provide passage for aquatic organisms
Essential Fish Habitat	Variety and quality of estuarine, sandy bottom, and marsh edge EFH would decline and convert to open water; conversion of marsh EFH to mud EFH	Short-term, unavoidable, adverse impacts from construction and long-term, unavoidable, moderate adverse impacts from rock placement would be offset by long-

Resource	No Action	Preferred
		term, moderate, benefits to: (1) EFH and nursery resources through preservation of marsh and shoreline and sandy intertidal habitats, and (2) prevention of conversion to open water and mud EFH
Threatened and Endangered Species	Indirect adverse impacts through loss of habitat	Temporary minor impacts of displacement unlikely with long-term benefits from habitat preservation expected
CULTURAL ENVIRONMENT		
Historical or Archaeological Resources	No direct impact; potential indirect impact by uncovering and loss of undiscovered sites as erosion continues	No direct impact; potential indirect impact by reduction in shoreline erosion that could potentially preserve cultural resource sites located shoreward of the proposed breakwater
Recreation	Indirect impact to recreational fishing and birding due to continued land loss	Indirect benefit to recreational fishing and birding due to reduction in land loss
HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE	No impacts	No impacts

3 AFFECTED ENVIRONMENT

The Affected Environment section describes the existing environmental resources of the areas that would be affected by project implementation. The purpose of this SEA is to determine if there are significant new circumstances or information bearing on the proposed action or its impacts that could potentially have an impact on the finding of no significant impact determination of the 2006 EA (NMFS 2006).

The Affected Environment sections describe only those environmental resources relevant to the decision making process. A resource is considered important if it is: recognized by statutory authorities including laws, regulations, executive orders, policies, rules, or guidance; recognized as important by some segment of the public; or determined to be important based on technical or scientific criteria. The condition of most environmental resources in the project area remain unchanged from the 2006 EA, except for some habitat and biological resources that may have changed due to naturally occurring processes, the effects of wave action and storm surges from storms and the passage of several hurricanes, and manmade impacts. The area was impacted by the Deepwater Horizon Oil Spill of 2010 and subsequent cleanup efforts. The demonstration project based on the 2006 EA was constructed in 2009 and an oyster ring demonstration project was constructed in 2012. Although changes have occurred in the area, none of these events has changed the site conditions of this project location in a significant way or in a manner such that proposed project activities would present a cumulatively significant impact to the project area.

The 2006 EA presented detailed historic and existing information relevant to this project and that information is incorporated by reference. Circumstantial changes and updated information are discussed below.

3.1 PHYSICAL ENVIRONMENT

3.1.1 Geology, Soils, and Topography

Section 4.1.1 of the 2006 EA describes the geology, soils, and topography of the project area (Figure 8). The shoreline has eroded since the 2006 EA due to the passage of storms and hurricanes; however, there is little change from that described in the 2006 EA. The ME-18 demonstration project test sections (gravel beach fill, reef breakwater, and reef breakwater with LWAC) described in Section 1.2.4 were constructed in 2009, and the oyster reef demonstration project (LA-08) was constructed in 2012 (Figure 6). The Bioengineered Oyster Reef Demonstration Project consists of two, 215 ft segments of artificial reef constructed by interlocking Oysterbreak™ concrete rings overlain on a marine mattress and separated by a 145 ft gap (CPRA 2012).

Updates for this effort include a review of topographic and bathymetric surveying, geotechnical investigations, aerial photography, prior reports and historical information, a wave and water level assessment, and a morphological evaluation (HDR Engineering, Inc. 2014). Additional topographic and bathymetric data were collected in 2013 and 2014.

Previous geotechnical investigations were summarized by HDR Engineering, Inc. (2014). The project area has extremely soft soils. The subsurface conditions appeared to be relatively uniform along-shore and across-shore, with primarily clayey soils. In addition to analysis of bearing capacity and slope stability, structure settlement was assessed in detail. For alternatives predicted to have significant settlement, increased wave transmission was a concern due to potential for greater erosion of the marsh. Settlement data collected during monitoring of the demonstration project were used to design the current project. Additional geotechnical analyses were performed in 2014 to determine current soil conditions at the site, including percent consolidation, soil strength, gain, and bearing capacity.

3.1.2 Air Quality

Section 4.1.3 of the 2006 EA also describes the air quality of the project area. The area of influence is an unpopulated shoreline. There are emissions from recreational boat traffic and oil and gas industry in the surrounding areas. No air quality concerns are known or expected for this area, as it is remote and freshened by Gulf breezes.

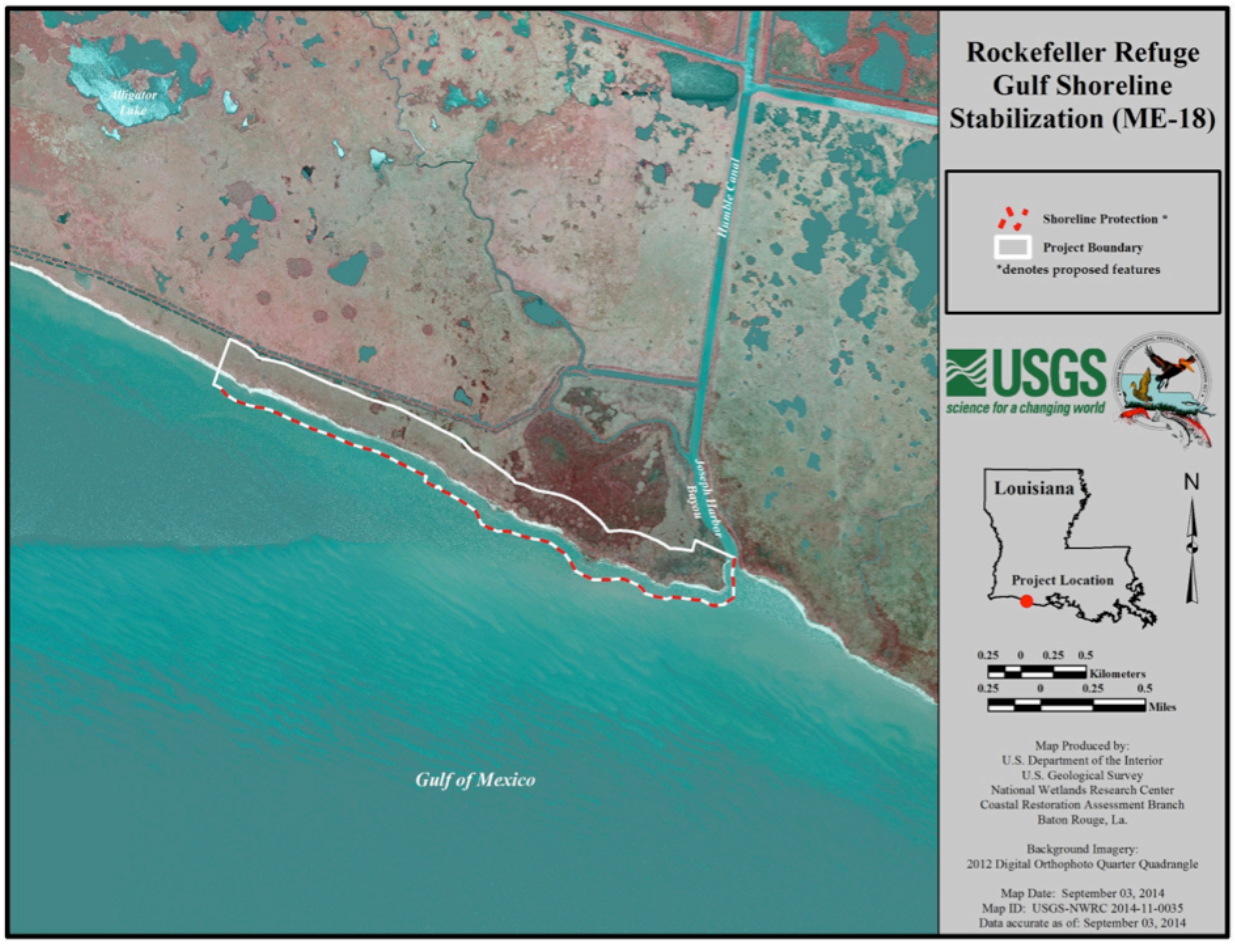
3.1.3 Surface Water Resources

Surface water resources are described in Section 4.1.4 of the 2006 EA; additional information from demonstration project monitoring from May to November 2010 is presented below. The project area has direct exposure to waves from the open Gulf. Prevailing winds in the project site during the monitoring were from the southeast (HDR Engineering, Inc. 2014). The predominant wave direction during the monitoring was from the south. The demonstration project affected average wave heights landward of the breakwater. Average wave heights recorded landward of the reef breakwater with LWAC were typically 96% smaller than those recorded at an adjacent control site without a breakwater.

The breakwater and oyster ring sections have settled since the demonstration projects were constructed; settling affects the wave attenuation by the breakwater. The current average crest elevations of the demonstration sections reported by HDR Engineering, Inc. (2014) are: reef breakwater (+0.4 ft), reef breakwater with LWAC (+2.9 ft), and oyster ring breakwater demonstration project (+0.1 ft). The ultimate consolidation for the reef breakwater with LWAC was estimated to be between 2.0 and 2.7 ft (HDR Engineering, Inc. 2014). The current crest elevation of the reef breakwater with LWAC demonstration section is approximately one foot above the minimum desired crest elevation and is not expected to settle below this minimum elevation. The minimum desired crest elevation of +1.9 ft over the 20-year project life is based on the +1.8 ft NAVD88 MHW level in the area. The reef breakwater demonstration section is approximately 1.6 ft below the minimum desired elevation of the reef breakwater

with LWAC, and the oyster ring breakwater demonstration section is about 2 ft below the minimum desired elevation; however, the foundation soil bearing capacity limits the amount of fill that could be added to these demonstration sections in the future to increase the elevation (HDR Engineering, Inc. 2014).

Figure 8. ME-18 Project Boundary



3.2 BIOLOGICAL ENVIRONMENT

3.2.1 Vegetative Communities

Section 4.2.1 of the 2006 EA describes the vegetative communities in the project area. The vegetative community has not changed since the description in the 2006 EA. The demonstration project test sections have protected some of the shoreline in the area and reduced some of the marsh loss.

3.2.2 Fish and Wildlife Resources

Section 4.2.2 of the 2006 EA describes the fish and wildlife in the project area. The project location is along a state wildlife refuge and a project goal is to enhance the fish and wildlife habitat. The USFWS was consulted in development of the proposed action, and is a cooperating agency under CWPPRA. The state wildlife refuge supports the proposed project. The demonstration project test sections have protected portions of the shoreline in the area and reduced marsh loss, thereby retaining more wildlife habitat and

marsh nursery habitat for some fish and shellfish species. In addition, the test sections have provided hard habitat in the area.

3.2.3 Essential Fish Habitat

Section 4.2.3 of the 2006 EA describes the Essential Fish Habitat (EFH) in the project area and a summary EFH table is presented in Table 3. In addition to being designated as EFH for a number of species, aquatic and wetland habitats in the project area serve as nursery, foraging, and predator refugia habitats for other marine species. Some of these species serve as prey items for species managed by the Gulf of Mexico Fishery Management Council under the Magnuson-Stevens Fishery Management Act.

Table 3. Essential Fish Habitat (EFH) for the Species and Life Stages Listed in the Project Area (M=marine; E=estuarine)

Species	Life Stage	System	EFH
SHRIMP FISHERY MANAGEMENT PLAN			
Brown shrimp *(Farfantepenaeus aztecus)*	eggs	M	<18-110 m; sand/shell/soft bottom
	larvae/ postlarvae	M/E	<82 m; planktonic, sand/shell/soft bottom, SAV, emergent marsh, oyster reef
	juveniles	E	<18 m; SAV, sand/shell/soft bottom, emergent marsh, oyster reef
	adults	M	14-110 m; sand/shell/soft substrate
White shrimp *(Litopenaeus setiferus)*	eggs	M	<9-34 m; sand/shell/soft bottom
	larvae/ postlarvae	M/E	<82 m; planktonic, soft bottom, emergent marsh
	juveniles	E	<30 m; soft bottom; emergent marsh
	adults	M	9-34 m; soft bottom
RED DRUM FISHERY MANAGEMENT PLAN			
Red drum (*Sciaenops ocellatus*)	eggs	M	Gulf of Mexico (GOM) < 46 m
	larvae/ postlarvae	E	all estuaries planktonic, SAV, sand/shell/soft bottom, emergent marsh
	juvenile	M/E	GOM <5 m, all estuaries, SAV, sand/shell/soft/hard bottom, emergent marsh
	adults	M/E	GOM, 1-46 m, all estuaries SAV, pelagic, sand/shell/soft/hard bottom, emergent marsh
REEF FISH FISHERY MANAGEMENT PLAN			
Lane snapper *(Lutjanus synagris)*	eggs	M	4-132 m: pelagic
	larvae	M/E	4-132 m; reefs, SAV
	juvenile	M/E	<20 m; SAV, mangrove, reefs, sand/shell/soft bottom
Dog snapper *(Lutjanus jocu)*	juvenile	M/E	SAV, mangrove, emergent marsh
COASTAL MIGRATORY PELAGICS FISHERY MANAGEMENT PLAN			
Spanish mackerel *(Scomberomorus maculatus)*	larvae	M	<50 m isobath
	juvenile	M/E	offshore, beach, estuarine
	adult	M	pelagic
King mackerel *(Scomberomorus cavalla)*	juvenile, adult	M	pelagic
Cobia *(Rachycentron canadum)*	postlarvae	M	pelagic
	larvae	M/E	estuarine & shelf
	postlarvae, juvenile, adult	M	coastal & shelf

Species	Life Stage	System	EFH
HIGHLY MIGRATORY PELAGICS FISHERY MANAGEMENT PLAN			
Bonnethead shark (*Sphyrna tiburo*)	juvenile	E	<25 m; inlets, estuaries, coastal waters,
	adult	M	<25 m

3.2.4 Threatened and Endangered Species

Section 4.2.4 and Appendix A of the 2006 EA describe threatened and endangered species in the project area. Protected species that could be potentially affected by the project are listed in Table 4. Changes that have occurred since the 2006 EA include the delisting of brown pelican, threatened listing for red knot, and candidacy for listing of the Sprague's pipit.

Table 4. Listed Species that could be Affected by the Proposed Project (E=endangered, T=threatened, C=critical habitat)

Species	Scientific Name	Federal Status
FISHES		
Gulf sturgeon	*Acipenser oxyrinchus desotoi*	**T**
SEA TURTLES		
Green turtle	*Chelonia mydas*	**T**
Hawksbill	*Eretmochelys imbricata*	**E**
Kemp's ridley	*Lepidochelys kempii*	**E**
Leatherback	*Dermochelys coriacea*	**E**
Loggerhead	*Caretta caretta*	**T**
BIRDS		
Piping plover	*Charadrius melodus*	**EC**
Red knot	*Calidris canutus rufa*	**Threatened**
Sprague's pipit	*Anthus spragueii*	**Candidate**
MARINE MAMMALS		
Florida manatee	*Trichechus manatus latirostris*	**E**

The Gulf sturgeon is listed as threatened and is known or believed to occur in Cameron Parish. No critical habitat for the species is designated in the project area.

Two sea turtle species, the threatened loggerhead sea turtle and the endangered Kemp's ridley could potentially nest in Louisiana during the summer (i.e., May through November), however, none of these species are known to nest along this portion of the Louisiana coastline.

3.3 CULTURAL AND SOCIOECONOMICS ENVIRONMENT

3.3.1 Historical and Archaeological Resources

Section 4.3.1 of the 2006 EA describes the historical and archaeological resources in the project area and is summarized below.

Archeological features consist of several known shell middens on or near the refuge and a shipwreck site. The *Nuevo Constante*, a Spanish merchant ship, foundered in 19 ft of water about 1,600 ft off the coast near what is now the Rockefeller Refuge in 1766 (Pearson 1981). Archaeologists, under contract to the

State of Louisiana, mapped and catalogued the wreck in 1981. The camp occupied by shipwreck survivors had been extensively documented previously. Although archaeologists found a few historic artifacts, these objects may have been washed onshore by waves. No other evidence of the survivors' camp was found. The shoreline in this area had eroded about 4,600 ft since 1766 and it is assumed that erosion destroyed the site of the camp.

Changes since the 2006 EA involve the continued erosion of the shoreline into the marsh. Any shell middens that may have been present would have been dispersed into Gulf waters along the shore by currents running westward along the shoreface and/or inland by storm surge.

The State Historic Preservation Office (SHPO) reported four potential cultural resource sites (CM114, CM150, CM151, and CM152) near the proposed project area (Pam Breaux, SHPO, letter dated Sept. 2, 2014; Appendix A).

3.3.2 Recreation

Section 4.3.3 of the 2006 EA describes the recreational uses of the project area as a refuge, and include shrimping, crabbing, fishing, bird and alligator watching. The refuge has an annual visitation rate of approximately 80,000 people.

3.4 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE

Hydrocarbons are the highest concern in terms of Hazardous, Toxic, and Radioactive Waste (HTRW). Hydrocarbons in the Gulf come from natural seeps and anthropogenic shore-based and offshore sources. The area was impacted by the Deepwater Horizon Oil Spill of 2010 and subsequent cleanup efforts.

4 ENVIRONMENTAL EFFECTS

This section is the scientific and analytic basis for comparing effects of the alternatives on the environment. It summarizes changes that may occur to the existing environment including direct, indirect, and cumulative effects and compares these effects for the No-Action Alternative (Future Without-Project Conditions) and the Rockefeller Refuge Gulf Shoreline Protection (Future With-Project Conditions). The current Rockefeller Refuge Gulf Shoreline Protection project includes the gapped breakwater, optional flotation channel, and optional temporary stockpile. Environmental effects were developed and integrated from the 2006 EA and other documents.

Section 5.0 of the 2006 EA analyzed the direct, indirect, and cumulative social, economic, and environmental impacts of the proposed activities on resources in the project area. Based on the 2006 EA, the NMFS issued a FONSI. This SEA evaluates whether the proposed action, new circumstances not previously analyzed, or information not previously available contribute to significantly different environmental effects (43 CFR 46.120). Current baseline conditions are generally believed to be similar to conditions described in the 2006 EA, except for effects due to the construction of the two demonstration projects and erosion that has occurred since the 2006 EA.

4.1 PHYSICAL ENVIRONMENT

Section 5.1 of the 2006 EA evaluated direct and indirect effects of three test sections and the No-Action Alternative on physical resources (Geology, Soils, and Topography; Climate and Weather; Air Quality; and Surface Water Resources) on the project area and is incorporated by reference. The current 3-mile long project is expected to have similar effects on physical resources; effects are summarized in Table 2.

4.1.1 Geology, Soils, and Topography

Section 5.1.1 of the 2006 EA describes environmental consequences to the geology, soils, and topography in the project area.

No-Action Alternative
The no-action alternative would allow current shoreline erosion rates and land loss rates to continue; the average shoreline erosion rate is estimated to be 46 feet per year. The demonstration project breakwaters reduce shoreline erosion and land loss in areas under their influence until failure at year 10. Without stabilizing the Refuge coast, the shoreline may retreat over 900 ft within a 20-year timespan (Figure 9). Erosion over the 20-year project life is estimated to be 325 acres (NMFS 2014).

Preferred Alternative
Most adverse impacts from the preferred alternative would consist of disturbing waterbottom in nearshore Gulf waters and 830 ft into the mouth of Joseph's Harbor Bayou during construction of the breakwater. Additionally, a temporary floatation channel may be constructed to access the site and have potential adverse impacts to 29.8 acres. If constructed, dredged material would be stock piled and backfilled (32.6 acres). The footprint of all hard features along the 3-mile long breakwater is 16.5 acres.

The project would provide long-term direct, beneficial impacts by protecting the shoreline. The preferred alternative is expected to reduce shoreline erosion by 93% until year 11 post-construction and 75% until 20 years post construction. The project would protect 256 acres along the 3-mile long area over the 20-year period (NMFS 2014).

4.1.2 Air Quality Resources

Section 5.1.3 of the 2006 EA describes environmental consequences to air resources in the project area.

No-action Alternative
No impacts would result from this action.

Preferred Alternative
Minor temporary adverse impacts would result from the preferred alternative. Exhaust emissions from dredging equipment with airborne pollutants would be quickly dissipated by prevailing winds and be limited to the construction and removal phases. Construction would be limited to 600 days and removal phase would be less than 600 days.

4.1.3 Surface Water Resources

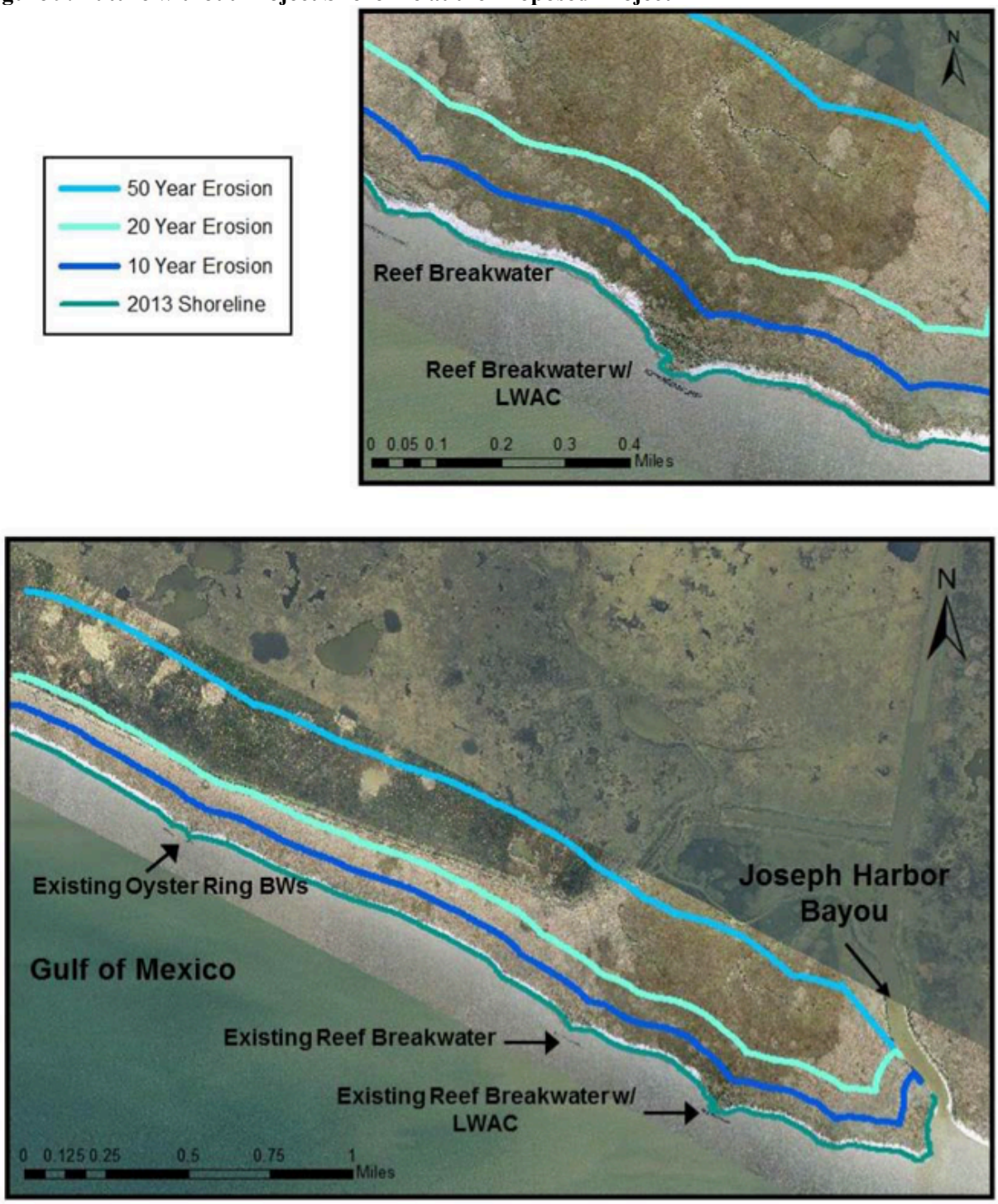
Section 5.1.2 of the 2006 EA describes environmental consequences to the surface water resources in the project area.

No-action Alternative
Relative sea-level rise at Rockefeller Wildlife Refuge can range from 5 to 10 inches over the 20-year design life of the project. There would be no direct impacts to surface water resources without project conditions. Without the project, the subsequent loss of land and shoreline retreat could increase vulnerability to storm surge of surrounding areas.

Preferred Alternative
Rock placement and dredging of a flotation channel, which may be needed to access the area, would increase turbidity in the already turbid waters of a 3-mile long area. After the two-year construction period, turbidity would be decreased between the structure and shoreline over approximately 20 years. Beneficial effects would result from preservation of filtering action of marsh, wave cessation at the

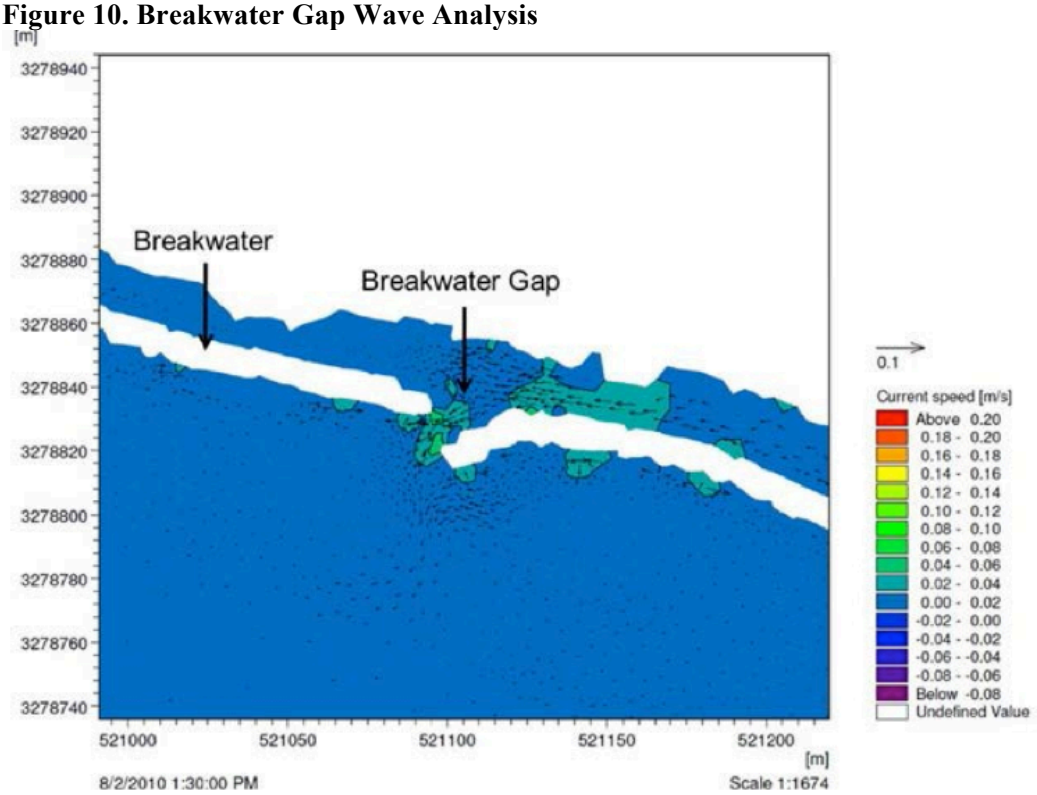
location of the breakwater, and wave reduction at the shoreline. Over 95% of wave energy would be deferred away from shoreline by the breakwater, although this effect would reduce to 75% at year 11 due to settling. Gaps in the breakwater were designed to allow organism access but minimize wave impacts and were oriented based on the predominant wave direction (Figure 10; HDR Engineering, Inc. 2014).

Figure 9. Future without Project Shoreline at the Proposed Project



Source: HDR Engineering, Inc. 2014

Figure 10. Breakwater Gap Wave Analysis



Source: HDR Engineering, Inc. 2014

4.2 BIOLOGICAL ENVIRONMENT

Section 5.2 of the 2006 EA evaluated direct and indirect effects of the demonstration project and the No-Action Alternative on the biological environment (Vegetative Communities, Fish and Wildlife, Essential Fish Habitat, and Threatened and Endangered Species) on the project area and is incorporated by reference. The current 3-mile long project is expected to have similar effects on the biological environment; updated effects are presented below and are summarized in Table 2.

4.2.1 Vegetative Communities

Section 5.2.1 of the 2006 EA describes environmental consequences to the vegetative communities in the project area.

No-action Alternative

The Rockefeller Wildlife Refuge in Cameron Parish, LA is currently experiencing erosion rates in excess of 40 ft per year along the Gulf of Mexico shoreline. Recent estimates indicate erosion along the western portion of the Refuge's shoreline is as high as 46 ft per year (USGS 2013); this is equivalent to approximately 16 acres of wetlands lost per year. Without any protection, the Refuge shoreline would continue to retreat landward, leaving less marsh complex, which could substantially impact the Refuge as well as the surrounding area. Without stabilizing the Refuge coast, the shoreline may retreat over 900 ft within a 20-year timespan. This is equivalent to the loss of over 325 acres of saline marsh that would convert to open water in 20 years.

Preferred Alternative
The preferred alternative would have no adverse impact to existing saline marsh and long-term, direct, moderate benefits to saline marsh and shoreline vegetation. The project would protect 256 acres over the 20-year period and generate 79 net Average Annual Habitat Units (AAHUs; NMFS 2014).

4.2.2 Fish and Wildlife

Section 5.2.2 of the 2006 EA describes environmental consequences to fish and wildlife in the project area.

No-action Alternative
The shoreline is eroding (46 ft per year), and has little to no beach. Shoreline erosion is expected to continue under no action. The continued conversion of marsh to open water would decrease the ability of the project area to support fish and shellfish and decrease fisheries diversity in the project area. Marsh habitat supports 70% of estuarine species. Shoreline and marsh losses would also decrease wildlife habitat in the project area.

Preferred Alternative
The preferred alternative would be constructed in and affect shallow water off the shoreline for the purpose of protecting the shoreline. All construction would be water based. Shoreline activities would only include conventional surveys needed for baseline conditions and monitoring and would include a few personnel walking on the shoreline. The shoreline is eroding (46 ft per year), and includes little to no beach. The proposed action has demonstrated benefits to the shoreline by reducing erosion (approximately 93%, HDR Engineering, Inc. 2014). The preferred action is not expected to have adverse effects on wildlife resources. The proposed breakwater would also provide a stable above water substrate for perching and feeding by nearshore avian species.

The preferred alternative would have long-term, direct, minor adverse impacts by coverage of shallow water habitat and burial of non-motile organisms by rock placement on 16.5 acres of waterbottom. Breakwater rocks would provide a stable substrate for colonization of lower forms of sedentary aquatic organisms. Construction could have temporary impacts to shallow water habitat and non-motile organisms by construction of the optional flotation channel (29.8 acres) and stockpile of dredged material that would be backfilled (32.6 acres). The preferred alternative would increase the diversity of fisheries habitat, maintain valuable marsh habitat, and gaps would allow ingress and egress through the otherwise continuous breakwater.

4.2.3 Essential Fish Habitat

Section 4.2.3 of the 2006 EA describes potential effects of the alternatives on EFH in the project area.

No-action Alternative
The no-action alternative would allow continued conversion of marsh to open water. This would allow the continued conversion of estuarine, sandy bottom, and marsh edge EFH to mud EFH, and decrease the ability of the project area to support managed fisheries.

Preferred Alternative
The preferred alternative would cause short-term unavoidable, adverse impacts from construction, and long-term, unavoidable, adverse impacts from rock placement that would be offset by long-term, moderate, benefits to EFH and nursery resources. The preferred alternative would protect acreage of marsh EFH from converting to open water and mud EFH. The breakwater gaps are designed to allow fish and shellfish ingress and egress. The proposed project would adversely impact 16.5 acres of waterbottom that currently serves as EFH by converting it to hard structure (breakwater), and could potentially temporarily adversely impact 29.8 acres by dredging and 32.6 acres by the stockpile area for the optional

flotation channel. The optional flotation channel would be backfilled upon completion of construction. The area around the hard structure would serve as EFH for different species. Breakwater rocks would provide a stable substrate for colonization of lower forms of sedentary aquatic organisms.

4.2.4 Threatened and Endangered Species

Section 5.2.4 of the 2006 EA described potential effects of the alternatives on threatened and endangered species in the project area. Overall effects on threatened and endangered species are listed below, followed by effects on selected individual protected species.

No-action Alternative
The no-action alternative would have indirect adverse impacts through shoreline erosion and loss of marsh habitat.

Preferred Alternative
The preferred alternative would adversely impact bottom dwelling organisms through displacement and disturbance during construction. Free swimming, open water species of aquatic life, including some endangered and threatened species would be able to maneuver away and avoid direct impact. The proposed breakwater would also provide a stable above-water substrate for perching and feeding by nearshore avian species. The proposed project includes the use of best management practices to reduce off-site turbidity and sedimentation impacts to surrounding aquatic areas including habitats for threatened and endangered species, and other aquatic life. The USFWS concurred that the preferred action is not likely to adversely affect the Florida manatee, piping plover or its critical habitat, proposed red knot, the candidate Sprague's pipit, sea turtles, or Gulf sturgeon (Jeffrey D. Weller, USFWS, letter dated Sept. 10, 2014; Appendix A).

Gulf sturgeon

No-action Alternative
The no-action alternative would have no direct or indirect effects on gulf sturgeon.

Preferred Alternative
No impacts are expected, because sturgeon would likely avoid the immediate area during construction. The project would have no long-term impact on sturgeon use of the nearshore habitat, nor prevent migration along the coast because the depth of water increases gradually from shore, allowing ample room for avoidance.

Sea Turtles

No-action Alternative
The no-action alternative would have no indirect or direct impact to manatee.

Preferred Alternative
Loggerhead, Kemp's ridley, hawksbill, leatherback, and green sea turtles occur along the coast in Louisiana. Two species, the threatened loggerhead sea turtle and the endangered Kemp's ridley could potentially nest in Louisiana during the summer (i.e., May through November). Federally listed sea turtles would not be affected onshore because none of these species are known to nest along this portion of the Louisiana coastline. The USFWS concurred that the proposed action is not likely to affect nesting sea turtles due to the lack of suitable nesting habitat within the project area (Appendix A).

Piping Plover and Critical Habitat and Red Knot

No-action Alternative
Continued shoreline erosion would reduce the availability of foraging habitat and critical habitat that is available to piping plover and foraging habitat available to red knot.

Preferred Alternative
The project would involve no construction on the shoreline other than personnel walking along the beach to survey. Although noise from construction activities nearby may temporarily displace birds to adjacent suitable habitats, birds would not be excluded from utilizing the shoreline habitat in proximity to the offshore work. The proposed action would not adversely affect designated critical habitat for the piping plover because no work would be done within critical habitat other than surveys. In addition, the action is designed to reduce shoreline erosion and protect the constituent elements of critical habitat. The USFWS concurred with the determination that the proposed action is not likely to adversely affect the piping plover and its critical habitat, or red knot, because effects would be temporary, discountable, and insignificant in nature (Appendix A).

Sprague's pipit

No-action Alternative
The no-action alternative would have no indirect or direct impact to Sprague's pipit.

Preferred Alternative
The proposed action is not likely to adversely affect the Sprague's pipit because no suitable habitat is present within or adjacent to the project area and the pipit is not likely to occur in nearby saline marshes. The USFWS concurred with that determination (Appendix A).

West Indian Manatee

No-action Alternative
The no-action alternative would have no indirect or direct impact to manatee.

Preferred Alternative
The West Indian manatee may travel through the area during warm summer months and have been sighted in southwestern Louisiana. However, the marine, shallow open water habitat along the shoreline of this project does not provide suitable foraging habitat for the manatees, and the construction noise from the project would likely cause any manatees to avoid the project area. The USFWS concurred that the project is not likely to adversely affect the manatee (Appendix A).

4.3 CULTURAL AND SOCIOECONOMICS ENVIRONMENT

Section 5.3 of the 2006 EA evaluated direct and indirect effects of the demonstration project and the No-Action Alternative on the cultural and socioeconomics environment (Historical or Archaeological Resources, Economics [Employment and Income], Recreation, Noise, and Infrastructure) on the project area and is incorporated by reference. Section 6.0 of the 2006 EA evaluated effects of the demonstration project on Environmental Justice. The current 3-mile long project is expected to have similar effects on the cultural and socioeconomics environment; updated effects are presented below and are summarized in Table 2.

4.3.1 Historical and Archaeological Resources

No-action Alternative
The no-action alternative would have no direct impact on cultural resources. The no-action alternative could indirectly impact cultural resources by uncovering and the loss of undiscovered sites as erosion continues.

Preferred Alternative
The preferred alternative would have no direct impact on cultural resources. Although the State Historic Preservation Office (SHPO) reported that four potential cultural resource sites were near the proposed project area (CM114, CM150, CM151, and CM152), no known historic properties would be affected by the project. SHPO concurred with this no effects determination (Pam Breaux, SHPO, letter dated Sept. 2, 2014; Appendix A). The project could have potential indirect effects through the reduction in shoreline erosion that would preserve cultural resource sites located shoreward of the proposed breakwater.

4.3.2 Recreation

No-action Alternative
The no action alternative would decrease the area's ability to support recreational fishing and birding and reduce the size of the wildlife reserve.

Preferred Alternative
This alternative has the potential to protect acres of state wildlife preserve, and benefit recreational uses such as fishing and birding for 20 years.

5 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE (HTRW)

No-action Alternative
The no-action alternative would have no direct impact on HTRW. Potential indirect effects on HTRW could occur through uncovering of oil and gas infrastructure as erosion continues.

Preferred Alternative
The preferred alternative would have no direct impact on HTRW. The project area has not had any activities associated with it that would be expected to produce hazardous or toxic wastes. Accidental spills and releases of waste/fuel, although remote, are possible. The Contractor will prevent oil, fuel, or other hazardous substances from entering the air or water by design and procedural controls. All wastes and refuse generated by project construction would be removed and properly disposed. The Contractor will implement a spill contingency plan for hazardous, toxic, or petroleum material. Compliance with U.S. EPA Vessel General Permits would be ensured, as applicable.

6 CUMULATIVE IMPACTS

Direct and indirect impacts of past, present, and reasonably foreseeable future events were considered in the analysis of consequences of the proposed project. This analysis was considered over the adjacent Refuge and over the past 20 years. These impacts include historical and predicted future land loss rates for the area and other restoration projects in the vicinity. The preferred alternative would have temporary adverse impacts to some environmental resources but overall cumulative benefits.

The coastal habitats and associated resources of Louisiana, including the project area, have been greatly impacted by natural subsidence, levees, hurricanes, and oil and gas infrastructure. Recent events,

particularly hurricanes, contribute to the loss of habitat but not enough to be discernible from other impacts.

Although CWPPRA projects are nominated and implemented one at a time and must have individual merit, the cumulative value of all wetland restoration and protection projects in an area can far exceed the summed values of the individual projects. Similar wetland protection projects in the area would operate with the preferred alternative to enhance the structural and functional integrity of the ecosystem, improve primary productivity rates, and thereby improve the overall environmental resources.

Existing and planned restoration projects north of ME-18 are shown in Figure 11 (the project area is in the 3-mile section to the east); some of these projects are funded through CWPPRA. Since the inception of CWPPRA, 151 coastal restoration or protection projects have been authorized, benefiting over 110,000 acres in Louisiana (CWPPRA 2014).

Figure 11. Existing and Planned Restoration Projects North of ME-18

Physical cumulative impacts of this protection project and other protection and restoration projects are meant to slow the land loss rate in coastal Louisiana. Currently, land is lost at an average rate of an acre every 38 minutes. If the current rate of loss is not slowed by the year 2040, an additional 800,000 acres of wetlands will convert to open water.

Physical cumulative adverse impacts are related to coverage of shallow water habitat by rock placement. Placement of rock for the proposed project and for other shoreline protection projects is not expected to

have any long-term adverse cumulative impacts and will make hard substrate available. In addition, benefits of shoreline protection would outweigh any minimal adverse impacts.

The cumulative impact of the proposed action on air and water quality, when considered in addition to other protection, restoration, and CWPPRA projects, would not differ substantially from the effects of the alternatives considered individually. Air quality would be temporarily and locally affected during construction of each project. Short-term, localized increases in turbidity would result from all the projects; however, these impacts are considered to be localized and short-term because projects would not co-occur in space or time. The cumulative beneficial impact to water quality would be a long-term increase in quality by increasing marsh and decreasing turbidity.

Biological cumulative impacts of all the CWPPRA and other protection and restoration projects would be similar to the direct and indirect impacts of the alternatives described previously. All alternatives, except the no-action alternative, would work with existing projects to enhance habitat for fish, wildlife, vegetation, and EFH. Cumulatively, the build alternatives would increase benefits to the area by decreasing land loss rates. No cumulative adverse impacts are anticipated from the proposed project, other CWPPRA projects, and other habitat protection and restoration projects.

Cumulative beneficial impacts to socio-economic resources would result from synergy of the build alternative with nearby protection and restoration projects. These projects would cumulatively decrease losses of habitat, thereby benefiting the local economy and providing improved storm protection. The build alternative is similar to previous protection actions in coastal Louisiana that have had no adverse cultural impacts. No adverse cumulative impacts to cultural resources would be expected to result from implementation of the preferred alternative.

7 ENVIRONMENTAL COMMITMENTS

The NMFS and CPRA commit to avoiding, minimizing, or mitigating for adverse effects during construction activities by including the following commitments in the contract specifications. Minimization and avoidance measures of the preferred alternative are presented in Table 5. Mitigation and monitoring would be derived through consultation and coordination with federal and state agencies. The USACE, LDNR, and Louisiana Department of Environmental Quality permits that would be obtained for this project would contain extensive requirements/conditions to ensure the minimizing and mitigation of adverse effects and the project would comply with applicable environmental requirements.

Table 5. Summary of Avoidance and Minimization Measures of the Preferred Alternative

Resource	Potential Avoidance and Minimization Measures
Geology, Soils, and Topography	• Construction of the breakwater, optional flotation channel, and optional stockpile of dredged material had been designed to minimize project impacts to waterbottom. Best management practices would be implemented to minimize impacts.
Air Quality	• No permanent sources of air emissions are part of this project. Equipment would be maintained to minimized exhaust fumes and best management practices would minimize dust.
Surface Water Resources	• Best management practices would be implemented to minimize turbidity. • Compliance with the Clean Water Act and other regulations would protect water resources.
Vegetative Communities	• Construction will be water based to avoid impacts to wetlands
Fish and Wildlife	• Construction of the breakwater, optional flotation channel, and optional stockpile of dredged material has been designed to minimize project impacts to waterbottom. Best management practices would be implemented to minimize impacts. • Areas adjacent to optional flotation channel and stockpile areas would provide source organisms for recolonization.
Essential Fish Habitat	• Areas adjacent to optional flotation channel and stockpile areas would provide source organisms for recolonization. Flotation channel would be backfilled after construction. • Project-specific evaluations and coordination with appropriate federal, state, and local agencies would focus on protecting sensitive species. • Gaps will be constructed in the breakwater to provide organism access.
Threatened and Endangered Species	• Safeguards to protect threatened and endangered species would be implemented during project construction
Historical and Archaeological Resources	• Appropriate Section 106 Consultation with the Louisiana SHPO has been completed. No known sites should be affected by the project; unanticipated discovery of sites would be referred to appropriate agencies.
Recreation	• Coordination with appropriate federal, state, and local agencies would focus on maintaining the quality of public recreation. • All work would be done by boat
Environmental Justice	• Project area is offshore of a wildlife refuge and is in compliance
Hazardous, Toxic and Radioactive Waste	• Contractor will use design and procedural controls to prevent oil, fuel, and other hazardous substances from entering the air or water.

8 PREPARERS

This SEA was prepared by biologists Joy Merino, Cecelia Linder, John Foret Ph.D., and Donna Rogers Ph.D. of NMFS.

9 COORDINATION

The original 2006 EA was reviewed by the participating CWPPRA agencies (EPA, USFWS, NRCS, USACE, and State of Louisiana), and comments were received from the USFWS and NRCS in support of the project. Agency comments were also requested in conjunction with this SEA and will be requested in coordination with the permitting process. USFWS concurred with the determination that the SEA action was not likely to adversely affect any threatened or endangered species in their review of the document. A final SEA will be made available to the public at http://www.lacoast.gov along with other public records for the project.

10 LITERATURE CITED

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APPENDIX A : CORRESPONDENCE

NOAA EFH Letter

RECEIVED
DEC 08 2014
NMFS LAFAYETTE

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

December 5, 2014 F/SER46/RH:jk
225/389-0508

Dr. John D. Foret, Ph.D.
NOAA Fisheries Service/SEFSC
Estuarine Habitats and Coastal Fisheries Center
646 Cajundome Boulevard, Room 175
Lafayette, Louisiana 70506

Dear Dr. Foret:

NOAA's National Marine Fisheries Service (NMFS) has reviewed the draft Supplemental Environmental Assessment (SEA) for the Rockefeller Refuge Gulf Shoreline Stabilization (ME-18) project funded for engineering and design under the auspices of the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA). This draft was transmitted for our review by electronic mail on November 25, 2014. Submittal of the draft SEA for our review also was intended to initiate essential fish habitat (EFH) coordination requirements pursuant to the requirements of the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) and NMFS' findings with the CWPPRA program.

Staff of NMFS' Habitat Conservation Division have reviewed the draft SEA and believe it to be well written and that impacts to resources of concern have generally been adequately evaluated and disclosed. However, we have the following comments to provide to ensure the final SEA is improved over the draft version:

Page 13, Essential Fish Habitat. The correct citing for the statute requiring management of economically important marine fishery species is the Magnuson-Stevens Fishery Conservation and Management Act. The last sentence in paragraph 1 should be edited to correctly cite the statute.

Page 19, Table 3. EFH for the Species and Life Stages Listed in the Project Area. This table is missing a number of federally managed fishery species for which EFH has been designated in the project area. In addition, this table includes a number of federally managed fishery species which do not have EFH in the project area. Table 3 should be replaced with the attached table and the text should be revised to reflect this information.

We appreciate the opportunity to review and comment on the draft SEA. While revisions to the text have been recommended, we agree the project would be beneficial to EFH supportive of marine fishery resources and support its implementation. Given the benefit to EFH, we have no

EFH Conservation Recommendations to provide. This completes the coordination requirements pursuant to the MSFCMA.

Sincerely,

Virginia M. Fay
Assistant Regional Administrator
Habitat Conservation Division

Enclosure

c:
F/SER46, Swafford
F/SER4, Rolfes, Dale
Files

Enclosure

Table 3. Essential Fish Habitat in the project area for fishery species managed by the Gulf of Mexico Fishery Management Council and Highly Migratory Species managed by the National Marine Fishery Service

Common Name	Life Stage System (M=marine, E=estuarine)	Essential Fish Habitat
Brown Shrimp	Juvenile (E)	Marsh, soft bottom
	Adult (M/E)	Nearshore and estuarine soft bottom
White Shrimp	Eggs/Larval (M)	Nearshore soft bottom
	Juvenile (E)	Marsh, estuarine soft bottom
	Adult (M)	Nearshore soft bottom
Red Drum	Larval/Postlarval (E)	Marsh, estuarine soft bottom
	Juvenile (E/M)	Marsh, estuarine soft bottom
	Adults (E/M)	Marsh, estuarine soft bottom
Gray Snapper	Adult (E/M)	Estuarine marsh, soft bottom nearshore soft bottom
Lane Snapper	Postlarval (M)	nearshore softbottom
	Juvenile (E/M)	soft bottom, nearshore soft bottom
Red Snapper	Juvenile (M)	nearshore soft bottom
Scalloped Hammerhead	Neonate (M)	nearshore waters to 30 fathoms
Blacktipped Shark	Neonate (M)	all nearshore waters
	Juvenile (M)	all nearshore waters
	Adult (M)	all nearshore waters
Atlantic Sharpnose Shark	Neonate (M)	all nearshore waters
	Adult (M)	all nearshore waters

NOAA Protected Resources Letter

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

F/SER31:NB

John Foret, Ph.D.
National Marine Fisheries Service
SEFC/Estuarine Habitats and Coastal Fisheries Center
646 Cajundome Boulevard
Lafayette, Louisiana 70506

Ref.: NMFS, 2 Restoration Projects, Cameron and Vermilion Parishes, Louisiana

	Project Name	Parish	NMFS Tracking Number
1	Rockefeller Refuge Gulf Shoreline Stabilization (ME-18)	Cameron and Vermilion	SER-2014-14934
2	Oyster Bayou Marsh Restoration (CS-59)	Cameron	SER-2014-14942

Dear Dr. Foret:

This document responds to 2 letters received on August 18 and August 20, 2014, for the above-referenced projects, requesting National Marine Fisheries Service (NMFS) concurrence with your project-effect determinations submitted pursuant to Section 7 of the Endangered Species Act (ESA). You determined that the proposed projects may affect, but are not likely to adversely affect, smalltooth sawfish, sea turtles (green, leatherback, loggerhead, Kemp's ridley, and hawksbill), whales (humpback, blue, fin, sei), and Gulf sturgeon. On September 5, 2014, we decided to batch these projects into a single consultation based on the similarity of the proposed activities. We requested additional information on September 16, 2014, and received it on September 17, 2014, the same day we initiated consultation. Our effects determinations are provided below. NMFS's findings on the projects' potential effects are based on the project descriptions in this response. Any changes to the proposed actions may negate the findings of this consultation and may require reinitiation of consultation with NMFS.

Each project is described in detail below and locations are shown in Figures 1-3 following the project descriptions. The applicants will follow NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*, dated March 23, 2006 (enclosed).

1. The Rockefeller Refuge Gulf Shoreline Stabilization project is located at 29.636786°N, 92.778019°W, in the Gulf of Mexico, westward from Joseph's Harbor Canal (Figure 1). The applicant proposes to construct 3 miles of reef breakwater parallel to the shore along the -3.5 foot (ft)-deep contour, positioned approximately 150 ft offshore. The new breakwater will incorporate existing breakwaters and provide gaps in the breakwater every 1,500 ft for tidal flow and species movement. The goal is to reduce the current loss of marsh estimated at a loss of 46 ft per year of shoreline with a projected loss of 340 acres (ac) of saline marsh in the next 20 years, totaling 840 ac of loss in the next 50 years (see Figure 2). Reef sections

are constructed by placing geotextile fabrics, lightweight aggregate centers, and then stone to form a breakwater. The top of the breakwaters will initially be at an elevation of +3.5 ft and measure 20 ft wide, though some subsidence is expected. Work will be completed from a shallow-draft barge because equipment is not permitted to access land at this site. To accommodate the barge in shallow water, dredging of a temporary flotation channel parallel to the breakwater may be necessary; however, no channel was necessary for the breakwater test sections completed in 2007. A temporary floatation channel would be roughly 80 ft wide by 7 ft deep, which would require mechanically dredging approximately 30,000 cubic yards (yd^3) of material. The sediment would be stockpiled by side-casting seaward of the channel, and the flotation channel backfilled after project completion. Temporary signs would be used to mark the temporary flotation channel, whereas other permanent signs would be constructed within the breakwater. Benthic conditions are described as clay and shell with no known seagrass beds within the high-turbidity project area. Construction is anticipated to take 1.8 years to complete with all work completed during daylight hours.

2. The Oyster Bayou Marsh Restoration project is located within an onshore marsh at 29.790728°N, 93.408101°W with a borrow site at 29.713158°N, 93.368142°W, in the Gulf of Mexico, westward from Calcasieu River (Figure 3). The project would create approximately 600 ac of marsh, 200 ac of terraced marsh, and protect an additional 18 ac of marsh, with all restoration work occurring in the uplands. Approximately 3,723,000 yd^3 of borrow sediments would be hydraulically dredged from a 359-ac borrow area to between 10-15 ft deep and then pumped via pipeline to the upland locations. The borrow site is located approximately 3.5 miles offshore in the Gulf of Mexico in waters approximately 16-25 ft deep. Material will be placed to +2.5 ft, in upland areas that avoid filling an existing canal and will use temporary dikes and existing sediment retention features to maintain the sediments in the intertidal range for the duration of the project (20 years). The marsh and terraced areas will be planted with plugs of native marsh plant species. Work is expected to occur continuously for up to 6-18 months.

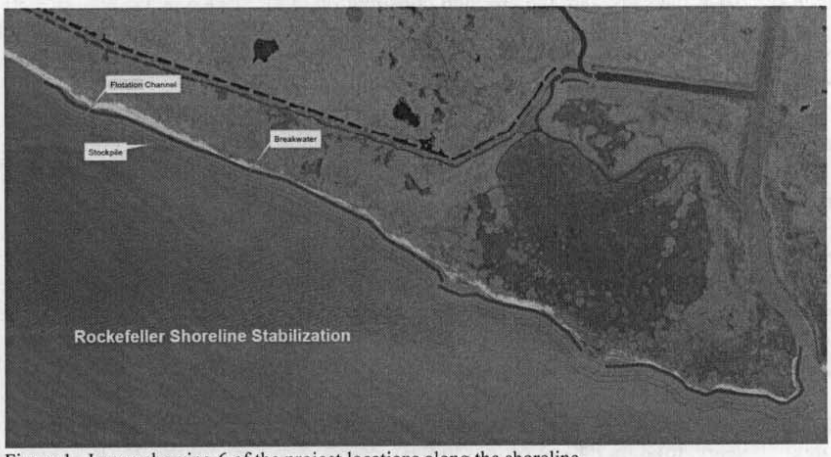

Figure 1. Image showing 6 of the project locations along the shoreline
(©2013 Google; Image Landsat; Data SIO, NOAA, U.S. Navy, NGA, GEBCO)

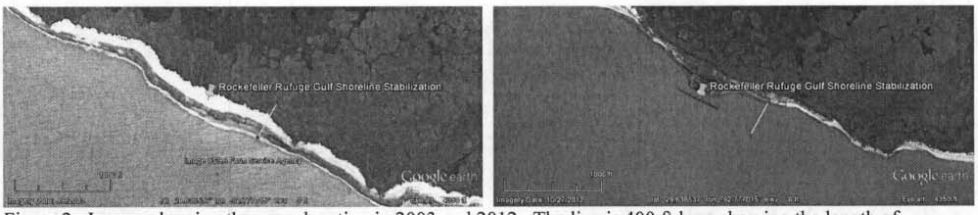

Figure 2. Images showing the same location in 2003 and 2012. The line is 400 ft long showing the length of erosion in that 10-year time frame (Image USDA Farm Service Agency and Image, ©2014 TerraMetrics)

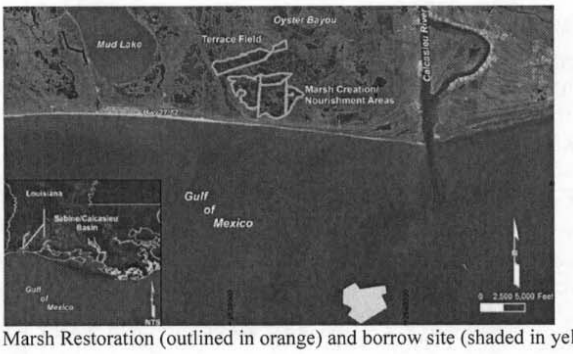

Figure 3. Oyster Bayou Marsh Restoration (outlined in orange) and borrow site (shaded in yellow). Image provided by applicant.

Three ESA-listed species of sea turtles (the endangered Kemp's ridley, the threatened loggerhead,[1] and the threatened/endangered green[2]), can be found in or near the action areas of the proposed projects and may be affected by the projects.

- We do not believe hawksbill or leatherback sea turtles will be present at the project sites or affected because of their very specific life history, sheltering, and foraging requirements, which are not met in or near the action areas. Hawksbills are associated with coral reefs while leatherbacks are a deepwater, pelagic species.

- You stated that the projects may affect smalltooth sawfish; however, smalltooth sawfish are only rarely found outside of the state of Florida; based on their known current range.[3] Because of their expected rarity in and near the proposed action areas, we believe that they will not be affected by these projects.

- You stated that the projects may affect Gulf sturgeon; however, these projects are outside of the known range for this species (68 FR 13370). Gulf sturgeon are not expected to occur west of the Mississippi River, therefore they will not be affected by these projects.

---

[1] Northwest Atlantic Ocean distinct population segment (DPS)
[2] Green turtles are listed as threatened except for the Florida and Pacific coast of Mexico breeding populations, which are listed as endangered.
[3] NMFS. 2009. Smalltooth Sawfish Recovery Plan, Silver Spring, MD.

- You stated that the projects may affect whales (humpback, blue, fin, sei); however, we believe the shallow water in the proposed project areas (3-25 ft) will not support large, deep-water whales. Therefore, these projects will not affect these whales.

- None of these projects are located within designated critical habitat and therefore it will not be affected.

We have identified the following potential effects to ESA listed species and concluded the species are not likely to be adversely affected:

1. Effects to sea turtles include the risk of injury from breakwater placement in 3-4 ft deep water, but the risk will be discountable due to the species' ability to move away from the project sites if disturbed. In addition, breakwater installation will cease temporarily if a sea turtle is spotted within 50 ft of the project, in compliance with NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions.*

2. Sea turtles may be adversely affected by being unable to use the sites for foraging and shelter due to avoidance of construction activities and related noise. These effects will be insignificant as these projects will not impact seagrasses, coral, or mangroves used for foraging or refuge habitat; and projects are located in open water areas that will not restrict movement of species in the area. The proposed projects may also result in increased turbidity; however, these effects will be insignificant. Project 1 is an area of high turbidity and will not be affected by a temporary increase in turbidity from this project and Project 2 is designed to incorporate natural turbidity barriers including dikes.

3. Effects to sea turtles include the risk of injury from contact with mechanical or hydraulic dredging equipment, which will be discountable. NMFS has previously determined in dredging Biological Opinions[4] that, while oceangoing hopper-type dredges may lethally entrain protected species, non-hopper type dredging methods (e.g., mechanical, clamshell, and bucket dredging as well as hydraulic [suction] cutterhead, pipeline, and sidecast dredging) are slower and unlikely to overtake or adversely affect them. The implementation of NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions* will provide additional protection by requiring work to stop if a listed species is observed within 50 ft of operating machinery.

In summary, we concur with your determinations that the proposed actions are not likely to adversely affect sea turtles.

This concludes your consultation responsibilities under the ESA for species under NMFS's purview. Consultation must be reinitiated if a take occurs or new information reveals effects of the action not previously considered, or the identified action is subsequently modified in a

[4] NMFS. 2007. Revision 2 to the November 19, 2003, Gulf of Mexico Regional Biological Opinion to the U.S. Army Corps of Engineers on Hopper Dredging of Navigation Channels and Borrow Areas in the U.S. Gulf of Mexico. National Marine Fisheries Service, Southeast Regional Office, Protected Resources Division, St. Petersburg, Florida. January 9, 2007. 15 pp.

manner that causes an effect to the listed species or critical habitat in a manner or to an extent not previously considered, or if a new species is listed or critical habitat designated that may be affected by the identified action.

We have enclosed additional relevant information for your review. If you have any questions, please contact Nicole Bonine, Consultation Biologist, at (727) 824-5336 or by email at Nicole.Bonine@noaa.gov. Thank you for your continued cooperation in the conservation of ESA-listed species.

Sincerely,

Roy E. Crabtree, Ph.D.
Regional Administrator

Enc.: 1. *Sea Turtle and Smalltooth Sawfish Construction Conditions* (Revised March 23, 2006)
2. *PCTS Access and Additional Considerations for ESA Section 7 Consultations* (Revised June 11, 2013)

File: 1514-22.C

SHPO Letter

Robin Daigle

From:	Joy Merino- NOAA Federal <joy.merino@noaa.gov>
Sent:	Tuesday, August 19, 2014 9:10 AM
To:	DCRT Section 106
Cc:	John Foret
Subject:	[SPAM] Sec 106 consult and Cultural coordination request
Attachments:	to ShPO ltr.pdf
Importance:	Low

Dear Mrs. Breaux,

The NOAA, National Marine Fisheries Service is the federal sponsor of the *Rockefeller Refuge Gulf Shoreline Stabilization Project* (ME-18) in Cameron Parish. We request your assistance in identifying any potential cultural resources in this area, so we may coordinate areas of high probability or those to avoid. For this shoreline protection project, we have prepared a cultural resources assessment, as required under Section 106 of the National Historic Preservation Act of 1966, as amended. We request section 106 consultation with your office for cultural resources, and request a concurrence with our determination of effect.

A letter and assessment are attached for your review. Your comments/ concerns would be appreciated no later than September 30, 2014, and may be addressed to:

Dr. John Foret
NOAA Fisheries Service
646 Cajundome Blvd.
Lafayette, LA 70506
John.Foret@noaa.gov

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

Pam Breaux 9-2-14
Pam Breaux Date
State Historic Preservation Officer

Thank you,

Fisheries Biologist
NOAA Fisheries, Science, Ecology Branch
U.S. Department of Commerce
337.291.2109
joy.merino@noaa.gov

http://www.galvestonlab.sefsc.noaa.gov/research/fishery_ecology/index.html

RECEIVED
AUG 19 2014
ARCHAEOLOGY

1

USFWS Letter

United States Department of the Interior

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

September 10, 2014

Dr. John D. Foret
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
646 Cajundome Boulevard
Lafayette, Louisiana 70506

Dear Dr. Foret:

The Fish and Wildlife Service (Service) has received your August 18, 2014, letter requesting our concurrence with the National Marine Fisheries Service's (NMFS) determination that the proposed Rockefeller Refuge Gulf Shoreline Stabilization (ME-18) project is not likely to adversely affect the endangered West Indian manatee (*Trichechus manatus*), the threatened piping plover (*Charadrius melodus*) and its designated critical habitat, the proposed red knot (*Calidris canutus rufa*), the candidate Sprague's pipit (*Anthus spragueii*), federally listed sea turtles, and the threatened Atlantic sturgeon (*Acipenser oxyrhynchus desotoi*). The proposed project is authorized for funding under the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) (104 Stat. 4779; 16 U.S.C. 3951 et seq.). The Service has reviewed the information you provided and offers the following comments in accordance with the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.), and the Migratory Bird Treaty Act (MBTA) (40 Stat. 755, as amended; 16 U.S.C. 703 et seq.).

The proposed project would involve installing reef breakwaters consisting of lightweight aggregate in shallow open water in the Gulf of Mexico. The breakwaters would be placed parallel to approximately 3 miles of shoreline along the Louisiana Department of Wildlife and Fisheries' Rockefeller Wildlife Refuge in Vermilion Parish, Louisiana. The purpose of the proposed action is to reduce both the direct loss of saline marsh and shoreline erosion. The lightweight aggregate breakwaters and other alternatives (i.e., no action (control area), beach fill, and traditional reef breakwater) have been tested over a 13-month period, and the lightweight aggregate provided the best results for reducing marsh loss and shoreline erosion. All construction would occur in open water and would be completed within 12 months. Onshore activity would consist only of personnel walking along the shoreline to conduct conventional baseline surveys. Disturbance on the shoreline would result from survey personnel walking along the beach and noise from equipment installing the breakwaters in nearby open water.

Manatees may travel through the area during the warm summer months and there have been sightings of manatees in southwestern Louisiana. According to your letter, the NMFS has determined that the proposed action would not adversely affect the West Indian manatee because it rarely occurs within the project area. The Service agrees that the marine, shallow open water habitat along the Vermilion Parish shoreline does not provide suitable foraging habitat or a

freshwater drinking source for manatees, and that the noise from the proposed work is likely to encourage manatees to avoid the project area. Accordingly, the Service concurs with your determination that the proposed action is not likely to adversely affect manatees.

According to your letter, the NMFS has determined that the proposed action is not likely to adversely affect the piping plover or the red knot because there would be no construction on the shoreline other than personnel walking along the beach for baseline survey purposes. Although nearby noise from construction activities may temporarily displace birds to nearby suitable habitats, birds would not be excluded from utilizing the shoreline habitat in proximity to the offshore work. The NMFS has determined that the proposed action would not adversely affect designated critical habitat for the piping plover because no work would be done within critical habitat other than baseline surveys. Furthermore, the action is designed to reduce shoreline erosion and protect the constituent elements of critical habitat. The Service concurs with the NMFS' determination that the proposed action is not likely to adversely affect the piping plover and its critical habitat, or red knots, because such effects described above would be temporary, discountable, and insignificant in nature.

The Sprague's pipit winters in Louisiana, arriving from its northern breeding grounds in September and remaining until April. Migration and wintering ecology of this species is poorly known, but Sprague's pipit exhibits a strong preference for open grassland (i.e., native prairie) with native grasses of intermediate height and thickness, and it avoids areas with too much shrub encroachment. Its use of an area is dependent upon habitat conditions. This species is a ground feeder and forages mainly on insects but will occasionally eat seeds. According to your letter, the NMFS has determined that the proposed action is not likely to adversely affect the Sprague's pipit because there is no suitable habitat within or adjacent to the project area and the pipit is not likely to occur in nearby saline marshes. The Service concurs with that determination.

Two species, the threatened loggerhead sea turtle (*Caretta caretta*) and the endangered Kemp's ridley *(Lepidochelys kempii*) could potentially nest in Louisiana during the summer months (i.e., May through November). Historical records indicate that loggerheads nested on the Chandeleur Islands and recent data indicate rare nesting attempts along Fourchon Beach in Lafourche Parish. The Kemp's ridley is known to nest in coastal Texas and Alabama; thus, nesting attempts could possibly occur in Louisiana as that species achieves recovery. According to your letter, the NMFS has determined that federally listed sea turtles would not be affected onshore because none of the five listed species are known to nest along this portion of the Louisiana coastline. The Service concurs with the NMFS' determination that the proposed action is not likely to affect nesting sea turtles due to the lack of suitable nesting habitat within the project area.

Please note that as part of the critical habitat designation for Atlantic sturgeon (formerly known as Gulf sturgeon), the Service and NMFS consultation responsibility was divided by project location and Federal action agency. In riverine waters, the Service is responsible for all consultations regarding Atlantic sturgeon and critical habitat, while in marine waters the NMFS is responsible for consultation. For estuarine waters, the Service is responsible for consultations with the Department of Transportation (DOT), the Environmental Protection Agency (EPA), the U.S. Coast Guard (USCG), and the Federal Emergency Management Agency (FEMA). All other

Federal agencies should consult with the NMFS office (Ms. Cathy Tortorici at 727-209-5953). Thus, the NMFS has jurisdiction over the currently proposed action within marine waters.

Nesting shorebirds may occur along the shoreline in proximity to the project area. If the proposed work occurs during nesting season, birds, nests, and chicks may be disturbed during baseline surveys conducted by personnel walking the shoreline. Accordingly, the NMFS may need to develop a bird abatement plan to avoid and minimize potential effects to nesting shorebirds prior to construction. Please contact Ms. Patti Holland (337-291-3121) of this office for further information.

We appreciate the NMFS' continued commitment to the conservation of threatened, endangered, proposed, and candidate species, and their critical habitats, as well as nesting shorebirds. If you have questions regarding the content of this letter, please contact Ms. Brigette Firmin (337-291-3108) of this office.

Sincerely,

Jeffrey D. Weller
Supervisor
Louisiana Ecological Services Office

cc: LDWF, Rockefeller Refuge, Grand Chenier, LA
LDWF, Natural Heritage Program, Baton Rouge, LA

EPA Letter- Water Dept.

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

September 8, 2014

John Foret, PhD
NOAA Fisheries Service
646 Cajundome Boulevard
Lafayette, LA 70506

Dear Mr. Foret:

We have received your August 18, 2014, letter requesting our evaluation of the potential environmental impacts which might result from the following project:

Gulf Shoreline Restoration
Rockefeller Refuge
Cameron Parish, Louisiana

The project, funded through the Coastal Wetland Planning, Protection & Restoration Act, is located on the Chicot aquifer system which has been designated a sole source aquifer (SSA) by the EPA. Based on the information provided for the project, we have determined that the project, as proposed, should not have an adverse effect on the quality of the ground water underlying the project site.

This approval of the proposed project does not relieve the applicant from adhering to other State and Federal requirements, which may apply. This approval is based solely upon the potential impact to the quality of ground water as it relates to the EPA's authority pursuant to Section 1424(e) of the Safe Drinking Water Act.

If you did not include the parish, project description, project location or the federal funding agency, please do so in future SSA correspondence.

If you have any questions on this letter or the SSA program please contact me at (214) 665-7133.

Sincerely yours,

Michael Bechdol, Coordinator
Sole Source Aquifer Program
Ground Water/UIC Section

cc: Jesse Means, LDEQ

Internet Address (URL) ● http://www.epa.gov/region6
Recycled/Recyclable ● Printed with Vegetable Oil Based Inks on 100% Recycled Paper, Process Chlorine Free

Joy Merino - NOAA Federal <joy.merino@noaa.gov>

Fwd: CWPPRA projects CS-59 Oyster Bayou EA and Rockefeller Refuge ME-18 SEA review

1 message

John Foret - NOAA Federal <john.foret@noaa.gov> Mon, Jan 5, 2015 at 9:35 AM
Reply-To: john.foret@noaa.gov
To: "Joy Merino (E-mail)" <joy.merino@noaa.gov>, Cecelia Linder <Cecelia.Linder@noaa.gov>

Wading through my emails...

John

-------- Forwarded Message --------
Subject:CWPPRA projects CS-59 Oyster Bayou EA and Rockefeller Refuge ME-18 SEA review
Date: Wed, 24 Dec 2014 17:48:33 +0000
From: Aldridge, Barbara <aldridge.barbara@epa.gov>
To:john.foret@noaa.gov <john.foret@noaa.gov>
CC: McCormick, Karen <McCormick.Karen@epa.gov>

Hi John,

I'm responding for Karen McCormick and the EPA CWPPRA Team.

The EPA has reviewed both the ME-18 Rockefeller Refuge SEA and CS-59 Oyster Bayou EA and have no comments at this time.

Thank you for the opportunity to review these environmental assessment documents.

Barbara J Aldridge

Barbara J. Aldridge

Marine & Coastal Section 6WQ-EC

Ecosystems Protection Branch

Water Quality Protection Division

U.S. Environmental Protection Agency (EPA) Region 6

1445 Ross Avenue, Dallas TX 75202

(214) 665-2712 Office; (214) 310-6217 Cell

NRCS Letter

Joy Merino - NOAA Federal <joy.merino@noaa.gov>

Fwd: Re: Phase 2 request for Rockefeller Refuge Gulf Shoreline Stabilization Project (ME-18)

1 message

John Foret - NOAA Federal <john.foret@noaa.gov> Mon, Jan 5, 2015 at 9:41 AM
Reply-To: john.foret@noaa.gov
To: "Joy Merino (E-mail)" <joy.merino@noaa.gov>

-------- Forwarded Message --------
Subject: Re: Phase 2 request for Rockefeller Refuge Gulf Shoreline Stabilization Project (ME-18)
Date: Tue, 23 Dec 2014 11:27:21 -0500
From: Cecelia Linder - NOAA Federal <cecelia.linder@noaa.gov>
To: Jurgensen, John - NRCS, Alexandria, LA <john.jurgensen@la.usda.gov>
CC: John.Foret@noaa.gov <John.Foret@noaa.gov>, Mallach, Troy - NRCS, Lafayette, LA <Troy.Mallach@la.usda.gov>, Boustany, Ron - NRCS, Lafayette, LA <ron.boustany@la.usda.gov>, Paul, Britt - NRCS, Alexandria, LA <britt.paul@la.usda.gov>

Thanks John for supplying NRCS' comments.

I hope you and the rest of the NRCS team have a lovely Christmas and New Years!

Cece

On Tue, Dec 23, 2014 at 10:24 AM, Jurgensen, John - NRCS, Alexandria, LA <john.jurgensen@la.usda.gov> wrote:

> December 23, 2014
>
> Cecelia Linder
>
> National Marine Fisheries Service
>
> 1315 East-West Hwy
>
> Silver Spring, MD 20910
>
> Cece,

Please reference your November 2014, draft Supplemental Environmental Assessment (SEA) for the proposed continuation of the Rockefeller Refuge Gulf Shoreline Stabilization Project (ME-18). The Natural Resources Conservation Service (NRCS) has reviewed the information and offers the following comments as requested.

General Comments on the Draft SEA

The draft SEA is well-written and generally provides an adequate description of the proposed project, the affected environmental resources, and the anticipated project impacts to those resources.

The purpose and orientation of the "overlapping" gaps are not well described and potentially unnecessary. NRCS has had similar shoreline protection success with conventional gapping of breakwaters without "overlapping." Please explain the purpose and benefits of that gapping.

Specific Comments on the Draft SEA

Page ES-i, Summary of statement and conclusions, Fourth Sentence – Please include that the conclusions are also based on test sections from the demonstration project as well.

Page 1, Introduction, Paragraph 5 , Fourth Sentence - We would like you to include that the conclusion is also based on test sections constructed during a project demonstration.

Page 1, Introduction, Paragraph 5 , Fifth Sentence – Is the protected marsh entirely saline or would some of it be classified as brackish? If so, you could include protection of shoreline and saline and brackish marsh habitats.

Page 2, Purpose and Need, Paragraph 1, First Sentence – We would like you to include that this project would also support Louisiana's Comprehensive Master Plan for a Sustainable Coast. (i.e.) …is to support the coastal restoration objectives of CWPPRA and the Louisiana's Comprehensive Master Plan for a Sustainable Coast by stabilizing the Gulf of Mexico shoreline.

Page 2, Purpose and Need, Paragraph 1, First Sentence – We recommend that you include brackish marsh with the second bullet (2) protect saline and brackish marsh habitat.

-

Page 6, Preferred Alternative, Paragraph 3, First Sentence – Please include a reference for gapping every 1500 feet. How was it determined to gap every 1500 feet? Could you gap at every 1000 feet and save

costs?

Page 12, Biological Environment, Vegetative Community, Paragraph 1, First Sentence – The CRMS database describes this area as brackish marsh. It probably fluctuated between saline and brackish so please include both habitats.

If you have any questions or would like to discuss these comments please us know.

Thanks,

John

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USDA Natural Resources Conservation Service

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From: Cecelia Linder - NOAA Federal [mailto:cecelia.linder@noaa.gov]
Sent: Monday, November 24, 2014 3:24 PM
To: Constance, Troy G MVN; Richard Hartman; Paul, Britt - NRCS, Alexandria, LA; Bren Haase; Karen McCormick; Darryl Clark
Cc: Murry, Allison MVN-Contractor; Inman, Brad L MVN; Crawford, Brad; Kevin Roy; Jurgensen, John - NRCS, Alexandria, LA; Stuart Brown; Andrew Beall; John Foret - NOAA Federal
Subject: Phase 2 request for Rockefeller Refuge Gulf Shoreline Stabilization Project (ME-18)