



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NEW ORLEANS DISTRICT
7400 LEAKE AVE
NEW ORLEANS, LA 70118-3651

Regional Planning and Environment
Division South
Environmental Planning Branch

FINDING OF NO SIGNIFICANT IMPACT (FONSI)

ENVIRONMENTAL ASSESSMENT

GRAND ISLE AND VICINITY: BEACH EROSION AND HURRICANE PROTECTION PROJECT, JEFFERSON PARISH, LA

EA #573

Construction of Breakwaters

Description of the Proposed Action (Recommended Plan): The U.S. Army Corps of Engineers (USACE), Mississippi River Valley Division (MVD), Regional Planning and Environment Division South, New Orleans District (CEMVN) has prepared Environmental Assessment (EA), EA #573, which is attached hereto and incorporated herein, to evaluate potential impacts associated with the proposed project. The proposed project would include constructing off-shore stone segmented breakwaters near the west end of the island on its gulf side to reduce impacts to the shore from wave action. Permanent navigation warning lights would be installed adjacent to the breakwater features. Upon completion of the breakwaters, sand would be pumped into the area landward of the new breakwaters to nourish and restore the eroded beach and the adjacent dune.

The proposed action involves the construction of a minimum of five (5) and a maximum of ten (10) segmented stone breakwaters in shallow waters within 400 feet of the shoreline of Grand Isle, Louisiana. Each segmented breakwater would be approximately 200 feet long with a maximum width of 50 feet and would be placed approximately 300 feet apart. The breakwaters would be constructed from stone placed upon a geo-textile fabric foundation. All activities associated with the construction of the breakwaters would be water based with barge mounted draglines and excavators being used to place the geo-textile fabric and rock. For safety purposes, navigational lights mounted to tripod shaped platforms would be placed every third breakwater. A barge mounted pile driver would be used to drive piling for navigation light platforms.

The proposed beach and dune nourishment activities include placing sand fill from nearby borrow sources along 32 acres of beach and 5 acres of existing sand dune. A maximum total of approximately 31.8 acres of Waters of the United States (WOTUS) would be

permanently impacted with the proposed breakwater construction and beach nourishment. The beach nourishment portion of the project would permanently impact approximately 29.5 acres of waterbottoms and periodically inundated beach areas while construction of the 5 to 10 segmented rock breakwaters would permanently impact between approximately 1.15 and 2.3 acres of waterbottoms. Additional temporary impacts to approximately 14.2 acres of waterbottoms could occur in the area surrounding the proposed breakwaters due to disturbance from the vessels used in constructing the breakwaters. The beach nourishment would require approximately 900,000 cubic yards (cy) of material, while the dune nourishment would require approximately 100,000 cy of material. Track hoes and marsh buggies would be used to spread the material at the site. The dune nourishment portion of the proposed activity would require planting of Bitter Panicum (*Panicum amarum*) and Sea Oats (*Uniola paniculata*) species. A proposed staging area would be located directly north of the proposed project area in a gravel/sand lot that is accessible from Highway 1.

Sand fill material for the beach and dune nourishment would be obtained from one or two near shore borrow sources located in the Gulf of Mexico (Gulf) and pumped to the beach and dune nourishment sites via a pipeline and hydraulic dredge. Further investigations are underway to determine which site(s) would be used. The first potential borrow site is the Barataria Bay Waterway (BBWW) borrow site which is located near the eastern end of Grand Isle and along the right descending bank of the BBWW. The BBWW site is approximately 650 acres in size and would be dredged from its current depth (-16 feet NAVD88) to (-) 20.0 feet NAVD88 in accordance with the authorized dredging limits of the BBWW federal navigation project. The second potential borrow site is the Caminada Pass Shoal (CPS) borrow site which is located near the western end of Grand Isle just off of the Caminada Pass. The CPS site is approximately 230 acres in size and would be dredged to a depth of no greater than (-) 20.0 feet NAVD88. Approximately 1,000,000 cy of material would be dredged from the borrow site(s). Between approximately 230 acres and 873 acres of water bottoms would be impacted by the proposed project's dredging activities.

The proposed action (proposed project) addressed in this EA consists of constructing segmented stone breakwaters near the west end of Grand Isle to reduce impacts to the shore from wave action. Following completion these breakwaters, sand would be pumped into the area landward of the breakwaters to help restore the eroded beach and dunes adjacent to the restored beach area. Either of these two project elements (the breakwaters and the beach/dune restoration) could be constructed without the other as each has independent utility. Although both project elements (actions) are evaluated in EA #573, only the breakwaters and the associated navigation warning lights are proposed for approval of construction initially and are covered by this FONSI. The beach and dune nourishment (restoration) component of the proposed project is proposed for approval later, conditioned upon completion of ESA consultation; construction would occur after completion of the breakwaters construction.

Factors Considered in Determination: The U. S. Army Corps of Engineers, New Orleans District (CEMVN) has assessed the impacts of the "no action" and the proposed action (proposed project) on important resources in the project area including: barrier shorelines, headlands, and islands; aquatic resources/fisheries; wildlife; Essential Fish Habitat; threatened, endangered, and protected species; Waters of the United States; water quality; air quality; cultural resources; recreational resources; visual resources (aesthetics), and noise. No significant adverse impacts were identified for any of the relevant resources based on implementation of the proposed action. Because the proposed action (construction of breakwaters) would provide some protection to the western end of Grand Isle from erosional forces, it is the environmentally preferable alternative.

Executive Order 11988 Floodplain Management: Executive Order 11988 directs federal agencies to reduce flood loss risk; minimize flood impacts on human safety, health, and welfare; and restore and preserve the natural and beneficial values served by floodplains. Agencies must consider alternatives to avoid adverse and incompatible development in the flood plain. If the only practical alternative requires action in the floodplain, agencies must design or modify their action to minimize adverse impacts. The proposed action would not affect any floodplains.

Clean Air Act of 1972: The Clean Air Act (CAA) sets goals and standards for the quality and purity of air. It requires the Environmental Protection Agency to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The proposed action project area is located in Jefferson Parish which is currently in attainment of NAAQS. A general conformity determination is not required.

Clean Water Act, Section 401: CEMVN applied to the Louisiana Department of Environmental Quality (LDEQ) for a state Water Quality Certification (WQC) for the proposed project. A WQC dated April 30, 2019 was received. LDEQ concluded that the discharge of fill will not violate water quality standards as provided for in LAC 33:IX. Chapter 11. (Appendix D)

Clean Water Act, Section 404: Section 404 of the Clean Water Act (CWA) establishes a program to regulate the discharge of dredged or fill material into jurisdictional Waters of the United States (WOTUS), including wetlands. A CWA Section 404(b)(1) evaluation is provided in Appendix C of this EA, along with an evaluation of the proposed project's impacts to WOTUS in the main body of the EA. It was determined that the proposed fill would impact a maximum total of 31.8 acres of WOTUS (open water areas of the Gulf). The proposed action complies with Section 404(b)(1) guidelines, would not result in significant adverse impacts to WOTUS, and would be in the public interest.

Coastal Zone Consistency: In accordance with Section 307 of the Coastal Zone Management Act, a Consistency Determination was prepared by CEMVN and submitted to the Louisiana Department of Natural Resources (LADNR). In accordance with Section

307, a Consistency Determination was prepared for the proposed Project and was coordinated with the Louisiana Department of Natural Resources (LADNR) in a letter dated March 13, 2019. In a letter dated May 13, 2019, LADNR concurred with CEMVN's Coastal Zone Consistency Determination. (Appendix E)

Endangered Species Act: The Endangered Species Act (ESA) is designed to protect and recover threatened and endangered (T&E) species. The following T&E species have been reported to occur or potentially occur in the general project area; West Indian manatee, piping plover and piping plover critical habitat, red knot, Gulf sturgeon, green sea turtle, hawksbill sea turtle, Kemp's ridley sea turtle, leatherback sea turtle, loggerhead sea turtle, and sei, humpback, black right and sperm whales. Because whales are unlikely to be present in the project area due to the shallow water depths, CEMVN determined that the proposed action would have no effect on sei, humpback, black right and sperm whales. CEMVN determined construction of the breakwater features would have no effect on piping plover and its critical habitat, rufa red knot, Gulf sturgeon, and the five species of sea turtles. CEMVN determined that breakwater construction may affect but would not likely adversely affect the West Indian manatee. USFWS concurred with this finding in a letter dated May 7, 2019. CEMVN determined the proposed sand dredging and placement required for the beach/dune nourishment activities may affect, but is not likely to adversely affect, the West Indian manatee, Gulf sturgeon, and the five listed sea turtle species. Consultation with the US Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) regarding the proposed beach/dune nourishment's potential impacts to T&E species is ongoing. Because CEMVN has determined that the breakwaters component will have no effect on any listed species under the jurisdiction of NMFS, ESA consultation with NMFS on the breakwaters is not required. The FONSI for the beach/dune nourishment component will not be signed until ESA consultation with USFWS and NMFS has concluded.

Marine Mammal Protection Act: The Marine Mammal Protection Act (MMPA) was enacted to prohibit hunting, killing, capture, and/or harassment of any marine mammal, and to place a moratorium on the import, export, and sale of any marine mammal, along with any marine mammal part or product within the US. The only marine mammal anticipated to occur in the immediate project area is the bottlenose dolphin. USFWS and NMFS guidelines for the protection of bottlenose dolphin during construction would be followed as part of the proposed project; thus, adverse impacts to this species are not expected to occur with implementation of the proposed action. West Indian manatee have been reported in the project area but their presence is unlikely. Nevertheless contractors will be required to follow manatee protection guidelines and therefore no adverse impacts are expected.

Fish and Wildlife Coordination Act: The Fish and Wildlife Coordination Act (FWCA) provides authority for USFWS involvement in evaluating impacts to fish and wildlife from proposed water resource development projects. It requires that fish and wildlife resources receive equal consideration to other project features. It requires federal agencies that

construct, license or permit water resource development projects to first consult with the USFWS, NMFS and state resource agencies regarding the impacts on fish and wildlife resources and measures to mitigate these impacts. Section 2(b) requires USFWS to produce a Coordination Act Report (CAR) that details existing fish and wildlife resources in a project area, potential impacts due to a proposed project, and recommendations for a project. USFWS prepared a Final CAR for the proposed project dated May 7, 2019. CEMVN has evaluated USFWS recommendations contained in the CAR and has agreed to follow the majority of these recommendations, as addressed in this EA. (Appendix E)

Magnuson-Stevens Fisheries Conservation and Management Act: The Magnuson-Stevens Fishery Conservation and Management Act, as amended, addresses the authorized responsibilities for the protection of Essential Fish Habitat (EFH) by NMFS in association with regional fishery management councils. The NMFS has a “findings” with CEMVN on the fulfillment of coordination requirements under provisions of the Magnuson-Stevens Fishery Conservation and Management Act. In those findings, CEMVN and NMFS have agreed to complete EFH coordination requirements for federal civil works projects through the review and comment on National Environmental Policy Act documents prepared for those projects. A portion of the proposed project is located in EFH, but CEMVN determined it would not result in significant adverse impacts to EFH due to the relatively small area of WOTUS that would be filled by construction of breakwaters and beach nourishment and the temporary nature of the dredging activities. A draft of EA #573 was provided to NMFS for review and comment on April 18, 2019. On May 8, 2019, NMFS responded by email stating that it has no objections to the project. (Appendix E)

Migratory Bird Treaty Act: The general project area is known to support colonial nesting wading/water birds (e.g., herons, egrets, ibis, night-herons and roseate spoonbills) and shorebirds (terns and gulls). Based on review of existing data, site visits, and with the use of USFWS guidelines, CEMVN determined that implementation of the proposed action (proposed project) would have no effect on colonial nesting water/wading birds or shorebirds. USFWS and CEMVN biologists will survey the proposed beach/dune nourishment area before construction to confirm no nesting activity is taking place or is likely to take place within or immediately adjacent to the proposed beach/dune nourishment area. If active nesting exists within 1,000 feet (water birds) or 1,300 feet (shorebirds) of construction activities then CEMVN, in coordination with USFWS, would develop specific measures to avoid adverse impacts to those species. A detailed nesting prevention plan may be necessary in order to deter birds from nesting within the aforementioned buffer zones of the Project footprint in order to avoid adverse impacts to these species. If a nesting prevention plan is necessary, it would be prepared in coordination with USFWS.

National Historic Preservation Act: Section 106 of the National Historic Preservation Act of 1966, as amended, requires federal agencies to take into account the effects of their undertakings on historic properties and afford the Advisory Council on Historic

Preservation a reasonable opportunity to comment on such undertakings. The procedures in 36 CFR Part 800 define how Federal agencies meet these statutory responsibilities. The Section 106 process seeks to accommodate historic preservation concerns with the needs of federal undertakings through consultation among the agency official and other parties with an interest in the effects of the undertaking on historic properties, including the State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO) and any federally recognized Tribe that attaches religious or cultural significance to historic properties that may be affected by an undertaking. The goal of consultation is to identify historic properties potentially affected by the undertaking, assess its effects and seek ways to avoid, minimize or mitigate any adverse effects on historic properties. CEMVN has concluded that the proposed breakwater construction would have no effect on historic properties. In a letter dated May 15, 2019, SHPO concurred that the proposed breakwater construction and the Barataria Borrow site would have no effect on historic properties. Further, SHPO, recommended that a survey be performed on the Caminada Pass borrow site. As this actions is proposed to take place later in time, CEMVN will coordinate further with SHPO to determine if the survey is necessary and if so, what the specific scope for the survey will be. (Appendix E)

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

1. If the proposed action is changed significantly or is not implemented within one year, CEMVN will reinitiate coordination with the USFWS to ensure that the proposed action would not adversely affect any federally listed threatened or endangered species, or their habitat.
2. If any unrecorded cultural resources are determined to exist within the proposed project site, work would not proceed in the area containing those cultural resources until a CEMVN archeologist has been notified, and coordination with the Louisiana SHPO and federally recognized Tribes has been completed.
3. The construction contractor would be required to: (A) Prepare a Stormwater Pollution Prevention Plan (SWPPP) for review and approval by CEMVN; (B) Obtain a Stormwater General Permit from the Louisiana Department of Environmental Quality (LDEQ) and comply with all applicable conditions and requirements set forth in the issued permit; (C) Comply with any applicable conditions and requirements included in the Water Quality Certification issued by LDEQ for the proposed project; (D) Comply with any applicable special conditions set forth in the Coastal Consistency Determination issued for the proposed project by the Louisiana Department of Natural Resources; (E) Avoid any project construction impacts to the existing wetland located north of the proposed beach and dune nourishment area; (F) Install markers along the outer boundaries of the above-water portion of the beach/dune nourishment area and maintain these markers throughout project construction to help ensure construction personnel and activities do not disturb areas beyond these boundaries other than the staging area.

4. The construction contractor would be required to comply with USFWS and NMFS guidelines for protecting West Indian manatees, sea turtles, and bottlenose dolphins during construction of the proposed project. (Appendix C) CEMVN biologists will also educate construction personnel regarding the potential presence of federally listed shorebirds and the importance of avoiding disturbance to such birds.

5. Prior to the initiation of project construction, CEMVN biologists would survey the proposed beach/dune nourishment area, along with suitable habitats located within approximately 2,000 feet of this area, for the presence of nesting wading birds, sea birds, and water birds. If active nests are discovered, the construction contractor would be restricted from conducting any work and/or access within the following "no work distances" buffering such nests: 650 feet for terns, gulls, and black skimmers; 1,000 feet for colonial nesting wading birds; 2,000 feet for brown pelicans. These protective buffers would not be modified unless otherwise approved by USFWS. If bird nesting has not been initiated but CEMVN concludes nesting is likely within or near the beach/dune nourishment area, a detailed nesting prevention plan would be prepared by CEMVN in coordination with USFWS to deter birds from nesting in areas that would restrict project construction. Once the plan is approved, CEMVN or its bird nesting abatement contractor would implement the plan.

6. The construction contractor would be required to install warning markers along the pipeline(s) used to pump sand/sediments from the proposed borrow site(s) to the proposed beach/dune nourishment area to help avoid marine navigation conflicts. Such markers may include flags, warning lights, and warning signs. CEMVN would also coordinate with the US Coast Guard (USCG) to provide this agency with information for inclusion in the USCG's Local Notice to Mariners, warning mariners of potential obstacles and restrictions posed by elements of the proposed project's construction activities.

7. CEMVN staff would monitor the survival of the initial dune plantings until the project is transferred to the Non-Federal Sponsor (NFS). The Operation, Maintenance, Repair, Replacement & Rehabilitation (OMRR&R) Manual prepared by CEMVN for the proposed project would require the NFS to monitor survival and condition of the dune plantings for three years and take appropriate action (e.g. re-planting, etc.) if the dune vegetation is inadequate or otherwise failing.

Public Involvement: The proposed action has been coordinated with appropriate federal, state, and local agencies and businesses, organizations, and individuals through distribution of draft EA #573 for a 15-day public review and comment period that began April 18, 2019 and ended May 4, 2019. One comment was received from the public during this time and is included in Appendix F along with CEMVN's response.

DECISION: The proposed action would require placing fill in a total of approximately 31.8 acres of jurisdictional Waters of the United States (WOTUS). Of this total, the construction of the proposed breakwaters would fill up to 2.3 acres of WOTUS while the beach

nourishment work would fill approximately 29.5 acres of WOTUS. The WOTUS areas impacted by fill are largely open water habitats classified as marine with intertidal rocky shore (existing shoreline area), intertidal unconsolidated shore (small remnant beach areas), and subtidal unconsolidated bottom (permanently inundated gulf areas). Approximately 15.2 acres of total 31.8 acres of WOTUS affected by fill placement would still classify as WOTUS following construction completion. Compensatory mitigation for the project impacts to WOTUS is not proposed since the proposed action seeks to restore previously existing beach area and protect this area with breakwaters. In addition, the proposed action would help protect nearby wetlands on Grand Isle and is in keeping with objectives of the Louisiana's 2017 Coastal Master Plan. No wetlands would be impacted.

I have reviewed EA #573 and have considered public and agency comments and recommendations. Based on the assessment conducted in EA #573, which is attached hereto and made a part hereof, and the implementation of the environmental commitments listed above, I have determined that construction of the breakwaters and their associated navigation warning lights component of the proposed action would have no significant impact on the human environment.

The proposed action is justified and in accordance with environmental statutes. It is in the public interest to implement that component of the proposed action involving installation of breakwaters and navigation warning lights as evaluated in EA #573.

17 May 19

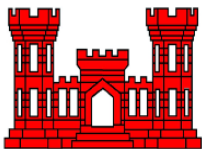
Date



Michael N. Clancy
Colonel, US Army
District Commander

***ENVIRONMENTAL ASSESSMENT
GRAND ISLE AND VICINITY, LOUISIANA
BEACH EROSION AND HURRICANE PROTECTION PROJECT
JEFFERSON PARISH, LA***

EA #573



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

CONTENTS

1. INTRODUCTION	1
1.1 Project Name and Location	2
1.2 Authority	2
1.3 Purpose and Need for the Proposed Action	3
1.4 Prior NEPA Documents	3
1.5 Public Concerns	4
2. ALTERNATIVES INCLUDING THE PROPOSED ACTION	5
2.1 Proposed Action	6
2.2 No-Action Alternative (Future without Project (FWOP))	8
3 AFFECTED ENVIRONMENT	8
3.1 Description of the Project Area	8
3.1.1 Climate and Climate Change	8
3.1.2 Geology	9
3.2 Relevant Resources	9
3.2.1 Barrier Shorelines, Headlands and Islands	11
3.2.2 Aquatic Resources/Fisheries	12
3.2.3 Wildlife	13
3.2.4 Essential Fish Habitat	17
3.2.5 Threatened, Endangered and Protected Species	19
3.2.6 Waters of the United States (WOTUS)	23
3.2.7 Water and Sediment Quality	24
3.2.8 Air Quality	25
3.2.9 Cultural Resources	27
3.2.10 Recreational Resources	28
3.2.11 Visual Resources (Aesthetics)	28
3.2.12 Noise	29
4 ENVIRONMENTAL CONSEQUENCES	29
4.1 Barrier Shorelines, Headlands and Islands	29
4.2 Aquatic Resources/Fisheries	30
4.3 Essential Fish Habitat	31
4.4 Wildlife	32
4.5 Threatened and Endangered Species	33
4.6 Waters of the United States	35
4.7 Water and Sediment Quality	38

4.8	Air Quality.....	40
4.9	Cultural Resources.....	40
4.10	Recreational Resources.....	40
4.11	Visual Resources (Aesthetics).....	41
4.12	Noise.....	41
5	CUMULATIVE IMPACTS ANALYSIS.....	42
6	HAZARDOUS, TOXIC AND RADIOACTIVE WASTE (HTRW).....	43
7	COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS.....	44
8	CONCLUSION.....	48
9	PREPARED BY.....	49
10	REFERENCES.....	49

TABLES

Table 1:	Relevant Resources and Their Institutional, Technical, and Public Importance.....	10
Table 2:	Relevant Resources In and Near the Project Area.....	11
Table 3:	Notable Wildlife Utilizing Coastal Wetlands in Louisiana.....	14
Table 4:	Louisiana's Most Abundant Duck Species.....	16
Table 5:	EFH Species in the Project Area.....	17
Table 6:	Highly Migratory Species in the Project Area.....	18
Table 7:	T&E Species Occurring in Jefferson Parish.....	19
Table 8:	Primary and Secondary NAAQS for the Seven Contaminants Established by EPA.....	26
Table 9:	Proposed Permanent Fill Impacts to Jurisdictional Waters of the United States.....	35

APPENDICES

- Appendix A: Acronyms and Abbreviations
- Appendix B: Figures
- Appendix C: Threatened and Endangered Species Protection Measures
- Appendix D: Clean Water Act Section 404(b)(1) Evaluation
- Appendix E: Agency Coordination
- Appendix F: Hazardous, Toxic or Radioactive Waste Phase I Assessment ([Link](#))
- Appendix G: Public Comments

1. INTRODUCTION

The U.S. Army Corps of Engineers (USACE), Mississippi Valley Division (MVD), Regional Planning and Environment Division South, has prepared this Environmental Assessment #573 (EA #573) titled “Grand Isle and Vicinity, Louisiana Beach Erosion and Hurricane Protection Project” in Jefferson Parish, Louisiana for the New Orleans District (CEMVN). The purpose of this EA is to evaluate the potential impacts associated with the proposed construction of approximately five to ten stone, segmented breakwaters and the transport (via pipeline) and placement of dredged material to restore the existing beach and dune to project design standards on the west end of Grand Isle, Louisiana. The primary existing hurricane and storm damage risk reduction features of the project consist of a west end jetty at Caminada Pass; a vegetated sand berm and dune reinforced by a geo-textile dune with stone armoring located along the southern (gulf-side) shore of the Island; and segmented offshore breakwaters located on the east end of the Island. The purpose of the proposed actions is to provide additional stability and coastal storm damage risk reduction to the island and to restore the shoreline which has become severely degraded from wind and wave actions from the Gulf of Mexico and to help reduce future erosional impacts to the shoreline.

This EA #573 has been prepared in accordance with the National Environmental Policy Act of 1969 and the Council on Environmental Quality’s Regulations (40 CFR 1500-1508), as reflected in the USACE Engineering Regulation ER 200-2-2. This EA #573 provides sufficient information on the potential adverse and beneficial environmental effects to allow the District Commander, U.S. Army Corps of Engineers, New Orleans District (CEMVN), to make an informed decision on the appropriateness of an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).

The proposed action involves the construction of a minimum of five (5) and a maximum of ten (10) segmented stone breakwaters in shallow waters within 400 feet of the shoreline of Grand Isle, Louisiana. Each segmented breakwater would be approximately 200 feet long with a maximum width of 50 feet and would be placed approximately 300 feet apart. The breakwaters would be constructed from stone placed upon a geo-textile fabric foundation. All activities associated with the construction of the breakwaters would be water based with barge mounted draglines and excavators being used to place the geo-textile fabric and rock. For safety purposes, navigational lights mounted to tripod shaped platforms would be placed every third breakwater. A barge mounted pile driver would be used to drive piling for navigation light platforms.

The proposed beach and dune nourishment activities include placing sand fill from nearby borrow sources along 32 acres of beach and 5 acres of existing sand dune. A maximum total of approximately 31.8 acres of Waters of the United States (WOTUS) would be permanently impacted with the proposed breakwater construction and beach nourishment. The beach nourishment portion of the project would permanently impact approximately 29.5 acres of waterbottoms and periodically inundated beach areas while construction of the 5 to 10 segmented rock breakwaters would permanently impact between approximately 1.15 and 2.3 acres of waterbottoms. Additional temporary impacts to

approximately 14.2 acres of waterbottoms could occur in the area surrounding the proposed breakwaters due to disturbance from the vessels used in constructing the breakwaters. The beach nourishment would require approximately 900,000 cubic yards (cy) of material, while the dune nourishment would require approximately 100,000 cy of material. Track hoes and marsh buggies would be used to spread the material at the site. The dune nourishment portion of the proposed activity would require planting of Bitter Panicum (*Panicum amarum* Ell) and Sea Oats (*Uniola paniculata*) species. A proposed staging area would be located directly north of the proposed project area in a gravel/sand lot that is accessible from Highway 1.

Sand fill material for the beach and dune nourishment would be obtained from one or two near shore borrow sources located in the Gulf of Mexico (Gulf) and pumped to the beach and dune nourishment sites via a pipeline and hydraulic dredge. Further investigations are underway to determine which site would be used. The first potential borrow site is the Barataria Bay Waterway (BBWW) borrow site which is located near the eastern end of Grand Isle and along the right descending bank of the BBWW. The BBWW site is approximately 650 acres in size and would be dredged from its current depth (-16 feet NAVD88) to (-) 20.0 feet NAVD88 in accordance with the authorized dredging limits of the BBWW federal navigation project. The second potential borrow site is the Caminada Pass Shoal (CPS) borrow site which is located near the western end of Grand Isle just off of the Caminada Pass. The CPS site is approximately 230 acres in size and would be dredged to a depth of no greater than (-) 20.0 feet NAVD88. Approximately 1,000,000 cy of material would be dredged from either site. Between approximately 230 acres and 873 acres of water bottoms would be impacted by the proposed project's dredging activities.

1.1 Project Name and Location

Project Name: Grand Isle and Vicinity, Louisiana Beach Erosion and Hurricane Protection Project in Jefferson Parish, Louisiana.

Project Location: The project is located on Grand Isle which is a low lying inhabited barrier island located along the Gulf of Mexico in Jefferson Parish, Louisiana, approximately 50 miles south of New Orleans, Louisiana. (Figure 1, Appendix B)

1.2 Authority

Section 301(b)(6) of the Water Resources Development Act of 1996 modified the Grand Isle and Vicinity, Louisiana Beach Erosion and Hurricane Protection Project, authorized by Section 204 of the Flood Control Act of 1965, to authorize construction of breakwater features. Section 103 of the Water Resources Development Act of 1986, Public Law 99-662, as amended (33 U.S.C. 2213), specifies the cost-sharing requirements applicable to the project. Appropriations provided under the Construction heading, Title IV, Division B of the Bipartisan Budget Act of 2018, Public Law 115-123 enacted February 9, 2018 (BBA 2018), currently estimated at \$15,000,000.00, are available to undertake construction of the project, and the Non-Federal Sponsors acknowledge that they will not be financing their required non-federal cash contributions as allowed under the provisions of BBA 2018.

1.3 Purpose and Need for the Proposed Action

The purpose of the proposed action is to help restore portions of the Grand Isle, Louisiana coastal shoreline that have been impacted by wind and wave action, and water levels. The proposed design to help restore the beach shoreline would consist of constructing stone segmented breakwaters that could help slow the erosional impacts and potentially help restore the shoreline. Sand from a nearby borrow source would be pumped into the gaps between the breakwater stones, which would help cover and secure the breakwater stones overtime. Sand would also be placed on the shoreline and existing dune for nourishment and restoration purposes.

The proposed action would result in the direct benefit of habitat creation and reverse coastal erosion that is currently causing habitat loss. Beach nourishment, and the placement of breakwaters, would provide the potential for the creation of new bird nesting habitat that has been lost through site degradation. The proposed action would have indirect benefits for wildlife by producing foraging habitat, and potentially an increase in nesting habitat as the site's vegetation matures. Cumulatively, the proposed action is anticipated to result in the restoration of coastal habitat currently being degraded.

1.4 Prior NEPA Documents

Information and data on previous and existing Grand Isle breakwaters, beach, and dune nourishment conditions associated with the proposed action were derived from the following reports, which are incorporated herein by reference:

EIS – Grand Isle and Vicinity, Louisiana - Beach Erosion and Hurricane Protection - Addressed construction of 7.5 miles of sand dune, offshore borrow (east and west ends), and rock jetty at Caminada Pass. ROD: August 1979.

EA #40A – Grand Isle and Vicinity, Louisiana - Beach Erosion and Hurricane Protection East-End Borrow Site. Assessed use of an 80-acre borrow pit in the Barataria Pass adjacent to the east-end jetty of Grand Isle. FONSI: February 1, 1984

EA #50 – Grand Isle and Vicinity, Louisiana - Assessed construction of jetty extensions (east and west ends), construction of 700 linear feet of sand-filled breakwater, and dredging of sand spit for dune renovation. FONSI: July 19, 1985.

EA #56 – Grand Isle and Vicinity, Louisiana – East End Borrow. One-time rehabilitation of the Grand Isle Hurricane Protection System. FONSI: September 2, 1986.

EA #63 – Grand Isle and Vicinity, Louisiana – Beach Erosion, Jetty Extension, and Sandbar Removal. Assessed removal of approximately 408,000 cubic yards of sand from a cusped sand bar in Grand Isle State Park and extension of the east-and west-end jetties on Grand Isle. July 2, 1987.

EA #97 – Grand Isle and Vicinity, Louisiana Beach Erosion and Hurricane Protection. Addressed adding clay core to levee, offshore sand borrow sites and Bayou Rigaud clay borrow site. FONSI: May 3, 1989.

EA #97a – Supplemental EA, Grand Isle and Vicinity, Louisiana Beach Erosion and Hurricane Protection - Assessed dune restoration and increased quantities of borrow. FONSI: September 21, 1989.

EA #97b – Grand Isle and Vicinity, Louisiana Beach Erosion and Hurricane Protection. Addressed deepening borrow pit #3, from -10' to -20' NGVD. FONSI: September 27, 1990.

EA #131a – Grand Isle, Emergency Sand Filled Breakwaters. FONSI: May 17, 1991 – Never built.

EA #187 – Addressed using dredged material removed from the Barataria Bay Waterway bar channel to restore and enlarge a segment of Grand Terre Island. FONSI: July 7, 1995.

EA #203 – Grand Isle and Vicinity, Louisiana Beach Erosion and Hurricane Protection - Assessed the addition of 27 segmented rock breakwaters along the Gulf side. FONSI: August 8, 1994.

EA #251 – Cheniere-Camida Breakwaters. Section 103 Project to construct seven staggered rock breakwaters off Cheniere-Camida Pass. FONSI: April 29, 1997

EA #316 – Barataria Bay Waterway-Addressed using dredged material removed from the Barataria Bay Waterway bar channel for Grand Terre Island beach nourishment. FONSI: September 6, 2000.

EA #381 – Barataria Bay Waterway Project. Addressed maintenance dredging of Bayou Rigaud and use of Fifi Island for disposal. FONSI: September 26, 2003

EA #396 – Grand Isle Shoreline Protection Project, North Shore Breakwaters - Addressed the construction of 18 rock breakwaters on north side of Grand Isle. FONSI dated October 19, 2004.

EA #397 – Grand Isle Advance Measures Dune Project - Assessed emergency measures taken in July 2003 along 2,275 feet of dune on the south shore of Grand Isle. FONSI: August 9, 2004.

EA #400 – Grand Isle, Dune Rehabilitation Project, Jefferson Parish, Louisiana - Assessed prevention of further erosion to 6,533 linear feet of dune along the south shore of Grand Isle. FONSI: June 24, 2004.

1.5 Public Concerns

The Town of Grand Isle and members of the public have expressed concern about the loss of land along the shoreline of Grand Isle, Louisiana. Additional concerns have been

expressed that the shoreline would continue to experience a high rate of erosion from wave activities and future storm events.

2. ALTERNATIVES INCLUDING THE PROPOSED ACTION

The design for the proposed plan was developed by the Non-Federal Sponsor (NFS), the Coastal Protection and Restoration Authority Board of Louisiana (CPRAB), working in conjunction and coordination with MVN. A "*Coastal Processes Analysis and Alternatives Development and Analysis Report*" was prepared for CPRAB which analyzed multiple alternatives. A copy of this report which details the alternatives analysis and selection of the proposed plan for further evaluation by USACE is available upon request. The following is an excerpt from the report that briefly addresses the alternatives, development process, and analysis.

"As part of the coastal engineering analysis, a statistical analysis of water level, wind and waves was conducted to understand the coastal environment impacting the project shoreline. A bathymetric surface was developed to be used for various modeling analysis. Shoreline and bottom morphology change analysis was conducted to understand how the near shore morphology has changed over time. Wave modeling transformed the waves from offshore to near shore and was used to develop an understanding of the long shore transport along the project shoreline and to drive the shoreline morphology model. The long shore transport in conjunction with shoreline morphology formed the basis of a sediment budget along the shoreline. This understanding of the coastal processes was then used to assess offshore winds which indicate a varied offshore distribution with no predominant direction, however; stronger winds were observed from the south southeast. Such winds result in net wave driven sediment transport toward to northeast. Wave modeling indicates that the Caminada Pass ebb shoal modifies the wave transformation near the west end of the Island so that the near shore wave climate results in a divergent node in sediment transport despite the fact the overall net sediment transport is directed to the northeast. This divergent node results in an erosional hot spot which has led to severe erosion at that nodal point and localized accretion on the West Jetty. Shoreline change rates analysis showed that prior to the construction of the rock revetment, the erosional hot spot lied around 0.3-0.4 miles east of West Jetty where the shoreline was eroding at almost 50 ft. /yr. The coastal processes and resulting morphology of the western end of Grand Isle have eroded the beach at the dune; this erosion has impacted the dune as well. The Project revetment was successful in protecting the dune in its immediate lee, but does nothing to alleviate erosion adjacent to the structure, which continues to impact the beach and dune.

"Potential long-term solution alternatives at a conceptual level were developed to maximize the stabilization of the Grand Isle shoreline and mitigate deficiencies based upon the understanding of the physical processes along the Grand Isle shoreline. It was assumed that any structure that retains sand within the Project shoreline may cause increased erosional down drift impacts,

therefore these impacts were evaluated during the alternative analysis. The goals of the alternatives are to protect the dune; decrease maintenance interval (stabilize shoreline); minimize capital costs; retain recreational beach; and minimize down drift impacts."

2.1 Proposed Action

The proposed action consists of constructing a minimum of five (5) to a maximum of ten (10) stone segmented breakwaters to be placed on the western Gulf-side of Grand Isle, Louisiana to assist in reducing the impacts of wave action on the shoreline. (Figure 2, Appendix B) Upon completion of the breakwaters, sand would be pumped adjacent to the existing stone armored dune to restore the beach and dunes to project design standards. Each project component (the breakwaters and beach/dune restoration) could be constructed without the other as each has independent utility; however the breakwaters would offer some protection for the beach and dune restoration feature. Although both actions will be evaluated in this document, only the breakwaters are proposed for approval for initial construction. The beach and dune nourishment components are proposed for approval later conditioned upon completion of Endangered Species Act (ESA) consultation and completion of the breakwater construction. Therefore, if no significant impacts are identified and other legal and environmental requirements are satisfied, there would be two FONSI's for this proposed action, one for the breakwaters and one for the beach and dune nourishment.

Breakwaters

The proposed action involves the construction of a minimum of five (5) and a maximum of ten (10) segmented stone breakwaters to be placed in shallow waters (WOTUS) within 400 feet of the shoreline of Grand Isle, Louisiana. (Figure 3, Appendix B) Construction of the segmented stone breakwaters would occur between Station 0+00 and Station 70+00 and require between 100,000 cy of stone (for 5 breakwaters) and 200,000 cy of stone (for 10 breakwaters). Each segmented breakwater would be approximately 200 feet long with a maximum width of 50 feet and a top elevation of (+) 5 NAVD88 (7 feet from the seafloor to water elevation or approximately 4 feet above the water surface), and would be placed approximately 300 feet apart. The breakwaters would be constructed from stone placed upon a geo-textile fabric foundation. All activities associated with the construction of the breakwaters would be water based with barge mounted draglines and excavators being used to place the geo-textile fabric and rock.

Permanent and temporary impacts associated with the construction of segmented stone breakwaters would vary depending upon the number of breakwaters constructed. With the construction of, at minimum, 5 breakwaters, there would be approximately 1.15 acres of permanent impacts to waterbottoms. Should the maximum number, 10 breakwaters, be constructed, there would be approximately 2.30 acres of permanent impacts to waterbottoms. Approximately 2.0 acres out of the total 2.3 acres of breakwater fill impacts would remain WOTUS. (See Section 4.6 Water of the US for a detailed explanation) Approximately 14.63 additional acres could be temporarily impacted from construction of the breakwaters as the equipment laden barges could scrape the waterbottoms around

the areas where the breakwaters are constructed. These areas of temporary impact are expected to return to preconstruction conditions as wave action shifts sand back into the impact zone.

Navigational Light Platforms

For safety purposes, navigational lights would be installed along the line of newly constructed breakwaters. The navigational light platforms (NLPs) would measure two feet wide by 4 feet wide and would be placed on every third breakwater structure. For each platform, a barge mounted pile driver would be used to drive piling to construct a tripod shaped structure upon which a navigational light would be mounted. (Figure 4, Appendix B) The final number of NLPs constructed would depend upon the final number of breakwaters constructed, however there would be at minimum, 2, and at maximum, 4, NLPs constructed.

Beach and Dune Nourishment

The proposed beach and dune nourishment activities include placing sand fill from nearby borrow sources along 32 acres of beach and 5 acres of existing sand dune. (Figure 5, Appendix B) Of the total 37 acres of beach/dune nourishment area, approximately 29.5 acres would be placed within WOTUS. Approximately 13.2 acres out of the 29.5 total acres of beach nourishment fill impacts would remain WOTUS. Therefore, the proposed action would result in an immediate net loss of about 16.6 acres of other WOTUS out of the total 31.8 acres filled. (See Section 4.6 Water of the US for a detailed explanation)

Sand fill would be obtained through a hydraulic dredge and pumped via pipeline to the beach and dune nourishment sites. (Figure 6, Appendix B) The floating pipeline would run from the borrow site through the waters of the Gulf to the beach restoration area. Roughly 1,000,000 cy of sand would be required to complete the nourishment activities. Of this total, approximately 900,000 cy would be placed in WOTUS (e.g. open water of the Gulf of Mexico). Track hoes and marsh buggies would be used to spread the sand material at the site. Upon completion of nourishment activities, the affected dune areas would be planted with Bitter Panicum (*Panicum amarum* Ell.) and Sea Oats (*Uniola paniculata*) species. The proposed staging area for beach nourishment work would be located directly north of the project area in an existing gravel/sand lot that has access from Highway 1. (Figure 7, Appendix B)

The construction contractor would be required to install warning markers along the pipeline(s) used to pump sand/sediments from the proposed borrow site(s) to the proposed beach/dune nourishment area to help avoid marine navigation conflicts. Such markers may include flags, warning lights, and warning signs. CEMVN would also coordinate with the US Coast Guard (USCG) to provide this agency with information for inclusion in the USCG's Local Notice to Mariners, warning mariners of potential obstacles and restrictions posed by elements of the proposed project's construction activities.

Sand fill material would be obtained from one of two newly identified near shore borrow sources located in the Gulf of Mexico. (Figure 8, Appendix B) The Barataria Bay Waterway (BBWW) borrow site is located near the eastern end of Grand Isle and along the right descending bank of the BBWW. The BBWW site is approximately 650 acres in size and would be dredged to elevation (-) 20.0 feet NAVD88 and in accordance with the authorized dredging limits of the BBWW federal navigation project. The CPS borrow site is located near the western end of Grand Isle just off of the Caminada Pass. The CPS site is approximately 230 acres in size and would be dredged to an elevation of (-) 20.0 feet NAVD88.

Further investigations are underway to determine which site would be used. It is possible that these additional investigations may indicate that the entirety of one borrow site and a portion of the other borrow site may need to be used rather than just one site. A total of approximately 1,000,000 cy of material would be dredged for the nourishment activities.

2.2 No-Action Alternative (Future without Project (FWOP))

NEPA requires that in analyzing alternatives to a proposed action, a federal agency must consider an alternative of “No Action.” The No Action alternative evaluates the impacts associated with not implementing the proposed action and represents the Future without Project (FWOP) condition against which alternatives considered in detail are compared. The FWOP provides a baseline essential for impact assessment and alternative analysis.

3 AFFECTED ENVIRONMENT

3.1 Description of the Project Area

The project area is located on Grand Isle, Louisiana, which is located in the Gulf of Mexico, in the lower edge of the Barataria Basin of the Mississippi River Deltaic Plain about 50 miles south of New Orleans and 45 miles northwest of the mouth of the Mississippi River (Figure 1, Appendix B). Grand Isle is part of the Bayou Lafourche barrier shoreline system (Ritchie et al. 1995), which separates Barataria Bay from the Gulf of Mexico, and is the only inhabited barrier island in Louisiana. Grand Isle extends approximately 7.5 miles along the Gulf shore generally in a northeast to southwest direction, and is approximately 0.75 mile wide at its center.

3.1.1 Climate and Climate Change

The climate along the southern coast of Louisiana and on Grand Isle is semitropical, primarily influenced by the Gulf of Mexico, and largely determined by two pressure ridges. Storm surges, usually related to tropical storm systems originating in the Gulf of Mexico, are a continuing threat to the project area. Hurricanes and tropical storms typically occur over the project area between June and November. In the past 130 years, over 50 major tropical storms have impacted Grand Isle, and since 2005, Hurricanes Katrina, Rita, Gustav, and Isaac have impacted the island. Summer thunderstorms are common, and tornadoes strike occasionally. These storms are of short duration and are quite variable in the amount and location of damage incurred. The occurrence of tropical depressions,

tropical storms, and hurricanes bring heavy rains that last up to several days. These storms typically cause alterations to the hydrologic regimes causing damage and loss of property and contribute to coastal land loss.

3.1.2 Geology

Grand Isle is part of the Bayou Lafourche barrier shoreline system (Ritchie et al. 1995). This barrier system includes the retreating headland of the Bayou Lafourche distributary of the Mississippi River (presently referred to as the Caminada-Moreau Headland) and the flanking barrier islands to the west, Timbalier Island and East Timbalier Island, and to the east, Grand Isle. The Bayou Lafourche distributary was active until 300 years ago (Frazier 1967; Nakashima 1988; Ritchie et al., 1995) and is one of the most rapidly eroding shorelines in the United States (McBride et al., 1992; Ritchie et al., 1995; USACE 2004). Within Louisiana, the Bayou Lafourche barrier system has a greater proportion of engineering structures such as jetties, sea walls, and beach nourishment projects (Mossa and Nakashima 1989; Ritchie et al., 1995). Rapid coastline retreat due to subsidence, shoreface erosion, sediment deficiency, and overwash processes has characterized the history of the entire Bayou Lafourche barrier shoreline.

Soils in the project area are of the Scatlake and Felicity series (Natural Resource Conservation Service Web Soil Survey). Scatlake soils are formed in saline marshes and consist of level, very poorly drained to very slowly permeable, moderately alkaline, peat, clay, fine sandy loam, and fine sand. These soils are saline, semifluid, and ponded or flooded. Scatlake soils have a dark gray to mottled gray and brown clay and muck overlying dark gray, green gray, to black clay and muck. The elevation of Scatlake soils is from 0 to +1 foot mean sea level (MSL), with a slope of less than 0.5 percent. Felicity soils, often located near Scatlake soils, form sandy ridges on coastal barrier islands such as Grand Isle and are the dominant soils in the project area. These soils consist of gently undulating, occasionally flooded, loamy fine sand with occasional shell fragments, and are commonly associated with beach ridges. The elevation of the Felicity soils is typically from +2 to +5 feet MSL with a slope of 0 to 3 percent.

3.2 Relevant Resources

Table 1 of this section provides summary information of the institutional, technical, and public importance of these resources. Table 2 contains a list of the relevant resources located in the project area and describes those resources that would be impacted, directly or indirectly, by construction.

The resources described in this section are those recognized as significant by laws, executive orders (EOs), regulations, and other standards of federal, state, or regional agencies and organizations; technical or scientific agencies, groups, or individuals; and the general public.

Table 1: Relevant Resources and Their Institutional, Technical, and Public Importance

Resource	Institutionally Important	Technically Important	Publicly Important
Barrier Systems	The Coastal Barrier Resources Act of 1990; the Endangered Species Act, the Coastal Zone Management Act; the Estuary Protection Act; the Marine Protection, Research, and Sanctuaries Act; the Outer Continental Shelf Lands Act; Public Law 103-426; the Magnuson Fishery Conservation and Protection Act; the Fish and Wildlife Conservation Act; and the Migratory Bird Conservation Act	They contain resources of extraordinary scientific, recreational, natural, historic, and ecologic importance; and provide habitats for migratory birds, wildlife, finfish, shellfish, and other aquatic organisms.	The high priority that the public places on their ability to serve as natural storm protective buffers and are generally unsuitable for development because they are vulnerable to hurricane and other storm damage and because natural shoreline recession and the movement of unstable sediments undermine human structures.
Waters of the United States	Clean Water Act of 1977, Rivers and Harbors Appropriation Act of 1899 Act of 1882, Fish and Wildlife Coordination Act of 1958	Federal and state agencies recognize the functions and values provided by jurisdictional Waters of the United States (WOTUS), including wetlands and other WOTUS such as oceans, rivers, streams, and lakes. Some of these agencies regulate activities affecting WOTUS, with the lead federal agencies including EPA and USACE.	The general public frequently supports the protection of WOTUS and often recognizes the importance of WOTUS to the overall health and condition of the ecosystem. The public further understand the economic value of certain types of WOTUS, particularly navigable waterways and those used for recreational and commercial purposes.
Aquatic Resources/ Fisheries	Fish and Wildlife Coordination Act of 1958, as amended; Clean Water Act of 1977, as amended; Coastal Zone Management Act of 1972, as amended; and the Estuary Protection Act of 1968	They are a critical element of many valuable freshwater and marine habitats; they are an indicator of the health of the various freshwater and marine habitats; and many species are important commercial resources.	The high priority that the public places on their esthetic, recreational, and commercial value.
Soils and Water Bottoms	Fish and Wildlife Coordination Act, Marine Protection, Research, and Sanctuaries Act of 1990	State and federal agencies recognize the value of water bottoms for the production of benthic organisms.	Environmental organizations and the public support the preservation of water quality and fishery resources.
Essential Fish Habitat (EFH)	Magnuson-Stevens Fishery Conservation and Management Act of 1996, Public Law 104-297	Federal and state agencies recognize the value of EFH. The Act states, EFH is "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity."	Public places a high value on seafood and the recreational and commercial opportunities EFH provides.
Wildlife	Fish and Wildlife Coordination Act of 1958, as amended and the Migratory Bird Treaty Act of 1918	They are a critical element of many valuable aquatic and terrestrial habitats; they are an indicator of the health of various aquatic and terrestrial habitats; and many species are important commercial resources.	The high priority that the public places on their esthetic, recreational, and commercial value.
Threatened and Endangered Species	The Endangered Species Act of 1973, as amended; the Marine Mammal Protection Act of 1972; and the Bald Eagle Protection Act of 1940	USACE, USFWS, NMFS, NRCS, EPA, LDWF, and LDNR cooperate to protect these species. The status of such species provides an indication of the overall health of an ecosystem.	The public supports the preservation of rare or declining species and their habitats.
Cultural Resources	National Historic Preservation Act of 1966, as amended; the Native American Graves Protection and Repatriation Act of 1990; and the Archeological Resources Protection Act of 1979	State and federal agencies document and protect sites. Their association or linkage to past events, to historically important persons, and to design and construction values; and for their ability to yield important information about prehistory and history.	Preservation groups and private individuals support protection and enhancement of historical resources.
Recreation Resources	Federal Water Project Recreation Act of 1965 as amended and Land and Water Conservation Fund Act of 1965 as amended	Provide high economic value of the local, state, and national economies.	Public makes high demands on recreational areas. There is a high value that the public places on fishing, hunting, and boating, as measured by the large number of fishing and hunting licenses sold in Louisiana; and the large per-capita number of recreational boat registrations in Louisiana.
Aesthetics	USACE ER 1105-2-100, and National Environmental Policy Act of 1969, the Coastal Barrier Resources Act of 1990, Louisiana's National and Scenic Rivers Act of 1988, and the National and Local Scenic Byway Program	Visual accessibility to unique combinations of geological, botanical, and cultural features that may be an asset to a study area. State and federal agencies recognize the value of beaches and shore dunes.	Environmental organizations and the public support the preservation of natural pleasing vistas.
Air Quality	Clean Air Act of 1963, Louisiana Environmental Quality Act of 1983	State and federal agencies recognize the status of ambient air quality in relation to the NAAQS.	Virtually all citizens express a desire for clean air.

Resource	Institutionally Important	Technically Important	Publicly Important
Water Quality	Clean Water Act of 1977, Fish and Wildlife Coordination Act, Coastal Zone Mgt Act of 1972, and Louisiana State & Local Coastal Resources Act of 1978	USACE, USFWS, NMFS, NRCS, EPA, and State DNR and wildlife/fishery offices recognize value of fisheries and good water quality and the national and state standards established to assess water quality.	Environmental organizations and the public support the preservation of water quality and fishery resources and the desire for clean drinking water.
Noise Quality	USACE ER 1105-2-100, and National Environmental Policy Act of 1969, Noise Control Act of 1972, Quiet Communities Act of 1978	Unwanted noise has an adverse effect on human beings and their environment, including land, structures, and domestic animals and can also disturb natural wildlife and ecological systems.	The EPA must promote an environment for all Americans free from noise that jeopardizes their health and welfare.

Table 2: Relevant Resources In and Near the Project Area

Relevant Resource	Impacted	Not Impacted
Barrier Islands	X	
Aquatics	X	
Soils and Water Bottoms	X	
Essential Fish Habitat	X	
Waters of the United States	X	
Wildlife	X	
Threatened and Endangered Species		
Breakwaters		X
Beach/Dune Restoration	X	
Cultural		X
Recreational		X
Visual (Aesthetics)		X
HTRW ¹		X
Air Quality	X	
Water Quality	X	
Noise	X	

¹Hazardous, Toxic, and Radioactive Waste. Although the area has been determined to have a low probability of containing HTRW, it is assessed in this document to comply with USACE policy.

3.2.1 Barrier Shorelines, Headlands and Islands

Existing Conditions

Barrier shorelines provide habitat for migratory birds, wildlife, finfish, shellfish, and other aquatic organisms, and are resources of extraordinary scenic, scientific, recreational, natural, historic, archeological, cultural, and economic importance. Barrier islands provide protection to the wetlands, bays, and estuaries located behind the islands. They function to absorb the impacts of storm surges by buffering interior estuarine marshes and regulating salinities. Barrier shorelines limit storm surge heights, retard saltwater intrusion and limit mechanical erosion by reducing wave energy at the margins of coastal wetlands. By absorbing the impact of these high-energy marine processes, barrier islands help to reduce the erosion of the mainland.

Barrier islands serve as nesting grounds for the area's bird and turtle species. The predominant plant species that can be found on barrier islands include: marshhay

cordgrass (*Spartina patens*), smooth cordgrass (*Spartina alterniflora*), coast dropseed (*Sporobolus virginicus*), and black mangrove (*Avicennia germinans*). Species distribution is generally determined by a combination of an elevation gradient and exposure to saltwater spray. Succulent species and vines are commonly found along the barrier island beach fronts. Grass species, such as wiregrass, occur at higher elevations and along back sides of the barrier islands. Black mangrove may also form stands in the calm waters along the backshore of the islands. Marine submergent aquatic vegetation may occur in the bays and lagoons behind these islands

Grand Isle is one of several barrier islands that serve as natural storm protective barriers and are generally vulnerable to hurricane and other storm damage. Several species of shore birds, wading birds, and song birds can be found foraging and roosting on the beaches and adjacent dunes. Tourism and recreation are a major part of the economy of Grand Isle, and the beaches provide much of the activities that support those endeavors. The proposed restoration action is located on the western Gulf-side of the island.

Grand Isle is not a designated Coastal Barrier Resources System unit under the Coastal Barriers Resources Act, as amended (CBRA). 16 U.S.C. §3501, et seq. However, areas beyond the 30 foot bathymetric contour off Grand Isle's shoreline may be part of that system. Portions of the Caminada Pass borrow site are within part of a designated Coastal Barrier Resources System unit (Unit S03). Because the purpose of the proposed action is to stabilize, to protect and to manage Grand Isle's shoreline and its fish and wildlife habitats, federal expenditures for the proposed project are allowed under Section 6 of the CBRA. 16 U.S.C. §3505(a)(6)(A) and (G).

3.2.2 Aquatic Resources/Fisheries

Existing Conditions

Open-water habitat includes the Gulf to the south and marshes, open water including bays to the north, as well as a large shallow breach in the headland that allows gulf waters to mingle directly with Barataria Bay. The pelagic offshore water-column biota contains: (1) primary producers— phytoplankton and bacteria, with 90 percent of the phytoplankton in the northern Gulf composed of diatoms; (2) secondary producers—zooplankton; and (3) consumers—larger marine species, including fish, reptiles, cephalopods, crustaceans, and marine mammals. The zooplankton consists of holoplankton (organisms for which all life stages are spent in the water column), and meroplankton (mostly invertebrate and vertebrate organisms for which larval stages are spent in the water column). Planktonic primary producers drift with currents, whereas zooplankton move by swimming (DOI MMS 2002).

Floating *Sargassum* in the Gulf can support more than 100 animal species (DOI MMS 2002). Hydroids and copepods dominate the assemblage, which also includes fish, crabs, gastropods, polychaetes, bryozoans, anemones, and sea spiders. Most of these species depend on the *Sargassum* algae. During their early years of life, sea turtles drift with the *Sargassum* and feed off living organisms associated with the seaweed. Although open water is essential fish habitat (EFH) to several managed species the trend toward

increasing the amount of open water habitat generally is considered a problem to be addressed by the project.

The most typical bottom substrate in the Central Gulf is soft muddy bottom where polychaetes are the dominant benthic organism. Benthic habitats support bacteria, algae, and seagrasses; abundances are controlled by scarcity of suitable substrates and limited light penetration. When turbidity is low, coralline red algae and other benthic algae grow in water depths to at least 180 m (DOI MMS 2002). Offshore seagrasses are uncommon in the Central Gulf but are more common in the estuaries behind barrier islands.

A diverse assemblage of invertebrates and fish inhabit the surf zone along Grand Isle. Dominant invertebrates include several species of crabs including lesser and greater blue crabs, fiddler crabs, ghost crabs, and brown, white, and pink shrimp. Numerous fish species include croakers, silver perch, ladyfish, speckled and white trout, bluefish, Spanish mackerel, red and black drum, and various sharks including bull, spinner, and black-tipped. Additionally, numerous juvenile offshore species seasonally inhabit the shallow waters.

A few bird species forage in the surf zone including brown pelican, double-crested cormorant, red-breasted merganser (winter), royal tern, least tern, and laughing gull. Many species of shorebirds forage along the beaches including breeding species such as willet and Wilson's plover and migratory and wintering species such as sanderling, dunlin, piping plover, semipalmated sandpiper, least sandpiper, short-billed dowitcher, black-bellied plover, and semipalmated plover. A few egrets and herons forage in the tidal pools.

3.2.3 Wildlife

Existing Conditions

In the United States, coastal wetlands are most abundant on the southeastern Atlantic coast and on the northern Gulf of Mexico (Nyman et al. 2013). Louisiana serves as a permanent or temporary home to over 900 species of vertebrate animals and an unknown number of invertebrates (Lester et al. 2005). From its coastal marshes to its interior pine-dominated landscapes, the state offers habitat to a variety of wildlife in numbers seldom exceeded elsewhere. These diverse areas provide refuge to 24 million migrant songbirds on a typical spring day and 5 million waterfowl during an average winter. Biologically diverse as the area may be, many of the species and habitats critical to wildlife are declining. Research indicates that hunting data show that hunters are not the cause of this decline. Rather, habitat loss is the true source of the decline of these species and numerous nongame species (Lester et al. 2005). Factors that threaten habitat also influence populations of these declining species, and these threats must be addressed in order to stop the declines (Lester et al. 2005). Table 3 lists the major wildlife utilizing coastal wetlands in Louisiana (Nyman et al. 2013).

Table 3: Notable Wildlife Utilizing Coastal Wetlands in Louisiana

Common Name	Scientific Name
American alligator	<i>Alligator mississippiensis</i>
Nutria	<i>Myocastor coypus</i>
Muskrat	<i>Ondatra zibethicus</i>
Raccoon	<i>Procyon lotor</i>
Waterfowl	<i>Anser</i> spp., <i>Anas</i> spp., <i>Aythya</i> spp., <i>Mergus</i> spp., etc.
Woodcock	<i>Scolopax minor</i>
River Otter	<i>Lutra canadensis</i>
White-Tailed Deer	<i>Odocoileus virginianus</i>
Mink	<i>Mustela vison</i>
Rabbit	<i>Sivillagus</i> spp.
Squirrel	<i>Sciurus</i> spp.
Snapping Turtle	<i>Macrolemys temmincki</i>

Coastal marshes and their associated water bodies, adjacent beaches, and sandbars contain diverse animal life. The abundance of individual species varies regionally and is influenced by prevailing environmental conditions (e.g., salinity regimes, water depth, tidal fluctuations, and vegetational communities). Natural and human-induced changes produce drastic changes in coastal marshes and the species composition of animal communities using them (Chabreck 1988). The productivity of biological resources in coastal Louisiana is at risk because of Gulf shoreline changes (O’Connell 2005). Most estuarine species depend on Gulf shores and barrier islands for nesting, food, or shelter and will be directly affected by habitat loss. Others have complex indirect relationships with the shoreline ecosystem. Forecasting the degree of impact on all animals that are indirectly affected by shoreline change cannot be done with any degree of certainty.

The area is known to support various species and the shallow waters and/or beaches in proximity to the project area serve as foraging habitat for a number of seabirds, wading birds, and other bird species. In a recent survey conducted by CEMVN biologists, the following species were identified as utilizing the beach, shrubs and/or waters adjacent to the project area: Sanderlings, kill deer, ruddy turnstones, sandpipers, snowy egrets, summer tanagers, herring gulls, laughing gulls, common terns, Foster’s terns, Caspian terns, royal terns, brown and white pelicans, magnificent frigate birds, barn swallows, cuckoos, bank swallows, eastern kings, painted bunting and red winged black birds. Foraging and roosting were the only activities exhibited during the duration of the surveys. Although none of these birds were observed nesting, the potential for nesting and suitable habitat exist within the study area. The waters adjacent to the project area are known to support bottlenose dolphins. They are commonly seen on a daily basis from the shores of the island.

Mammals

Louisiana's coastal areas have many different wildlife species, including important game animals such as white-tailed deer (*Odocoileus virginianus*), eastern cottontail (*Sylvilagus floridanus*), swamp rabbit (*Sylvilagus aquaticus*), gray squirrel (*Sciurus canadensis*), fox squirrel (*S. niger*), and raccoon (*Procyon lotor*); furbearers include river otter (*Lutra canadensis*), muskrat (*Ondatra zibethicus*), nutria (*Myocastor coypus*), mink (*Mustela vison*), Virginia opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), bobcat (*Lynx rufus*), beaver (*Castor canadensis*), and coyote (*Canis latrans*). The area supports insectivores such as bats, rodents, and the ninebanded armadillo (*Dasypus novemcinctus*) (Gosselink et al. 1998, Chabreck 1988).

Reptiles and Amphibians

Many reptiles and amphibians utilize wetlands during some part or all of their life cycle, and coastal marshes provide essential habitat in most areas. The number of reptile and amphibian species in Louisiana is inversely proportional to water salinity – a major source of stress (Chabreck 1988). Twenty-four species of reptiles are found in fresh marsh; 16 species in intermediate and brackish marsh; and only four species regularly occur in salt marsh. Fresh marsh supports 16 species of amphibians; intermediate, six species; and brackish, five species. There are no amphibians that utilize salt marsh in Louisiana (Gosselink et al. 1979).

Amphibians and reptiles are limited within the project area. The eastern narrow-mouthed toad may be present in shrub-scrub habitats on the island and suitable developed areas, and has been reported from salt marsh habitat in other portions of Louisiana; diamond-backed terrapin and Gulf salt marsh snake also use salt marsh habitat (Dundee and Rossman 1989; Vermillion 2004 pers. comm.). According to USACE (2014b), there are 23 species of turtles, 10 species of lizards, 39 species of snakes, and the alligator that inhabit the coastal areas of Louisiana.

Birds

The vastness and diversity of marshes and estuaries along the Gulf coast are matched by the variety and numbers of birds that depend on these habitats during all or a portion of their lives (Sprunt 1968). Ninety percent of all bird species occurring in eastern North America have been observed utilizing the Gulf Coast marshes (Lowery and Newman 1954). Birds are significant herbivores in coastal marshes and they help transport propagules of various marsh plants. Birds in Gulf Coast Marshes can be grouped as permanent residents, breeding summer residents, breeding winter residents, nonbreeding winter residents, and transients. Individual species prefer a certain type of habitat within a coastal region and because of the large number of species and their wide range of habitat requirements, all habitat types are used (Chabreck 1988).

Various raptors such as barred owls, red-shouldered hawks, marsh hawks, ospreys, and Arctic peregrine falcons are present and utilize various habitats throughout the project area (LCWCRTF and WCRA 1999, Day et al. 1989, USACE 2004). Suitable habitat exists for

the bald eagle within the project area. There are documented active nests in the Breton Sound, Barataria, Lake Pontchartrain, and Mississippi Delta Basins and eagles utilize basin-area trees for hunting and resting. The Coast 2050 Report (LCWCRTF and WCRA 1999) characterized the current population status, population trends since 1985, and population projections to 2050 for 14 prominent avifauna species and/or species groups.

Table 4 provides population estimates for the state's most abundant duck and geese species. Dabbling ducks and geese feed in shallow ponds and flooded freshwater and brackish marshes, and they also frequent adjacent rice fields and other agricultural areas. The birds eat seeds, leaves, shoots, rhizomes, and tubers of emergent marsh plants and submerged aquatic plants and they supplement this diet with insects, mollusks, and other invertebrates. The most abundant dabbling ducks in the Louisiana coastal marshes are gadwall, greenwinged teal, mallard, and northern pintail (Mac et al. 1998).

Table 4: Louisiana's Most Abundant Duck Species

Species or species group	Louisiana Coastal Area			U.S. total			% Louisiana Coastal Area		
	# of Years	Mean	Std. Dev.	# of Years	Mean	Std. Dev.	# of Years	Mean	Std. Dev.
Dabbling Ducks									
Mallard	25	387	230	26	5,911	1,456	25	7	4
Mottled Duck	25	67	32	26	104	37	2525	63	16
Gadwall	25	734	261	26	1,017	302		70	10
American Wigeon	25	201	125	26	1,095	306	25	18	8
Green-Winged Teal	25	617	268	26	1,450	399	25	42	14
Blue-Winged Teal	25	96	86	26	121	95	25	72	16
Shoveler	25	156	77	26	712	182	25	22	11
Northern Pintail	25	372	168	26	3,528	1,538	25	12	7
Total Dabblers	25	2,631	754	26	13,928	3,542	25	19	5
Diving Ducks									
Redhead	22	15	6	26	389	128	22	4	2
Canvasback	25	21	21	26	269	52	25	7	7
Scaups	25	413	348	26	1,187	337	25	32	25
Ring-Necked Ducks	24	61	53	26	240	120	24	23	10
Total Divers	25	506	355	26	2,085	331	25	23	15
Total Ducks	25	3,137	919	26	16,023	3,646	25	19	5
Geese									
Lesser Snow	25	345	55	26	1,747	524	25	22	9
Greater White-Fronted	25	56	10	26	271	109	25	22	7
Total Geese	25	401	48	26	2,018	591	25	21	7
Total Waterfowl	24	3,490	913	26	18,041	3,290	24	19	4

3.2.4 Essential Fish Habitat

Existing Conditions

The Gulf of Mexico Fisheries Management Council (GMFMC), in cooperation with the National Marine Fisheries Service (NMFS), has delineated essential fish habitat (EFH) for federally managed species identified in Gulf Fisheries Management Practices (FMPs). EFH is defined as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity” (GMFMC 2016). Federally managed species likely to occur in the proposed project area are managed under the following FMPs for the Gulf of Mexico: shrimp, red drum, reef fish, coastal migratory pelagic fishes and other marine biota, and highly migratory species. Table 5 identifies those federally managed species, their life stages and EFH, which may occur in the project area. Table 6 lists those highly migratory species in the study area that have the potential to be impacted by the proposed actions of the project.

Table 5: EFH Species in the Project Area

Common Name	Scientific Name	Life Stage	EFH
Red drum	<i>Sciaenops ocellatus</i>	Larvae/Post Larvae	All estuaries planktonic, estuarine Submerged Aquatic Vegetation (SAV), estuarine sand/shell/mud/soft bottom, emergent marsh
		Adult	Gulf of Mexico & estuarine sand/shell/mud/soft bottoms, oyster reef, estuarine SAV, 35-180 m
Brown shrimp	<i>Crangon crangon</i>	Larvae/Post Larvae	Planktonic, estuarine sand/shell/soft bottom, SAV, emergent marsh, oyster reef, 0-82 m
		Adult	Gulf of Mexico <110 m, silt sand, muddy sand
White shrimp	<i>Litopenaeus setiferus</i>	Juvenile	Marsh edge, SAV, marsh ponds, inner marsh, oyster reef
		Adult	Gulf of Mexico <33 m, silt, soft mud
Reef Fish			
Vermillion snapper	<i>Rhomboplites aurorubens</i>	Juvenile	Nearshore hardbottom
Lane snapper	<i>Lutjanus synagris</i>	Larvae/Post Larvae	Nearshore SAV, planktonic 4-132 m
		Juvenile	Nearshore SAV, sand/shell/mud/soft bottom, banks/shoals, mangrove 4-132 m.
		Adult	Nearshore SAV, sand/shell/mud/soft bottom, banks/shoals 4-132 m
Gray snapper	<i>Lutjanus griseus</i>	Adult	Nearshore SAV, nearshore hardbottom/banks/shoals, estuarine mud/soft/sand/shell bottom, estuarine emergent marsh, 0-180 m
Almaco jack	<i>Seriola rivoliana</i>	Juvenile	Nearshore algae (Sargassum)
Red snapper	<i>Lutjanus campechanus</i>	Larvae	Nearshore pelagic,
		Juvenile	Nearshore hard/mud/soft bottom
		Adult	Nearshore sand/shell bottom
Gray triggerfish	<i>Balistes capriscus</i>	Larvae/Post Larvae	Nearshore algae (Sargassum)

		Juvenile	Nearshore algae (Sargassum), mangrove
		Adult	Nearshore sand/shell bottom
Coastal Migratory Pelagics			
King mackerel	<i>Scomberomorus cavalla</i>	Juvenile	Nearshore pelagic
Cobia	<i>Rachycentron canadum</i>	Eggs/Post Larvae/Juvenile/Adult	Nearshore pelagic
Greater amberjack	<i>Seriola dumerili</i>	Juvenile	Nearshore algae (Sargassum)
		Adult	Nearshore pelagic
Gulf stone crab	<i>Menippe adina</i>	Eggs	Banks/shoals 1 - 97.5 m
		Larvae/Post Larvae	Sand/shell and soft bottoms 40 m
		Juveniles	Pelagic 40 m
		Adults	Oyster reefs, sand/shell/soft bottoms 40 m

Table 6: Highly Migratory Species in the Project Area

Common Name	Scientific Name	Life Stage	EFH
Scalloped Hammerhead Shark	<i>Sphyrna lewini</i>	Neonate	Galveston Bay; Vermillion Bay to West Bay; All nearshore waters to > 54 m
		Juvenile	West Galveston Bay; nearshore off Galveston Island
Blacktip Shark	<i>Carcharhinus limbatus</i>	Neonate & Juvenile	Estuarine waters of Galveston, Terrebonne and Timbalier Bays; all nearshore and offshore waters
		Adult	Estuarine waters of Vermilion, Atchafalaya, Terrebonne and Timbalier Bays; all nearshore and offshore waters
Finetooth Shark	<i>Carcharhinus isodon</i>	Neonate	Lower Galveston Bay, West Bay and nearshore waters off Galveston Island and Boliver Peninsula; Timbalier Bay and waters offshore Timbalier islands
		Juvenile & Adult	Estuarine and nearshore waters E of Terrebonne Bay
Spinner Shark	<i>Carcharhinus brevipinna</i>	Neonate	Galveston Bay (including East, West and Trinity Bays) and nearshore waters off Brazoria, Galveston, and Chambers Counties; Terrebonne Bay and estuarine and nearshore waters to Grand Isle
		Juvenile	Galveston Bay (including East, West and Trinity Bays) all nearshore waters (ex. off mouth of Mermentau River and between Vermillion and Atchafalaya Bays); Terrebone and Barataria Bays and the Mississippi birdfoot delta
Atlantic Sharpnose Shark	<i>Rhizoprionodon terraenovae</i>	Neonate	All nearshore and offshore waters Freeport to the mouth of the Mississippi, Christmas Bay, Galveston Bay (incl. West, Trinity and East Bays), Vermillion, West Cote Blance,

			Atchafalaya, lower Terrebonne and Timbalier Bays and Barataria Bay
		Juvenile	All nearshore and offshore waters Freeport to the mouth of the Mississippi, Christmas Bay, West Bay, lower Terrebonne and Timbalier Bays
		Adult	All nearshore and offshore waters Freeport to the mouth of the Mississippi, Christmas Bay, Galveston Bay (incl. West, Trinity and East Bays), lower Terrebonne and Timbalier Bays and Barataria Bay
Blacknose Shark	<i>Carcharhinus acronotus</i>	Neonate and Juvenile	Estuarine and nearshore waters of Brazoria and Galveston Counties
Bonnethead Shark	<i>Sphyrna tiburo</i>	Neonate and Juvenile	Estuarine and nearshore waters of Brazoria and Galveston Counties

3.2.5 Threatened, Endangered and Protected Species

Existing Conditions

Within the State of Louisiana, there are 41 threatened and endangered (T&E) or at risk species (some with critical habitat) under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS) and/or the National Marine Fisheries Service (NMFS). Of those 41 species, 10 occur in Jefferson Parish (Table 7).

Table 7: T&E Species Occurring in Jefferson Parish

Common Name	Scientific Name	Occurrence	Group	Status
West Indian Manatee	<i>Trichechus manatus</i>	Seasonal	Mammal	T
Piping Plover	<i>Charadrius melodus</i>	Known	Bird	T, CH
Rufa Red Knot	<i>Calidris canutus</i>	Seasonal	Bird	T
Gulf Sturgeon	<i>Acipenser oxyrinchus desotoi</i>	Known	Fish	T, CH
Pallid Sturgeon	<i>Scaphirhynchus albus</i>	Known	Fish	E
Green Sea Turtle	<i>Chelonia mydas</i>	Known	Reptile	T
Hawksbill Sea Turtle	<i>Eretmochelys imbricata</i>	Known	Reptile	E
Kemp's Ridley Sea Turtle	<i>Lepidochelys kempii</i>	Known	Reptile	E
Leatherback Sea Turtle	<i>Dermochelys coriacea</i>	Known	Reptile	E
Loggerhead Sea Turtle	<i>Caretta caretta</i>	Known	Reptile	T

* <https://www.fws.gov/southeast/pdf/fact-sheet/louisiana-ecological-services-field-office-t-and-e-species.pdf> (accessed March 19, 2019)

T = Threatened; E = Endangered; CH = Critical habitat (includes those areas occupied by the species)

The USFWS and NMFS share jurisdictional responsibility for sea turtles and the Gulf sturgeon. Other species that were listed on the Endangered Species List but which have since been de-listed because population levels have improved, are the bald eagle and the brown pelican. Currently, American alligators and shovelnose sturgeon are listed as threatened under the Similarity of Appearance clause in the Endangered Species Act (ESA) of 1973, as amended, but are not subject to ESA Section 7 consultation.

T&E species are known or believed to occur within the project area including: piping plover (*Charadrius melodus*), rufa red knot (*Calidris canutus rufa*), West Indian manatee (*Trichechus manatus*), and Kemp's Ridley (*Lepidochelys kempii*), Leatherback

(*Dermochelys coriacea*), Hawksbill (*Eretmochelys imbricate*), Green (*Chelonia mydas*) and Loggerhead (*Caretta caretta*) sea turtles. T&E species that may occur in coastal waters of the study area are the sperm whale (*Physeter catodon*), the humpback whale (*Megaptera novaeangliae*), the sei whale (*Balaenoptera borealis*), and black right whale (*Eubalaena glacialis*).

Piping Plover (*Charadrius melodus*)

The piping plover is listed as threatened under the ESA. The piping plover does not nest in Louisiana, but it winters along its coastal beaches and barrier islands. Breeding and wintering plovers forage in exposed wet sand in wash zones; intertidal ocean beach; wrack lines; washover passes; mud-, sand-, and algal flats; and shorelines by probing for invertebrates at or just below the surface. They use beaches adjacent to foraging areas for roosting and preening. Small sand dunes, debris, and sparse vegetation within adjacent beaches provide shelter from wind and extreme temperatures.

Grand Isle is designated as critical habitat for wintering piping plover. Critical habitat constitutes areas considered essential for the conservation of a listed species.

Rufa Red Knot (*Calidris canutus rufa*)

The rufa subspecies of the red knot is listed as threatened under the ESA. Louisiana is a migration stopover for this species of red knots in both spring and fall, and some birds may overwinter in small numbers. Rufa red knots are known to occur in the project area. In the southeastern United States, rufa red knots forage along sandy beaches, tidal mudflats, salt marshes, and peat banks. Observations along the Texas coast indicate that rufa red knots forage on beaches, oyster reefs, and exposed bay bottoms and roost on high sand flats, reefs, and other sites protected from high tides.

Marine Turtles

The Green (*Chelonia mydas*) and Loggerhead (*Caretta caretta*) sea turtles are listed as threatened and the Kemp's Ridley (*Lepidochelys kempii*), Leatherback (*Dermochelys coriacea*) and Hawksbill (*Eretmochelys imbricate*) are listed as endangered under the ESA. All of the previously mentioned species are known to utilize the offshore and inshore areas of the Gulf of Mexico near Grand Isle. During their early years of life, sea turtles drift with the *Sargassum* and feed off living organisms associated with the seaweed. In 2014, the National Oceanic and Atmospheric Administration (NOAA) Fisheries designated Sargassum habitat in the Gulf of Mexico as critical habitat for the Northwest Atlantic Ocean Distinct Population Segment (DPS) of the loggerhead sea turtle. This designated critical habitat is located approximately 4 miles off the coast of Louisiana and is well outside the project area.

Nesting of any of these species has not been documented in Louisiana, however, sea turtles have been known to get stranded on Grand Isle and other beaches of Louisiana. Contractors would be informed of the potential of stranded turtles and would be directed

to report any strandings to the Louisiana Department of Wildlife and Fisheries (LDWF) at (337) 962-7092.

West Indian Manatee (*Trichechus manatus*)

Manatees are listed as threatened under the ESA and the Marine Mammal Protection Act (MMPA). Manatees inhabit coastal areas from Florida to the Greater Antilles and suitable habitats in Central and South America. While the West Indian manatee has been observed in the coastal waters of Louisiana occasionally, it is unlikely that they would be found near the project area due to the lack of vegetation for foraging.

Gulf Sturgeon (*Acipenser oxyrinchus desotoi*)

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

Bald Eagle (*Haliaeetus leucocephalus*)

Although it is delisted, the bald eagle is still protected by the Bald and Golden Eagle Protection Act (BGEA) and the Migratory Bird Treaty Act (MBTA). Bald eagles nest in Louisiana from December through mid-May in mature trees (e.g., bald cypress, sycamore, willow, etc.) near fresh to intermediate marshes or open water. Nest sites typically include at least one perch with a clear view of the water or area where the eagles usually forage. Habitats suitable for use by the bald eagle are present throughout coastal Louisiana, and can be found in the project area.

Brown Pelican (*Pelecanus occidentalis*)

On November 17, 2009, the brown pelican was removed from the federal list of threatened and endangered species. However, the brown pelican is still protected under the MBTA and is a state listed species. Habitats suitable for use by the brown pelican are present throughout coastal Louisiana, including the project area.

Colonial Nesting Waterbirds/Wading birds and Seabirds/Shorebirds:

Coastal Louisiana contains habitats suitable for support of colonial nesting waterbirds which are protected under the MBTA. Louisiana is considered a hotspot for colonial wading bird and seabird nesting in all of the United States because of its position in the Mississippi Alluvial Valley and along the Gulf of Mexico. It is estimated that the Louisiana coastal area is home to approximately 200 rookeries of wading birds and seabirds.

Some of the representative nesting seabird species in Louisiana include: laughing gull (*Leucophaeus atricilla*), sooty tern (*Onychoprion fuscatus*), least tern (*Sternula antillarum*), gull-billed tern (*Gelochelidon nilotica*), caspian tern (*Hydroprogne caspia*), Forster's tern (*Sterna forsteri*), royal tern (*Thalasseus maximus*), sandwich tern (*Thalasseus sandvicensis*), black skimmer (*Rynchops niger*), herring gull (*Larus argentatus*), kelp gull (*Larus dominicanus*), and common tern (*Sterna hirundo*). Geologic subsidence, saltwater intrusion, and significant tropical storm activity all will continue to impact birds in the project area. All of the above have combined to impact available marsh, barrier islands, beach, and dredged spoil nesting habitat for colonial nesting seabirds within the Louisiana coastal zone.

Bottlenose dolphins

Common bottlenose dolphins are protected under the MMPA and found throughout the world in both offshore and coastal waters, including harbors, bays, gulfs, and estuaries of temperate and tropical waters. Bottlenose dolphins are known to inhabit the project area and often venture very close to shore.

Sperm whales (*Physeter macrocephalus*)

Sperm whales are protected under the MMPA and the ESA and occur throughout the world's oceans. They are known to inhabit Gulf waters but are primarily found in waters deeper than about 1,640 feet due to their food source being comprised mainly of deep-diving squid and fishes. Sperm whales stay within the Gulf, in waters about 656–11,480 feet deep and are unlikely to venture into the project area.

Sei whales (*Balaenoptera borealis*)

Sei whales are found in all the oceans of the world and are usually found in deep waters. As a highly pelagic species, sei whales will make seasonal migrations from low-latitude wintering areas to high-latitude summer feeding grounds. Sei whales primarily appear to be associated with the continental shelf edge and are rarely seen in the Gulf. (Hain et al. 1985).

Humpback whale (*Megaptera novaeangliae*)

Humpback whales occur in all oceans of the world. In the Gulf of Mexico, humpback whales have been captured in the Florida Keys and northern Cuba. Sightings have occurred off the west coast of Florida and Alabama. There are no known occurrences along the Louisiana Coast.

Black right whale (*Eubalaena glacialis*)

Right whales are among the rarest of the baleen whale species with distinct populations scattered across oceans of the world until they were decimated by heavy and consistent whaling. Most right whales head south for the winter, to shallow coastal waters off the southeastern United States near the coast of Florida.

3.2.6 Waters of the United States (WOTUS)

Existing Conditions

Grand Isle is a barrier island and is thus surrounded by jurisdictional Waters of the United States (WOTUS), which also classify as navigable WOTUS. On the north or bay side of the island, these open water areas along the shoreline include portions of Caminada Bay, Bayou Rigaud, and Bayou Fifi. On the south or gulf side of the island, the shoreline is bordered by the waters of the Gulf of Mexico. The shoreline of the west end of Grand Isle is bordered by Caminada Pass while the east end is bordered by Barataria Pass, which encompasses part of the Barataria Bay Waterway.

Two broad categories of WOTUS are often referred to as wetlands and “other waters” or other Waters of the United States. Other waters can include features such as oceans, rivers, streams, lakes, and ponds, i.e. areas of primarily open water. Wetlands can include features such as marshes, swamps, bogs, estuaries, and wet prairies. At Grand Isle, most wetland areas are found on the bay side of the island although there is a relatively large wetland area at the west end of the island that extends to the island’s gulf side and a large complex of wetlands at the east end of the island on its gulf side. Most wetlands are salt marshes with some mud flats also present.

In the immediate area of the proposed breakwaters, other WOTUS consist of the open water of the Gulf of Mexico (Gulf), and may be classified as marine, subtidal, unconsolidated bottom using the modified Cowardin classification system (FGDC, 2013). In the immediate area of the proposed beach and dune nourishment activities, other WOTUS encompass areas that may be classified as: marine, subtidal, unconsolidated bottom (closest to proposed breakwaters); marine, intertidal, unconsolidated shore (extending from near the breakwaters to the southern edge of the line of sand dunes along the shoreline; basically the former beach/shoreline zone), and marine, subtidal, rocky shore (portions of the southern sideslope of the dunes that have been armored with rock). The northern boundary of the marine WOTUS here follows the Mean High High Water (MHHW) line (elevation) along the current southern island shoreline, along with the periodically inundated splash zone beyond the MHHW line. There is one salt marsh wetland at the west end of Grand Isle close to the proposed beach/dune nourishment work, but this isolated wetland is situated over 40 feet north/northwest of any proposed project construction locations and would not be impacted by the proposed construction.

The proposed CPS borrow site would be located completely within other WOTUS (the Gulf), which can be classified as marine, subtidal, unconsolidated bottom. The proposed BBWW borrow site is similar to the CPS borrow site, but this site’s sea-bottom has been previously disturbed by prior dredging activities.

The Grand Isle shoreline, including beaches, is subject to significant erosion caused by wave action, wind, and currents. Figures 9 and 10, Appendix B provide aerial photos of Grand Isle’s western end taken in 2010 and in 2016 respectively. These photos illustrate erosion that has occurred over just 6 years. That portion of the island’s shoreline to be nourished and protected as part of the proposed project is now highly eroded. The

formerly exposed beach areas are largely absent with Gulf waters reaching to the south side of the adjacent sand dune. In the recent past, the southern side slope of the dune was armored with rock to protect against erosion. This armoring begins approximately 370 feet east of the Caminada Pass jetty (projecting into the Gulf at the southwest tip of Grand Isle) and continuing northeast along the dune for roughly 2,430 linear feet. Past shoreline/erosion repair also included installation of a large-diameter geo-tube where the dune had eroded near the jetty, combined with re-construction of the dune around the geo-tube. An existing wooden boardwalk extends southward from an upland sand/gravel parking lot (the project's proposed staging area) over the dune to the former beach area. This boardwalk is located approximately 1,870 linear feet northeast from the Caminada Pass jetty and is presently closed to public access due to erosion of the beach. Figure 11, Appendix B is a photo showing a portion of the armored dune and eroded shoreline near the cited boardwalk. Figure 12, Appendix B provides a photo showing the beginning of the dune armoring and a portion of the geo-tube exposed by erosion.

3.2.7 Water and Sediment Quality

Existing Conditions

Very little water quality monitoring data is available for open water areas in the general vicinity of the proposed project. U.S. Geological Survey (USGS) monitoring site 07380249 is located in Caminada Bay north of the west end of Grand Isle. Monitoring data from 2018 (USGS, 2019) showed daily mean dissolved oxygen values ranged from 3.2 to 10.9 mg/L, but typically fell in the range of 6 to 9 mg/L. In this same year, daily mean turbidity concentrations ranged from 3.1 to 168 formazin nephelometric units (FNU). These data showed highly variable turbidity levels, even from one day to the next. This is not surprising since ocean turbidity is affected by strong wind and storm events, wave action, and currents.

Louisiana Department of Environmental Quality (LDEQ) ambient water quality monitoring site 4547 is located in the Gulf south of the proposed BBWW borrow site. Monitoring data from 2015 (most recent; LDEQ, 2019) showed dissolved oxygen concentrations ranging from 7.6 to 9.1 mg/L and dissolved oxygen saturation ranging from 97% to 130% at roughly 7 to 8 feet deep. LDEQ monitoring site 0727 is located in Caminada Bay north of the west end of Grand Isle. Monitoring data from 1998 (LDEQ, 2019) revealed a mercury concentration of 1.24 ppm. LDEQ monitoring site 4551 is located in the Gulf about 5 miles south of Grand Isle. Monitoring data from 2015 (LDEQ, 2019) showed dissolved oxygen concentrations ranging from 6.7 to 7.9 mg/L and dissolved oxygen saturation ranging from 91% to 106%. Monitoring site 4548 is located in the Gulf about 7 miles east-northeast of Grand Isle. 2015 monitoring data (LDEQ, 2019) showed dissolved oxygen concentrations ranging from 2.7 to 10.4 mg/L and dissolved oxygen saturation ranging from 40% to 146%.

The Louisiana Department of Health and Hospitals Beach Monitoring Program analyzes beach water for fecal coliform bacteria and enterococci from April to September. These bacteria, typically found in sewage pollution, can cause rashes, disease, and infections in humans. Water quality testing at a Grand Isle beach (part of the proposed beach nourishment work) has historically passed water quality tests for the cited bacteria 60 to

95% of the time, and about 75% of the time in 2018 (Swim Drink Fish Canada, 2019). Water quality testing at a Grand Isle beach area near the east end of the proposed beach nourishment area also historically passed such water quality tests 60 to 95% of the time, and about 78% of the time in 2018 (Swim Drink Fish Canada, 2019).

As can be seen from the above data, water quality in marine water areas near the proposed project area can be highly variable. Turbidity is particularly variable due to the numerous natural factors that can affect suspended sediments in the water column of Gulf waters. Dissolved oxygen concentrations are also quite variable but the limited monitoring data indicate impaired concentrations are not particularly frequent in the general project area. Potential organic and inorganic items that can degrade water quality include things such as fecal bacteria, nitrogen, phosphorous, certain pesticides, metals like arsenic, selenium, and methylmercury, and petroleum compounds or derivatives. Overall water quality in the Gulf is highly variable, and in coastal settings, is highly influenced by human activities. The primary cause of degraded water quality tends to be excess nutrients. These nutrients can result in eutrophication which can result in diminished water clarity, increased *chlorophyll a* concentrations, and related secondary effects such nuisance/toxic algal blooms and loss of submerged aquatic vegetation.

No recent chemical analyses of Gulf sediments in the general vicinity of the proposed project area could be found. It is noted that EPA has established sediment benchmarks for aquatic life that address concentrations of nickel, vanadium, and oil-related organic compounds such as benzene, xylene, toluene, and naphthalene in Gulf sediments (EPA, 2019). Such benchmarks identify chemical concentrations above which there is the potential of risk or harm to animals or humans. These are used as risk assessors rather than regulatory standards.

3.2.8 Air Quality

Existing Conditions

National air quality standards have been set by the Environmental Protection Agency (EPA) for six common pollutants (also referred to as criteria pollutants). Table 8 lists these pollutants which include ozone, particulate matter, carbon monoxide, nitrogen dioxide, sulfur dioxide, and lead. States are required by the law and regulations to report to the EPA annual emissions estimates for point sources (major industrial facilities) emitting greater than, or equal to, 100 tons per year of volatile organic compounds, nitrogen dioxide, sulfur dioxide, particulate matter less than 10 microns in size; 1,000 tons per year of carbon monoxide; or 5 tons per year of lead. Since ozone is not an emission, but the result of a photochemical reaction, states are required to report emissions of volatile organic compounds (VOC), which are compounds that lead to the formation of ozone. Jefferson Parish is currently in attainment of all National Ambient Air Quality Standards (NAAQS), and operating under attainment status, therefore, a general conformity determination is not necessary. This classification is the result of area-wide air quality modeling studies.

Table 8: Primary and Secondary NAAQS for the Seven Contaminants Established by EPA

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

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

3.2.9 Cultural Resources

Existing Conditions

The Grand Isle area has been inhabited since prehistoric times. Historically, the area was home to hunters, trappers, fishermen, and farmers as well as a stronghold for privateers and pirates who raided merchant ships in the Gulf of Mexico. The earliest land grants on the barrier islands were granted in the Spanish colonial period. By the early 1800's, Grand Isle supported a number of sugar and cotton plantations and, in the late 1880's, the region became a resort destination. Today, Grand Isle hosts a number of individual recreational camps, as well as plant facilities and helicopter pads related to the oil industry.

Several cultural resources surveys have been conducted on Grand Isle. These investigations have resulted in the identification of 78 archaeological sites and 221 magnetic and acoustic anomalies in the surrounding waters. The most pertinent of these investigations is the 1978 Phase I cultural resources survey conducted by Coastal Environments, Inc. on behalf of USACE. This survey included the entire Barataria, Segnette, and Rigaud Waterways, and identified 77 sites, all of which are outside the current area of potential effect (APE).

The undertaking involves pumping sand to the beach side of the proposed breakwater on the south end of Grand Isle. Sand will be from one of two possible sources in open water of the Gulf of Mexico. There are three borings (B1, B2, and B3) proposed for a proposed 643 acre BBWW borrow source that is 40,000 feet east of Caminada Pass at the tip of Grand Isle. The estimated boundaries for the proposed borrow source at Caminada Pass extend from the LA Highway 1 bridge through the pass along Elmer's Island on the west and the Grand Island jetty on the east. There are four proposed boring locations (C1, C2, C3, and C4) in the proposed Caminada Pass borrow source that extend due south from the tip of Grand Isle into open water. A 2009 hydrographic survey by NOAA (SHPO report 22-4651) produced no targets in the C3 or C4 area. A 2008-2009 hydrographic survey (SHPO report 22-4652) and other reports have recorded targets in the Gulf (near C1 and C2) and within the pass. These are five features in the pass and a like number of obstructions near the bridge. An additional six to seven features and three obstructions are in open water. No other information is available for the features.

The tip of Grand Isle has been intensively developed along Highway 1. An archaeological investigation in 1986 east of the proposed fill area (SHPO report 22-1155) recorded the Barataria Plantation (16JE144), a plantation operation established early on the island that was the first plantation converted to a resort hotel on the Louisiana Gulf Coast. This archaeological site that is 2,270 meters east of the proposed breakwater has been determined eligible for the National Register of Historic Places. Elmer's Island, also in Jefferson Parish, on the west side of Caminada Pass has been intensively surveyed for cultural resources (SHPO report 22-2966) and no archaeological remains were observed south of Highway 1. The recorded archaeological sites in Jefferson Parish (16JE30, 16JE221, and 16JE222) and Cheniere Cemetery are 1,700 meters north of the tip of Elmer's Island. These are the Jefferson Parish sites closest to Caminada Pass. National

Register of Historic Places (NRHP) eligibility has not been determined for 16JE221 or 16JE222, and the pirogue (16JE30) is not NRHP eligible.

3.2.10 Recreational Resources

Existing Conditions

The project area is located on the southwest side of the island, which remains natural and undeveloped. Recreation includes swimming, sun bathing, walking/jogging on the beach, bird watching, photography, and saltwater fishing. There are four marinas/boat launches on the island which provide access to Barataria Bay and the Gulf of Mexico. The closest boat launch area is Bridge Side Marina located on the Barataria Bay side of the island. The marina provides a highly-used pier used for fishing and viewing. The pier and adjacent LA-1 Bridge provide the most accessible views into the project area. The south side, or Gulf of Mexico side of the island, is primarily beach. Grand Isle State Park is located on the eastern end of the island and is managed by Louisiana State Parks. Facilities include tent and recreational vehicle campground, picnic areas, water playground, hiking trails, beach and fishing pier. The International Grand Isle Tarpon Rodeo attracts thousands of visitors each year. The Grand Isle Migratory Bird Celebration (Grand Isle Bird Festival) is an annual three-day event that promotes bird watching and the awareness of the island's ecologically valuable bird habitat.

3.2.11 Visual Resources (Aesthetics)

Existing Conditions

Grand Isle is located at the southern end of the Lafourche/Terrebonne Scenic Byway (Louisiana Highway 1). The island's visual significance is based on its natural barrier island characteristics and developmental actions that have evolved into visual-cultural features. The terrain is very flat with a gentle slope leading up to the hurricane protection dune on the Gulf of Mexico side of the island. The Bridge Side Marina pier and adjacent LA-1 Bridge provide the most accessible views into the project area. Trees are sparse and the view shed is open from Highway 1 to structures and internal views of the island. The island's frontal sand dunes are elevated to 13 and 1/2 feet and are vegetated with bitter panicum and sea oats on the Gulf side, and remnants of black mangrove/salt marsh on the bay side. Land use along the dune is almost exclusively single-family residential. Structures are elevated and offer views over the dune out to the Gulf of Mexico.

Institutional and publically significant features include the Grand Isle Cemetery and Grand Isle State Park. The Grand Isle Cemetery is a local visual/cultural value and features whitewashed tombs, wrought iron crosses, and surrounding live oaks. Grand Isle State Park features a three-tiered lookout that affords panoramic views of the island, the ever-present offshore oilrigs, and the ruins of historic Fort Livingston (located northeast across Barataria Pass on Grand Terre Island).

3.2.12 Noise

Existing Conditions

Noise, or unwanted sound, may be objectionable in terms of the nuisance, health, or well-being effects it may have upon humans and the human environment, as well as upon the animals and ecological systems in the natural environment (Kryter 1994). Generally, noise is a localized phenomenon. The Noise Control Act (42 U.S.C. §4901, et seq.) establishes a means for effective coordination of federal activities in noise control and to provide information to the public regarding the noise emissions. There are many different sources of noise throughout the project area including: operation of commercial and recreational boats, water vessels, air boats, and other recreational vehicles; automobiles, trucks, and all-terrain vehicles; aircraft; operation of machinery and motors; and human industry-related noise (such as oil and gas facilities).

4 ENVIRONMENTAL CONSEQUENCES

4.1 Barrier Shorelines, Headlands and Islands

Future Conditions with No Action

Under the No Action (Future without Project (FWOP)) conditions, there would be no direct impacts on the project area resulting from project construction. Existing conditions would persist and Grand Isle would likely continue to experience land loss. Marine influences and tropical storm events would be the primary factors affecting land loss. As this land loss trend continues, hydrologic connections between the gulf and interior areas would increase and exacerbate land loss and conversion of habitat type within the interior wetland communities. The continued loss of Grand Isle and other coastal barrier systems would result in the reduction and eventual loss of the natural protective storm buffering of these barrier systems. The loss of these barrier systems would also adversely impact the extraordinary scenic, scientific, recreational, natural, historical, cultural, and economic importance of the barrier system. In addition, loss of these coastal barrier systems would result in the reduction and eventual loss of the natural protective storm buffering these barrier systems provide. Without the protective buffer provided by the barrier island systems, interior wetlands, upland habitats and developed areas would be at an increased risk of severe damage from tropical storm events.

Future Conditions with the Proposed Action

Implementation of the proposed action would convert 29.3 acres of WOTUS to beach habitat. The existing beach/shoreline has been severely degraded due to coastal erosion processes. There would be no loss of tidal habitat or beach habitat, however the proposed action would initially destroy slow-moving and sessile benthic organisms where beach nourishment and breakwater construction occurs due to direct contact (e.g., burial) and localized turbidity. Other adverse impacts associated with the construction phase of the project, in addition to physical disturbance, include increased levels of turbidity and suspended sediments that would return to ambient conditions shortly after completion of

the work. Following construction, these levels would rapidly return to normal.

Beneficial impacts include additional protection of property in the Grand Isle area which would be buffered from some of the impacts caused by future storm surge events. Additionally, restoration of the beach area from the deposition of sand along the shoreline would provide increased habitat area for crabs and foraging small mammals.

4.2 Aquatic Resources/Fisheries

Future Conditions with No Action

Under the No Action alternative, the beach and dune nourishment activities would not take place and the segmented rock breakwaters would not be constructed. Conditions on Grand Isle would continue to degrade as erosional forces would continue to wear away at the shoreline in the form of wind and wave action and seasonal storms. With continued erosion, marsh habitats on Grand Isle could become more and more saline and eventually convert to open water. Marsh provides feeding and nursery habitat for fisheries and the loss of such habitat could result in negative impacts to fisheries. If USACE were not to implement the proposed project, it is possible that the Town of Grand Isle would take future actions to preserve the area by implanting a shoreline/beach protection and nourishment activities as funds become available. It is not possible to evaluate the extent and exact nature of such impacts, nor when they might occur.

Future Conditions with the Proposed Action

With implementation of the proposed action, a maximum total of approximately 31.8 acres of aquatic resources would be permanently impacted and a maximum of approximately 14.2 acres may be temporarily impacted around the proposed breakwater features. The beach and dune nourishment portions of the project would permanently impact approximately 29.5 acres of waterbottoms and periodically inundated beach areas while construction of the 5 to 10 segmented rock breakwaters would permanently impact between approximately 1.15 and 2.3 acres of waterbottoms. Temporary impacts to approximately 14.2 acres of waterbottoms could occur in the area surrounding the proposed breakwaters due to disturbance from the vessels used in constructing the project elements. In addition, somewhere between a minimum of approximately 230 acres and a maximum of 873 acres of water bottom would be impacted by the proposed dredging activities. If only the Caminada borrow site is used, the affected area would be 230 acres. If all of both the Caminada borrow site and the BBWW borrow site are used, the affected areas would total roughly 873 acres.

The proposed action would initially destroy slow-moving and sessile benthic organisms beneath the breakwaters and beach nourishment due to direct contact and localized turbidity. Temporary displacement of existing fish populations in the project area would be expected during breakwater and beach nourishment activities. Other adverse impacts associated with the construction phase of the project, in addition to physical disturbance, include increased levels of turbidity and suspended sediments that would return to ambient conditions shortly after completion of the work.

The dredging element of the proposed action would have similar impacts to those described above. It is likely that benthic organisms would re-populate the dredged borrow site(s) within a few years following completion of the dredging work. Fish would again utilize the waters within and near those borrow areas dredged within a few days of cessation of dredging activities.

Construction of the breakwaters would provide areas of new structural habitat in the previously open water area that would be utilized by returning fish populations. Numbers of macroinvertebrates and some benthic populations would colonize the newly created rock habitat at the base of the breakwaters. Increased diversity and numbers of fishes are expected to rapidly utilize this excellent foraging habitat. Birds favoring rocky shores such as American oystercatchers and ruddy turnstones may increase locally. Increased sand deposition along the shoreline would provide increased habitat for a variety of shorebirds, invertebrates such as ghost and fiddler crabs, and foraging small mammals.

4.3 Essential Fish Habitat

Future Conditions with No Action

Under the No Action alternative, the proposed action would not be constructed. Forces of erosion would continue to wear away Grand Isle's western Gulf shoreline, eventually converting portions to open water and thereby increasing essential fish habitat. The project area could potentially be rehabilitated and maintained in the future by the Town of Grand Isle as funds are available. In that event, impacts could be similar to the proposed action.

Future Conditions with the Proposed Action

Although open water is essential fish habitat to several managed species, increasing amounts of open water habitat due to shoreline erosion is generally considered a problem to be addressed. Additionally, continued inundation on the shoreline of Grand Isle increases the susceptibility of the island to the adverse effects of storm surge.

The direct impacts to EFH is primarily caused by construction of the breakwaters and beach nourishment activities and dredging activities. The beach and dune nourishment portions of the project would directly convert approximately 29.5 acres of waterbottoms and periodically inundated beach areas to beach habitat while construction of the 5 to 10 segmented rock breakwaters would permanently impact between approximately 1.15 and 2.3 acres of waterbottoms. Additional temporary impacts to approximately 14.2 acres of waterbottoms could occur in the area surrounding the proposed breakwaters due to disturbance from the vessels used in constructing the project elements.

In addition to the proposed beach and dune nourishment impacts, dredging activities could directly impact between approximately 230 acres and 873 acres of waterbottoms as material for the proposed beach and dune nourishment is pulled from the Caminada and/or BBWW borrow areas. Should only the Caminada borrow site be used, the impacts caused by dredging activities would be approximately 230 acres of waterbottoms. If both the

Caminada and BBWW sites are used in their entirety, the impacts from dredging would total approximately 873 acres.

Noise from construction related activities would cause a temporary dispersal of mobile fish and shellfish, including managed species away from the site. Potential impacts include entrainment, vessel equipment strikes, and underwater noise. Breakwater construction and beach nourishment activities may impact the following water quality parameters in the project area: total suspended solids and turbidity, light penetration, and nutrient levels. Decreases in light penetration in the water column could result in behavioral responses from fishes due to the effects of disturbance and the potential for limited visual acuity (Wenger et al., 2017).

Immobile organisms, such as benthic worms, bivalve mollusks, and snails, which provide food for some managed species, would be covered by the fill material and lost. Colonization of the rock breakwaters by existing populations of fish and benthic organisms would be expected within a few weeks or months. Rock breakwater habitat would allow for more diverse EFH habitat than open water alone and the creation of the breakwaters would be expected to benefit local managed fisheries. Slowing the erosion of marsh could provide positive impacts to fishery resources near the Grand Isle project site. Salt marsh habitat is highly productive for a variety of marine fishes and invertebrates, many of which are prey for federally managed species.

Due to the small portion of WOTUS being impacted by the proposed breakwater construction and beach nourishment activities relative to the surrounding Gulf, CEMVN has determined there would be no adverse effect to EFH from the proposed action.

4.4 Wildlife

Future Conditions with No Action

Under the No Action alternative, the beach and dune nourishment activities would not take place and the segmented rock breakwaters would not be constructed. Conditions on Grand Isle would continue to degrade as erosional forces would continue to wear away at the shoreline in the form of wind and wave action and seasonal storms. As terrestrial and wetland areas become open water, wildlife species that used those areas for feeding and shelter would be forced to relocate to neighboring areas to survive.

Future Conditions with the Proposed Action

CEMVN has assessed the environmental impacts of the proposed action on species found in the project area that are protected under the Marine Mammal Protection Act of 1972, the Migratory Bird Treaty Act of 1918 and Migratory Bird Conservation Act of 1929. CEMVN has determined that with the use of guidelines from USFWS (Appendix E), the proposed action would have no permanent adverse impacts on protected birds. The proposed action could temporarily disturb roosting and foraging birds and other wildlife in the vicinity of the project area during construction due to equipment noise and human activity. Construction of the breakwaters and beach nourishment, which involves placing

fill in 29.5 acres of WOTUS, has the potential to cause temporary impacts to Bottlenose dolphins, however it is expected that dolphins would avoid the area as construction is taking place and would return upon completion of the proposed project.

4.5 Threatened and Endangered Species

Future Conditions with No-Action

There would be no direct impacts to listed or protected species as no construction activities would take place in the project area. There also would be no indirect impacts to the following species: West Indian manatee, green, loggerhead, hawksbill, Kemp's Ridley, and leatherback sea turtles. The piping plover and rufa red knot would continue to lose foraging and wintering habitat as land loss in the area continues at the current rate. Cumulative impacts to listed and protected species include habitat loss by natural conditions such as tropical storm surge, saltwater intrusion, and subsidence.

Future Conditions with the Proposed Action

The proposed action would result in the direct benefit of habitat creation and reverse coastal erosion that is currently causing habitat loss. Beach nourishment and the placement of breakwaters would provide the potential for the creation of new bird nesting habitat that has been lost through site degradation.

Rufa Red Knot, and Piping Plover Critical Habitat

Grand Isle is designated critical habitat for wintering piping plover. Critical habitat identifies specific areas that are essential to the conservation of a listed species, and that may require special management considerations or protection. The primary constituent elements for the piping plover wintering habitat are those habitat components that are essential for the primary biological needs of foraging, sheltering, and roosting, and only those areas containing these primary constituent elements within the designated boundaries are considered critical habitat. The primary constituent elements are found in coastal areas that support intertidal beaches and flats (between annual low tide and annual high tide) and associated dune systems and flats above annual high tide.

A site visit was conducted on March 14, 2019 by biologists with USACE and USFWS. The site visit confirmed that the beach was so degraded that habitat did not exist for piping plovers, red knots or any other shore birds and therefore the species are not expected to be in the area. Likewise, the area did not contain the primary constituent elements that would make it critical habitat for wintering piping plovers. For this reason, USACE has made the determination that the proposed project would have no effect on the piping plover or on its critical habitat and would have no effect on the red knot. The proposed action would not impact any protected shore birds.

West Indian Manatee

While manatees have been known to enter the coastal waters of Louisiana, they are unlikely to be present due to the absence of foraging opportunities in the project area. The presence of construction-related activity, machinery, and noise would be expected to cause any manatees present to temporarily avoid the project area during the construction period. To minimize the potential for construction activities to cause adverse impacts to manatees, the manatee protection measures found in Appendix C will be implemented. The USACE has determined that the proposed project may affect but would not likely adversely affect the West Indian manatee.

The USFWS reviewed the proposed activities described in EA #573 and a final coordination act report was received May 7, 2019. The USFWS provided concurrence with the USACE's determinations therefore, no further consultation for the proposed action will be necessary for manatees, red knots, and piping plovers or their critical habitat, unless: 1) the scope or location of the proposed project changes in a manner that the potential effects to listed species or designated critical habitat exceed those discussed in the draft EA; 2) new information reveals that the action may adversely affect listed species or designated critical habitat; or 3) a new species is listed or critical habitat designated.

Sea Turtles and Gulf Sturgeon

Construction of the breakwaters is anticipated to take place in the spring months which coincides with nesting season for the sea turtles that may occur in the area and also with spawning for Gulf sturgeon. Sea turtles are not known to nest in Louisiana and therefore it is unlikely that they would be in the area at the time of breakwater construction as they would be elsewhere nesting. Gulf sturgeon would be in the rivers spawning at this time and also not in the project area. For these reasons, USACE has made the determination that construction of the breakwaters would have no effect on Gulf sturgeon or any of the listed sea turtles that are known to occur in the project area.

Construction of the beach and dune nourishment is anticipated to take place from November to June. As this covers a large portion of the year, there is potential for sea turtles and Gulf sturgeon to be in the area at some point during construction. The presence of construction-related activity, machinery, and noise would be expected to cause these species to temporarily avoid the project area during the construction period. Dredging for borrow material would occur via hydraulic cutterhead dredge. Entrainment of sea turtles is not expected since hydraulic dredges are slow moving and their use is not known to impact these species. Loggerhead critical habitat would not be impacted as the proposed borrow sites are located much closer to shore. Sea turtle and gulf sturgeon protection measures found in Appendix C would be implemented minimize potential impacts to the species. The USACE has determined that the construction of the sand and dune nourishment may affect but would not likely adversely affect the listed sea turtles and Gulf sturgeon. Endangered Species Act (ESA) coordination is ongoing for the beach and dune nourishment features of the proposed project. A forthcoming submission of a Biological Assessment (BA) to NMFS is anticipated in May 2019.

Whales

Whales are unlikely to be present in the project area due to the shallow water depths. CEMVN has determined that the proposed action would have no effect on sei, humpback, black right and sperm whales.

Indirect Impacts

It is anticipated that the beach replenishment would create habitat for the piping plover, rufa red knot, and other shorebirds. The beach nourishment and breakwaters would also help replenish the piping plover critical habitat that has diminished due to shoreline erosion.

4.6 Waters of the United States

Future Conditions with No-Action

Without the proposed project (e.g. no-action alternative or Future without Project (FWOP) condition), the proposed deposition of fill into a total of approximately 31.8 acres (breakwater construction and beach nourishment) of jurisdictional WOTUS would not occur as a USACE project. Under this scenario, there would likely be an increase in the acreage of WOTUS in the general project area as the southwestern shoreline of Grand Isle is gradually eroded away and replaced by Gulf waters. Recent modeling indicated it would be roughly 1.5 years before the shoreline eroded to the dune vegetation line without any new protection measures including beach nourishment (Mott MacDonald, 2017). Further erosion of the shoreline, including beaches and adjacent dunes, would not be in the public interest as this would threaten people, buildings, infrastructure, and other existing development. If left unabated this erosion could also eliminate or degrade some existing wetlands on Grand Isle, particularly the marsh at the west end of the island.

Future Conditions with the Proposed Action

Table 9 below lists the proposed permanent fill (discharge) impacts to jurisdictional WOTUS that would result from project construction assuming all 10 breakwater features are built.

Table 9: Proposed Permanent Fill Impacts to Jurisdictional Waters of the United States

Project Component	Acres Filled	Type of Fill	Cubic Yards of Fill
Breakwaters	2.3	Rock	200,000
Beach nourishment	29.5	Sand/Sediment	900,000
Totals	31.8		1,100,000

Note: The values indicated for the proposed breakwaters are based on constructing 10 breakwater features.

All of the permanent impacts indicated in Table 9 would affect “other” WOTUS (e.g. non-wetlands) that include marine intertidal rocky shore, marine intertidal unconsolidated shore, and marine subtidal unconsolidated bottom. Although these impacts involve placing clean fill covering the acreages of other WOTUS indicated, portions of these areas would remain jurisdictional other WOTUS upon construction completion since these portions would remain at or below the MHHW elevation of Gulf waters. Approximately 13.2 acres out of the 29.5 total acres of beach nourishment fill impacts would remain WOTUS. Approximately 2.0 acres out of the total 2.3 acres of breakwater fill impacts would remain WOTUS. Therefore, the proposed action would result in an immediate net loss of about 16.6 acres of other WOTUS out of the total 31.8 acres filled.

The proposed action would also include installing as many as 4 navigational warning lights along the Gulf side of the new breakwaters. Each light would be supported on three pilings driven into the gulf floor. With each piling having a diameter of 7 inches, installation of the pilings would result in permanent filling of a total of approximately 3.6 square feet in other WOTUS (marine subtidal unconsolidated bottom). This is considered a *de minimis* impact due to the small area of fill involved and is thus not listed in Table 9.

Dredging would occur in one or two borrow areas: the CPS borrow site (230 acres) and the BBWW borrow site (643 acres). Dredging would extend to elevation of no greater than (-) 20.0 feet NAVD88. Both of the proposed borrow sites are in open water areas (marine subtidal unconsolidated bottom) that classify as other WOTUS. Some fall-back of excavated sediments would occur during the dredging process but not to the extent that this could be considered significant fill deposition. Although the proposed dredging would permanently alter the substrate at the borrow site(s) utilized, the affected areas would remain other WOTUS since they would still be permanently inundated by Gulf waters. Note that the BBWW borrow site was previously dredged to elevation -16 feet NAVD88 in order to obtain borrow material for a different project.

As noted, construction of the proposed segmented stone breakwaters would involve permanent placement of fill (rock) into as much as 2.3 acres of other WOTUS. It is possible that the barges used for breakwater construction could temporarily disturb the water bottom sediments in areas immediately adjacent to each breakwater feature during the construction process. It is estimated that such disturbance, if it occurs, could encompass an envelope extending roughly 50 feet beyond the base of each breakwater feature. If 10 breakwaters are constructed, the total potential temporary disturbance area in other WOTUS would be approximately 14.2 acres.

The proposed project would not result in direct or secondary impacts to any jurisdictional wetlands. The dune nourishment activities would be close to an isolated wetland located north of the dune at the western end of Grand Isle. The project’s construction plans and specifications (specs) would require the construction contractor to avoid any impacts to this nearby wetland. Such measures would include installing silt fence along the northern toe-of-slope of the dune where it is adjacent to the wetland to minimize the potential for construction sand and sediment-laden stormwater runoff reaching the wetland. The proposed project would also include installation of a sand fence along the crest of the

nourished dune segment to help windblown, drifting sand accumulate along the fence, control erosion, and help stabilize the dune.

Recreational vessels would not be able to travel through the borrow site(s) used by the proposed project during the dredging activities, but this restriction would be lifted once dredging is complete and the equipment and floating pipeline removed. Recreational boaters and pedestrians would also not be able to use the area where breakwaters and beach/dune nourishment are proposed during project construction. Once construction is complete, only small vessels with very shallow draft may be able to navigate through a small portion of the proposed beach nourishment area close to the breakwaters. Installation of the proposed navigation warning lights would help avoid and minimize navigation dangers posed by the breakwater features and expanded shoreline formed by the proposed project.

Modeling of the proposed project revealed that the constructed breakwaters and nourished beach area would not adversely affect Gulf currents in the area and would instead decrease downdrift shoreline erosion compared to the FWOP alternative for 9 years without further beach renourishment (Mott MacDonald, 2017). The project design would allow slow transport of the beach fill downdrift (longshore sediment transport to the east) where it would be deposited along other shoreline segments. The cited modeling also indicated the rate of shoreline retreat (erosion) with the proposed project would be substantially less than under the FWOP alternative. Modeling predicted it would be more than 13 years before the shoreline retreats to the dune with the project in place, whereas the shoreline is essentially at the south toe of the dune now. With the proposed project in place, the frequency of beach re-nourishment required in the nourished beach area would be substantially reduced thereby reducing the frequency of future impacts to WOTUS. The recreational beach area available to the public would be significantly increased compared to the FWOP alternative for over 10 years, even without maintenance re-nourishment (Mott MacDonald, 2017).

A shoal has been developing in Caminada Pass over the years resulting in greater shoreline erosion focusing on the west end of Grand Isle (Mott MacDonald, 2017). This shoal has also altered sediment transport patterns whereby nearshore sediment transport in the area of the shoal has shifted from a primarily northeast direction (toward west end of Grand Isle) to a primarily western direction (Mott MacDonald, 2017). If the Caminada Pass borrow site is dredged as part of the proposed project, it is possible this adverse situation may be partially mitigated through removal (dredging) of some of the shoal.

Appendix D provides a Clean Water Act Section 404(b)(1) evaluation for the proposed project. The Section 404(b)(1) guidelines set forth requirements that must be met by a project involving discharges of dredged or fill material to WOTUS before the USACE Regulatory Division can issue a Department of the Army permit for the project. While USACE does not issue permits for its own activities, USACE authorizes its own discharges of dredged or fill material by applying all substantive legal requirements, including application of the section 404(b)(1) guidelines. The four main requirements that must be met are: (1) there is no practicable alternative to the proposed discharge that would have

less adverse impact on the aquatic ecosystem, as long as the alternative does not have other significant adverse environmental consequences; (2) the discharge cannot violate state water quality standards, toxic effluent standards, the Endangered Species Act, or protection of marine sanctuaries; (3) project does not cause or contribute to significant degradation of WOTUS; (4) project must include appropriate and practicable steps to minimize potential adverse impacts of proposed discharge to the aquatic ecosystem. The Section 404(b)(1) evaluation for the subject project concluded the project would be in compliance with the guidelines, would not cause or contribute to significant degradation of WOTUS, and is in the public interest.

4.7 Water and Sediment Quality

Future Conditions with No-Action

Under the no-action (FWOP) alternative, USACE would not engage in dredging either of the two proposed borrow sites for purposes of beach/dune nourishment at the proposed project site, would not construct the proposed breakwater features, and would not conduct the proposed beach/dune nourishment work. Hence, existing water quality in the Gulf would not be temporarily or permanently affected by project construction activities.

Water quality in the general vicinity of the proposed project's elements would remain highly variable under the FWOP scenario, being affected by factors such as currents, waves, storms, sediment transport, erosion, pollution levels, and water temperature.

The Non-Federal Sponsor's future beach re-nourishment efforts if they occur would temporarily degrade water quality in the immediate vicinity of re-nourishment activities and any borrow sites used to obtain sand for such activities.

As addressed herein, sediment quality refers to the chemical properties of Gulf sediments that would be excavated (dredged) as part of the proposed project. The chemical properties of these sediments would not be an issue under the no-action alternative. These properties would change over time and would be affected by natural sediment deposition and transport, water quality, various physical and biological processes, and anthropogenic factors.

Future Conditions with the Proposed Action

Water quality within and near the borrow site(s) would be temporarily degraded during the proposed dredging activities. Turbidity would increase significantly above ambient conditions, which could also serve to temporarily lower dissolved oxygen concentrations. Elevated turbidity levels could cause temporary adverse effects to fish and other aquatic life by reducing food supplies and affecting gill function. The dredging work could potentially release undesirable nutrients like nitrogen and phosphorous as well as organic and inorganic contaminants (ex. pesticides, methylmercury, selenium, hydrocarbons, etc.) into the water column if such nutrients and contaminants are present in the dredged sediments. However, it is not anticipated that any soluble or mobilized concentrations of such substances, if present, would be significant due to the effects of dilution in the open

waters of the Gulf. The elevated turbidity levels generated by dredging would rapidly decrease to ambient levels once dredging activities have ceased.

Water quality within and near the proposed breakwaters and beach/dune nourishment area would also be temporarily degraded during construction of these project components. This degradation would be similar to that described for the borrow sites. Increased turbidity would occur during construction and could include the mobilization of similar contaminants, including fecal bacteria, assuming such contaminants are present. The duration of elevated turbidity should be less than that generated by dredging due to the largely coarse sediments (sands) that would be deposited in the beach/dune nourishment area. The elevated turbidity levels would quickly decline to pre-project ambient concentrations after completion of the beach/dune nourishment work.

Geotechnical and chemical testing of sediments at the proposed borrow sites is currently underway. Should sediments in a particular borrow site show unacceptable concentrations of potential contaminants, the area containing such sediments would not be dredged as part of the proposed project. It is possible that some accumulation of relatively stable materials containing polycyclic aromatic hydrocarbons (PAHs) could be present in the upper few inches of sediment within one or both borrow sites as a result of the 2010 Deep Water Horizon oil spill. Such materials include sediment-oil agglomerates, sediment-oil mats (SOMs), and oil-particle aggregates. If such materials are detected at a borrow site area that must be dredged to obtain sufficient sand for the proposed project, the construction contractor would be directed to place such sediment at the bottom of the beach nourishment fill layer then cover this thin layer with remaining fill.

To help avoid and minimize the proposed project's impacts to water quality, the construction contractor would be required to prepare a Stormwater Pollution Prevention Plan (SWPPP) for review and approval by USACE. The construction contractor would then be required to apply for and obtain a Stormwater General Permit (LPDES General Permit) from the Louisiana Department of Environmental Quality (LDEQ). The construction contractor would further be required to comply with all applicable conditions and requirements set forth in the issued permit.

USACE has applied for Water Quality Certification (WQC) of the proposed project from LDEQ. The construction contractor would be required to comply with any applicable conditions and requirements included as part of the issued WQC.

USACE has submitted a Coastal Zone Consistency Determination for the proposed project to the Louisiana Department of Natural Resources (LDNR). This determination evaluates the project's consistency with enforceable policies of the state's coastal management program. The project construction contractor would be required to comply with any special conditions pertaining to protection of water quality contained in LDNR's final determination for the project.

4.8 Air Quality

Future Conditions with No-Action

Under the No Action alternative, there would be no potential for direct or indirect effects to air quality because construction of the proposed action would not occur, and the status of attainment of air quality for Jefferson Parish is not anticipated to change from current conditions.

Future Conditions with the Proposed Action

Probable direct impacts to air quality would include temporary diesel and gasoline emissions from the operation of construction equipment and temporary creation of fugitive dust due to placement of rocks and sand during construction activity. These effects would be localized within the project area and would cease after construction. The indirect effects to air quality of implementing the proposed action would be related to the emissions from transportation of personnel and equipment to and from the job site on a daily basis until the completion of construction.

4.9 Cultural Resources

Future Conditions with No Action

Were the project cancelled the status quo would probably be maintained in the offshores areas. However, the tip of Grand Isle would continually be eroded by sea level transgression and secondary effects of oil and gas pipeline construction. The western tip of Grand Isle (between stations 0+00 and 20+00) has undergone minimal development. This area would be subjected to continued erosion particularly between stations 16+00 and 20+00 without the protection of the offshore breakwaters.

Future Conditions with the Proposed Action

The proposed breakwaters would provide protection for the shoreline particularly between stations 16+00 and 40+00. There are no known historic wrecks in the existing 643 acre BBWW borrow source or the proposed CPS borrow location. An intensive archaeological survey (SHPO report 22-2966) on Elmer's Island at the western border of the proposed CPS borrow locations produced no cultural resources. This investigation and the hydrographic surveys have indicated minimal probability for the encounter of historic remains by the proposed breakwater construction, dredging and beach nourishment activities.

4.10 Recreational Resources

Future Conditions with No-Action

The conditions within the recreational environment would continue to evolve as they have in the past and would be dictated by the natural land use patterns and processes that have historically dominated the area. Both the Gulf of Mexico side, or beach side, and the

Barataria Bay side of the island would continue to shift and erode due to unimpeded wind and wave action. Access to recreation resources from the island may decrease with continued erosion impacts from wind and wave action.

Future Conditions with the Proposed Action

With the proposed breakwaters and beach nourishment, recreational resources could be restored to previous shoreline conditions. Those recreational resources tied directly to the beach and shoreline could see temporary impacts during construction. These resources include, but are not limited to, swimming, sun bathing, walking/jogging on the beach, bird watching, photography, and saltwater fishing. Recreational boaters may need to divert around the dredge material pipeline during beach nourishment construction. The construction contractor would be required to install warning markers along the pipeline(s) used to pump sand/sediments from the proposed borrow site(s) to the proposed beach/dune nourishment area to help avoid marine navigation conflicts. Such markers may include flags, warning lights, and warning signs. CEMVN would also coordinate with the US Coast Guard (USCG) to provide this agency with information for inclusion in the USCG's Local Notice to Mariners, warning mariners of potential obstacles and restrictions posed by elements of the proposed project's construction activities. Upon completion of construction of the breakwaters, navigational lights would be installed every third breakwater to assist boaters with navigation.

4.11 Visual Resources (Aesthetics)

Future Conditions with No-Action

The natural landscape combination of beaches and dunes on the Gulf of Mexico side of the island, and black mangrove/salt marsh on the Barataria Bay side of the island would continue to evolve from existing conditions. This evolution is the result of both land use trends and natural processes over time. Land deposits would continue to shift and erode due to unimpeded wind and wave action.

Future Conditions with the Proposed Action

With the proposed breakwaters and beach nourishment, visual resources could be restored to previous shoreline conditions. Colonies of Bitter Panicum and Sea Oat species could be re-established and provide habitat for existing and previously displaced species, thus improving the visual quality of what had once transitioned into open water. Land deposits could continue to shift and erode at reduced rates due to the breakwaters partially impeding wind and wave action.

4.12 Noise

Future Conditions with No-Action

Noise impacts would probably be similar to those under existing conditions. There would be no direct or indirect impacts as a result of implementing the proposed action. Future

noise levels would continue to be dictated by normal daily activities and development on Grand Isle.

Future Conditions with the Proposed Action

Noise levels would temporarily increase in the area due to the operation of equipment and vehicles used during construction of the proposed action and would be present only during daylight hours. While noise impacts may cause a temporary inconvenience to residents and facilities in the immediate area, noise levels associated with construction activities would be temporary and monitored to ensure acceptable standards are maintained. No harmful decibel (dB) levels would occur to people living in nearby residences or businesses for the entire duration of the project.

Noise levels associated with construction activities have the potential to temporarily impact wildlife that may be present in the area, but would not be significantly different from noise associated with other human activities that occur on a daily basis. After completion of the proposed action, noise levels would be expected to return to pre-action levels. Future maintenance activities could result in a slight increase in noise levels from equipment and associated activities, but any increase in noise levels associated with maintenance activities are anticipated to be lower and of shorter duration.

5 CUMULATIVE IMPACTS ANALYSIS

The Council on Environmental Quality's (CEQ) regulations (40 CFR 1500-1508) implementing the procedural provisions of the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. 4321 et seq.), define cumulative effects as "the impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. (40 CFR 1508.7) Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time."

The Town of Grand Isle has been developing at a steady rate for many years and it is possible that the Town of Grand Isle would continue to develop as long as the beaches and other recreational activities continue to exist and increase. Cumulative impacts to environmental resources would continue to accumulate incrementally over time consistent with development, recreational use, and natural events that occur on Grand Isle.

Without the implementation of the proposed action, land loss and other natural events, development, and recreational use would continue to impact environmental resources. Barrier shoreline and habitat loss would continue due to natural conditions such as tropical storm surge, erosion, and saltwater intrusion. Aquatic resources, essential fish habitat, and WOTUS would continue to be impacted by natural events such as tropical storm events, subsidence, and erosion. The continued loss of shoreline and beach area resulting from natural events would continue to impact cultural, recreational, and aesthetic/visual values on Grand Isle.

Implementation of the proposed action would contribute cumulatively to environmental resources in the project area when added to other past, present, and reasonably foreseeable projects, natural events, and development on Grand Isle. Implementation of the proposed action may result in temporary impacts to wildlife, T&E species, aquatic resources, EFH, WOTUS, water quality, recreational opportunities, and visual values within the project area. However, these impacts would be insignificant and last only throughout the period of construction. Overall, the cumulative impacts of the proposed action are expected to be positive, with long-term benefits to barrier shorelines, EFH, aquatic and wildlife resources, visual values, and recreational opportunities, and is expected to result in the restoration of barrier shoreline and coastal habitat currently being degraded.

The cumulative effects to air quality would be the combined emissions from the direct and indirect sources from constructing the proposed action when added to other emissions sources within the region. Because of the relatively short duration of construction, the cumulative impacts of the proposed action on air quality would be minimal and temporary, and Jefferson Parish would remain in attainment of all National Ambient Air Quality Standards.

Without implementation of the proposed action, the Barataria Bay Waterway and Caminada Pass Shoal borrow sites could continue to be used to acquire sand material for other projects on Grand Isle and within the region. With implementation of the proposed action, the substrate of the borrow site(s) utilized would be permanently altered, but the impacted areas would remain other WOTUS since they would still be permanently inundated by Gulf waters. It is reasonable to assume that over time sediment transported by wave action, storm events, as well as other natural forces would continue to alter the substrate of the borrow sites by continuously moving a mix of sediments in and out of the borrow sites.

6 HAZARDOUS, TOXIC AND RADIOACTIVE WASTE (HTRW)

The USACE is obligated under Engineer Regulation (ER) 1165-2-132 to assume responsibility for the reasonable identification and evaluation of all Hazardous, Toxic, and Radioactive Waste (HTRW) contamination within the vicinity of proposed actions.

Engineer Regulation (ER) 1165-2-132 provides that in the Planning, Engineering and Design (PED) Phase that, for proposed project in which the potential for HTRW problems has not been considered, an HTRW initial assessment, as appropriate for a reconnaissance study, should be conducted as a first priority. USACE HTRW policy is to avoid the use of project funds for HTRW removal and remediation activities. If the initial assessment indicates the potential for HTRW, testing, as warranted and analysis similar to a feasibility study should be conducted prior to proceeding with the project design. The NFS will be responsible for planning and accomplishing any HTRW response measures, and will not receive credit for the costs incurred.

An ASTM E 1527-13 Phase I Environmental Site Assessment (ESA), HTRW 19-02 dated March 28, 2019, has been completed for the work area (Appendix F). A copy of the Phase I ESA will be maintained on file at CEMVN. The probability of encountering HTRW for the proposed action is minimal based on the initial site assessments. If a recognized environmental condition is identified in relation to the work area, CEMVN would take the necessary measures, in accordance with ER 1165-2-132, to avoid the recognized environmental condition so that the probability of encountering or disturbing HTRW would continue to be low.

7 COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

Coordination and Public Involvement

There are many federal and state laws pertaining to the enhancement, management and protection of the environment. Federal projects must comply with applicable environmental laws, regulations, policies, rules and guidance. Compliance with these laws will be accomplished upon 15-day public and agency review of this EA #573 and associated Finding of No Significant Impact. This EA was published for public review and comment on April 18, 2019 through May 4, 2019. One comment from the public regarding the design of the breakwaters was received. (Appendix E)

Clean Air Act of 1972

The Clean Air Act (CAA) sets goals and standards for the quality and purity of air. It requires the Environmental Protection Agency to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The Project Area is in Jefferson Parish, which is currently in attainment of NAAQS. A general conformity determination is not required.

Clean Water Act of 1972 – Section 401 and Section 404

The Clean Water Act (CWA) sets and maintains goals and standards for water quality and purity. Section 401 requires a Water Quality Certification from the Louisiana Department of Environmental Quality (LDEQ) that a proposed project does not violate established effluent limitations and water quality standards. The application for the State Water Quality Certification was mailed to LDEQ on March 11, 2019 and a response was received on April 30, 2018 in which LDEQ concluded that “the discharge of fill will not violate water quality standards as provided for in LAC 33:IX. Chapter 11.” (Appendix E)

As required by Section 404(b)(1) of the CWA, an evaluation to assess the short- and long-term impacts associated with the discharge of dredged and fill materials into waters of the United States resulting from this Project has been completed. The 404(b)(1) evaluation was signed on May 8, 2019 and is attached in Appendix D.

Coastal Zone Management Act of 1972

The Coastal Zone Management Act (CZMA) requires that "each federal agency conducting or supporting activities directly affecting the coastal zone shall conduct or support those activities in a manner which is, to the maximum extent practicable,

consistent with approved state management programs." In accordance with Section 307, a Consistency Determination was prepared for the proposed Project and was coordinated with the Louisiana Department of Natural Resources (LADNR) in a letter dated March 13, 2019. In a letter dated May 13, 2019, LADNR concurred with CEMVN's Coastal Zone Consistency Determination. (Appendix E)

Endangered Species Act of 1973

The Endangered Species Act (ESA) is designed to protect and recover threatened and endangered (T&E) species of fish, wildlife and plants. In their draft coordination letter dated April 1, 2019, the USFWS identified several T&E species that are known to occur or believed to occur within the vicinity of the project area. Endangered species that may occur in coastal waters of the study area are West Indian manatee (*Trichechus manatus*), Kemp's ridley sea turtle (*Lepidochelys kempii*), leatherback sea turtle (*Dermochelys coriacea*), sperm whale (*Physeter catodon*), humpback whale (*Megaptera novaeangliae*), sei whale (*Balaenoptera borealis*), and black right whale (*Eubalaena glacialis*). Threatened species that may occur in coastal waters of the project vicinity are green sea turtle (*Chelonia mydas*) and Atlantic loggerhead sea turtle (*Caretta caretta*). The piping plover and the rufa red knot are known to occur or believed to occur within the vicinity of the project area. No plants were identified as being threatened or endangered in the project area. CEMVN initiated coordination with the USFWS on March 9, 2019.

Because whales are unlikely to be present in the project area due to the shallow water depths, CEMVN determined that the proposed action would have no effect on sei, humpback, black right and sperm whales. CEVMN determined construction of the breakwater features would have no effect on piping plover and its critical habitat, rufa red knot, Gulf sturgeon, and the five species of sea turtles. CEMVN determined that breakwater construction may affect but would not likely adversely affect the West Indian manatee. USFWS concurred with this finding in a letter dated May 7, 2019.

The USFWS reviewed the proposed activities described in EA #573 and a final coordination act report was received May 7, 2019. The USFWS provided concurrence with the USACE's determinations therefore, no further consultation for the proposed action will be necessary for manatees, red knots, and piping plovers or their critical habitat, unless: 1) the scope or location of the proposed project changes in a manner that the potential effects to listed species or designated critical habitat exceed those discussed in the draft EA; 2) new information reveals that the action may adversely affect listed species or designated critical habitat; or 3) a new species is listed or critical habitat designated. No comments were received from NMFS on the species under its jurisdiction (Gulf sturgeon and sea turtles). (Appendix E)

Fish and Wildlife Coordination Act of 1934

The Fish and Wildlife Coordination Act (FWCA) provides authority for the USFWS involvement in evaluating impacts to fish and wildlife from proposed water resource development projects. It requires that fish and wildlife resources receive equal consideration to other project features. It requires federal agencies that construct, license or permit water resource development projects to first consult with the USFWS, NMFS and

state resource agencies regarding the impacts on fish and wildlife resources and measures to mitigate these impacts. Section 2(b) requires the USFWS to produce a Coordination Act Report (FWCAR) that details existing fish and wildlife resources in a project area, potential impacts due to a proposed project and recommendations for a project. The USFWS reviewed the proposed activities described in EA #573 and a Final Coordination Act Report was received May 7, 2019. (Appendix E)

Magnuson-Stevens Fisheries Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act, as amended, Public Law 104-208, addresses the authorized responsibilities for the protection of Essential Fish Habitat (EFH) by NMFS in association with regional fishery management councils. The NMFS has a “findings” with the CEMVN on the fulfillment of coordination requirements under provisions of the Magnuson-Stevens Fishery Conservation and Management Act. In those findings, the CEMVN and NMFS have agreed to complete EFH coordination requirements for federal civil works projects through the review and comment on National Environmental Policy Act documents prepared for those projects. A draft of EA #573 was provided to the NMFS for review and comment during the public comment period from April 18, 2019 through May 4, 2019. In an email dated May 8, 2019, NMFS stated they had no objection to the proposed action. (Appendix E)

Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act

The bald eagle was removed from the List of Endangered and Threatened Species in August 2007 but continues to be protected under the Bald and Golden Eagle Protection Act (BGEPA) and the Migratory Bird Treaty Act of 1918, as amended (MBTA). During nesting season, construction must take place outside of USFWS/LDWF buffer zones. A USACE Biologist and USFWS Biologist will survey for nesting birds. This will be done prior to the start of construction.

National Historic Preservation Act of 1966

Section 106 of the National Historic Preservation Act of 1966, as amended, requires federal agencies to take into account the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. The procedures in 36 CFR Part 800 define how federal agencies meet these statutory responsibilities. The Section 106 process seeks to accommodate historic preservation concerns with the needs of federal undertakings through consultation among the agency official and other parties with an interest in the effects of the undertaking on historic properties, including the State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO) and any Tribe that attaches religious or cultural significance to historic properties that may be affected by an undertaking. The goal of consultation is to identify historic properties potentially affected by the undertaking, assess its effects and seek ways to avoid, minimize or mitigate any adverse effects on historic properties. CEMVN has concluded that the proposed breakwater construction would have no effect on historic properties. In a letter dated May 15, 2019, SHPO concurred that the proposed breakwater construction and the Barataria Borrow site would have no effect on historic properties. Further, SHPO, recommended that a survey be performed on the Caminada Pass borrow site. As this actions is proposed

to take place later in time, CEMVN will coordinate further with SHPO to determine if the survey is necessary and if so, what the specific scope for the survey will be. (Appendix E)

Tribal Consultation

NEPA, Section 106 of the National Historic Preservation Act, EO 13175 (Consultation and Coordination with Indian Tribal Governments), the American Indian Religious Freedom Act, and related statutes and policies have a consultation component. In accordance with CEMVN's responsibilities under NEPA, Section 106, and EO 13175, CEMVN will offer the following federally-recognized Indian Tribes the opportunity to review and comment on the potential of the proposed action to significantly affect protected tribal resources, tribal rights, or Indian lands: Alabama-Coushatta Tribe of Texas, Caddo Nation of Oklahoma, Chitimacha Tribe of Louisiana, Choctaw Nation of Oklahoma, Coushatta Tribe of Louisiana, Jena Band of Choctaw Indians, Mississippi Band of Choctaw Indians, Seminole Nation of Oklahoma, Seminole Tribe of Florida, and Tunica-Biloxi Tribe of Louisiana. No comments were received during the public review period.

Environmental Commitments:

The following commitments are an integral part of the proposed action:

1. If the proposed action is changed significantly or is not implemented within one year, CEMVN will reinitiate coordination with the USFWS to ensure that the proposed action would not adversely affect any federally listed threatened or endangered species, or their habitat.
2. If any unrecorded cultural resources are determined to exist within the proposed project site, work would not proceed in the area containing those cultural resources until a CEMVN archeologist has been notified, and coordination with the Louisiana SHPO and federally recognized Tribes has been completed.
3. The construction contractor would be required to: (A) Prepare a Stormwater Pollution Prevention Plan (SWPPP) for review and approval by CEMVN; (B) Obtain a Stormwater General Permit from the Louisiana Department of Environmental Quality (LDEQ) and comply with all applicable conditions and requirements set forth in the issued permit; (C) Comply with any applicable conditions and requirements included in the Water Quality Certification issued by LDEQ for the proposed project; (D) Comply with any applicable special conditions set forth in the Coastal Consistency Determination issued for the proposed project by the Louisiana Department of Natural Resources; (E) Avoid any project construction impacts to the existing wetland located north of the proposed beach and dune nourishment area.
4. The construction contractor would be required to comply with USFWS and NMFS guidelines for protecting West Indian manatees, sea turtles, and bottlenose dolphins during construction of the proposed project.

5. Prior to the initiation of project construction, CEMVN biologists would survey the proposed beach/dune nourishment area, along with suitable habitats located within approximately 2,000 feet of this area, for the presence of nesting wading birds, sea birds, and water birds. If active nests are discovered, the construction contractor would be restricted from conducting any work and/or access within the following “no work distances” buffering such nests: 650 feet for terns, gulls, and black skimmers; 1,000 feet for colonial nesting wading birds; 2,000 feet for brown pelicans. These protective buffers would not be modified unless otherwise approved by USFWS. If bird nesting has not been initiated but CEMVN concludes nesting is likely within or near the beach/dune nourishment area, a detailed nesting prevention plan would be prepared by CEMVN in coordination with USFWS to deter birds from nesting in areas that would restrict project construction. Once the plan is approved, CEMVN or its bird nesting abatement contractor would implement the plan.

6. The construction contractor would be required to install warning markers along the pipeline(s) used to pump sand/sediments from the proposed borrow site(s) to the proposed beach/dune nourishment area to help avoid marine navigation conflicts. Such markers may include flags, warning lights, and warning signs. CEMVN would also coordinate with the US Coast Guard (USCG) to provide this agency with information for inclusion in the USCG’s Local Notice to Mariners, warning mariners of potential obstacles and restrictions posed by elements of the proposed project’s construction activities.

7. CEMVN staff would monitor the survival of the initial dune plantings until the Non-Federal Sponsor (NFS) assumes its operation and maintenance responsibility. The Operation, Maintenance, Repair, Replacement & Rehabilitation (OMRR&R) Manual prepared by CEMVN for the proposed project would require the NFS to monitor survival and condition of the dune plantings for three years and take appropriate action (e.g. re-planting, etc.) if the dune vegetation is inadequate or otherwise failing.

8 CONCLUSION

The proposed action involves the construction of a minimum of five (5) and a maximum of ten (10) segmented stone breakwaters and navigational light platforms in shallow waters within 400 feet of the shoreline of Grand Isle, Louisiana. Additionally, sand fill material for the beach and dune nourishment would be obtained from either the Barataria Bay Waterway or the Caminada Pass Shoal borrow sites located in the Gulf of Mexico and pumped to the beach and dune nourishment sites via a hydraulic dredge. Approximately 37 acres would be impacted through the proposed action. Of the 37 acres, 32 acres of beach would be nourished, with 29.5 acres of that being Waters of the United States. The remaining 5 acres would involve dune nourishment activities. The dune nourishment portion of the proposed activity would require planting of Bitter Panicum (*Panicum amarum*) and Sea Oats (*Uniola paniculata*) species.

The proposed action would result in the direct benefit of habitat creation and reverse coastal erosion that is currently causing habitat loss. Beach nourishment, and the placement of breakwaters, would provide the potential for the creation of new bird nesting

habitat that has been lost through site degradation. The proposed action would have indirect benefits for wildlife by producing foraging habitat, and potentially an increase in nesting habitat as the site's vegetation matures. Cumulatively, the proposed action is anticipated to result in the restoration of coastal habitat currently being degraded.

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

With implementation of the proposed breakwater construction and beach and dune nourishment project, a maximum total of approximately 31.8 acres of aquatic resources would be permanently impacted and a maximum of approximately 14.2 acres may be temporarily impacted around the proposed breakwater features. The beach and dune nourishment portions of the project would permanently impact approximately 29.5 acres of waterbottoms and periodically inundated beach areas while construction of the 5 to 10 segmented rock breakwaters would permanently impact between approximately 1.15 and 2.3 acres of waterbottoms. Temporary impacts to approximately 14.2 acres of waterbottoms could occur in the area surrounding the proposed breakwaters due to disturbance from the vessels used in constructing the project elements. At the minimum, approximately 230 acres and at the maximum 873 acres of water bottom would be impacted by the proposed project's dredging activities. If only the Caminada borrow site is used, the affected area would be 230 acres. If all of both the Caminada borrow site and the BBWW borrow site are used, the affected areas would total roughly 873 acres.

9 PREPARED BY

EA #573 and the associated FONSI were prepared by Patricia S. Naquin, Senior Biologist, U.S. Army Corps of Engineers, New Orleans District; Regional Planning and Environment Division South, MVN-PDN-CEP; 7400 Leake Avenue; New Orleans, Louisiana 70118.

Title/Topic	Team Member
Senior Environmental Manager Team Lead	Patricia S. Naquin, CEMVN
Environmental Manager	Everard Baker, CEMVN
Environmental Manager	Clay Carithers, CEMVN
Senior Project Manager	Nick Sims, CEMVN
Project Manager	David Bradley, CEMVN
Cultural Resources	John Penman, CEMVN
Aesthetics/Recreation	John Milazzo, CEMVN
HTRW	Joe Musso, CEMVN

10 REFERENCES

Bryant, J.C. & Chabreck, R.H. Estuaries (1998) 21: 416.
<https://doi.org/10.2307/1352840>

DOI MMS. 2003. *Issuance of Non-Competitive Leases for the Use of Sand Resources from Ship Shoal, Outer Continental Shelf, Offshore Central Louisiana for Coastal and Barrier Island Nourishment*. November.

Federal Geographic Data Committee (FGDC). 2013. *Classification of Wetlands and Deepwater Habitats of the United States*. FGDC-STD-004-2013. Second Edition. Wetland Subcommittee, FGDC and US Fish and Wildlife Service, Washington, DC.

Frazier, D.E. 1967. Recent Deltaic Deposits of the Mississippi River: their Development and Chronology. *Gulf Coast Association Geological Society*. Vol. 17, pp. 287-315.

Hain, J.H.W., M.A.M. Hyman, R.D. Kenney, and H.E. Winn. 1985. The role of cetaceans in the shelf-edge region of the northeastern United States. *Marine Fisheries Review* 47:13-17.

Louisiana Department of Environmental Quality (LDEQ). 2019. Louisiana Environmental Assessment Utility (LEAU) database (LEAU Web Portal). Retrieved from <https://waterdata.deq.louisiana.gov/Projects/WQ1958001>.

McBride, R. A., Penland, S., Hiland, M. W., Williams, S. J., Westphal, K. A., Jaffe, B. E., and Sallenger, A. H., Jr., 1992, Analysis of barrier shoreline change in Louisiana from 1853 to 1989, in Williams, S. J., Penland, S., and Sallenger, A. H., Jr., eds., *Louisiana Barrier Island Erosion Study, Atlas of Shoreline Changes in Louisiana from 1853 to 1989*: U.S. Geological Survey, Miscellaneous Investigations Series I2150-A, p. 36–97.

Mossa J. & Nakashima, L.D., 1989, Variations in natural and artificial beach systems on the Bayou Lafourche headland, Louisiana Coastal Zone '89, *American Society of Civil Engineers*, p. 3723-3737

Mott MacDonald. 2017. Grand Isle Levee Dune and Beach Stabilization and Beach Nourishment Project: Coastal Processes Analysis and Alternatives Development and Analysis Report. Coastal Protection. Mott MacDonald (prepared for CPRA), New Orleans, LA.

Nakashima, L.D., 1988, Short-term beach changes along the Louisiana coast, *Transaction, Gulf Coast Association of Geological Societies*, 38:323-329.

Ritchie, J. C., Humes, K. S., & Wertz, M. A. (1995). Laser altimeter measurements at Walnut Gulch watershed, Arizona. *Journal of Soil and Water Conservation*, 50, 440–442

Swim Drink Fish Canada. 2019. The Swim Guide. Retrieved from <https://www.theswimguide.org>.

USACE. 2014. Amended & Updated OMR&R Manual - Operation, Maintenance, Repair, Replacement, and Rehabilitation Manual, Grand Island and Vicinity, LA: Beach Erosion and Hurricane Protection. USACE, New Orleans, LA.

US Environmental Protection Agency (EPA). 2019. Sediment Benchmarks for Aquatic Life. Retrieved from <https://archive.epa.gov/emergency/bpspill/web/html/sediment-benchmarks.html#gen2>.

US Geological Survey (USGS). 2019. USGS National Water Information System: Web Interface. Retrieved from <https://maps.waterdata.usgs.gov/>.

APPENDIX A: ACRONYMS AND ABBREVIATIONS

BBWW	Barataria Bay Waterway
BGEPA	Bald and Golden Eagle Protection Act
CAA	Clean Air Act
CEMVN	Corps of Engineers New Orleans District
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CPRAB	Coastal Protection and Restoration Authority Board of Louisiana
CPS	Caminada Pass Shoal
CWA	Clean Water Act
CY	Cubic Yards
CZMA	Coastal Zone Management Act
dB	decibel
DOI	Department of the Interior
EA	Environmental Assessment
EFH	Essential Fish Habitat
EO	Executive Order
EIS	Environmental Impact Statement
ER	Engineer Regulation
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FNU	Formazin Nephelometric Units
FONSI	Finding of No Significant Impact
FWCA	Fish and Wildlife Conservation Act
FWOP	Future without Project
FWP	Future with Project
GMFMC	The Gulf of Mexico Fisheries Management Council
Gulf	Gulf of Mexico
HTRW	Hazardous, Toxic, and Radioactive Waste
LDEQ	Louisiana Department of Environmental Quality
LDNR	Louisiana Department of Natural Resources
LDWF	Louisiana Department of Wildlife and Fisheries
LPDES General Permit	Stormwater General Permit
MBTA	Migratory Bird Treaty Act
MBCA	Migratory Bird Conservation Act
MFCPA	Magnuson Fishery Conservation and Protection Act
MHHW	Mean High High Water
MMPA	Marine Mammal Protection Act
MMS	Minerals Management Service
MVD	Mississippi River Valley Division
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NFS	Non-Federal Sponsor
NLP	Navigation Light Platforms
NMFS	National Marine Fisheries Service
PAH	Polycyclic Aromatic Hydrocarbons

PED	Planning, Engineering and Design Phase
SHPO	State Historic Preservation Officer
SOM	Sediment-Oil Mats
SWPPP	Stormwater Pollution Prevention Plan
T&E	Threatened and Endangered
THPO	Tribal Historic Preservation Officer
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VOC	volatile organic compounds
WOTUS	Waters of the United States
WRDA	Water Resources Development Act

APPENDIX B: FIGURES

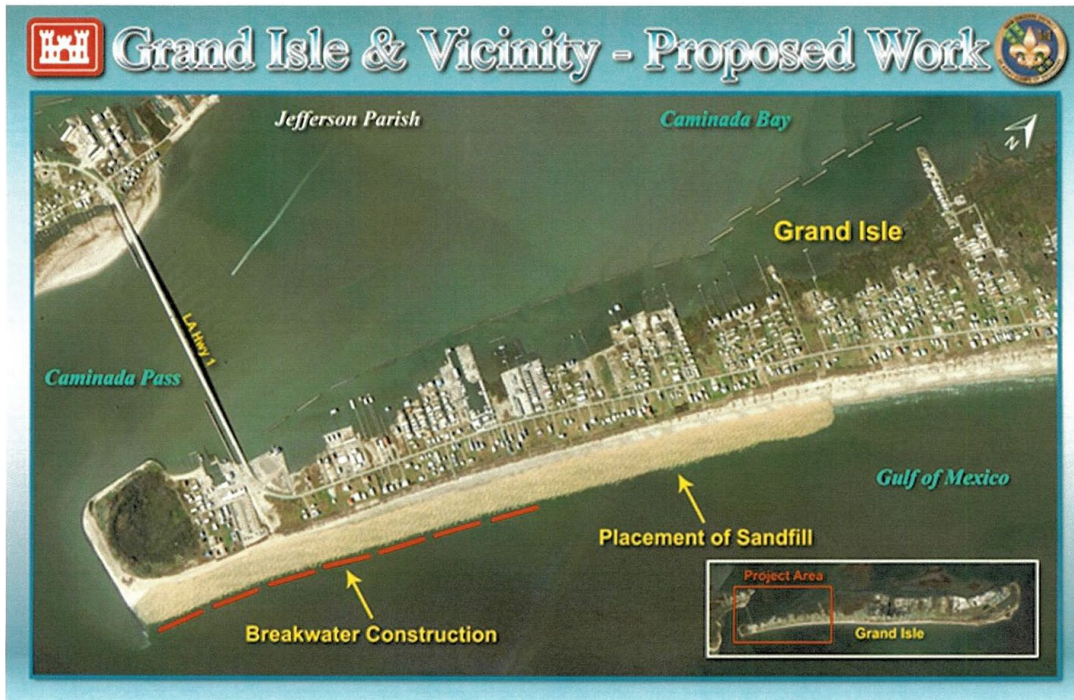


Figure 1: Project Location, Grand Isle, Louisiana



Figure 2: Alternative 3B – Proposed Action

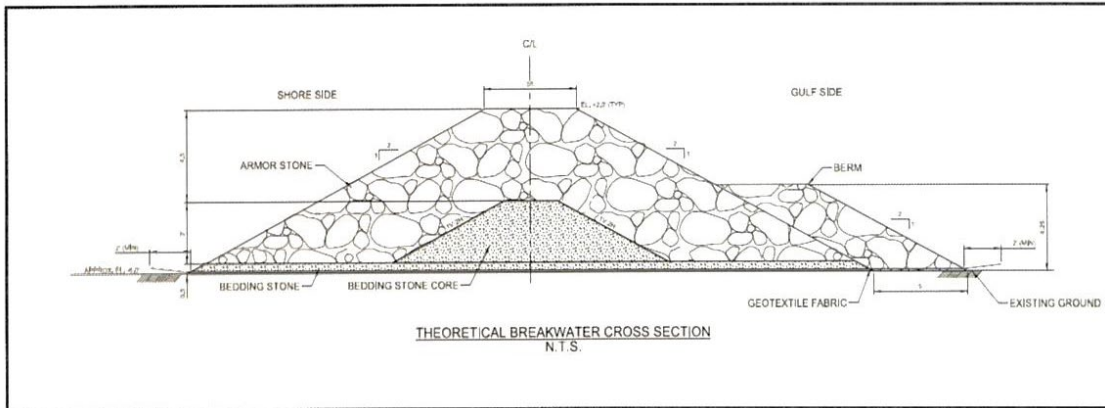


Figure 3: Breakwater Construction

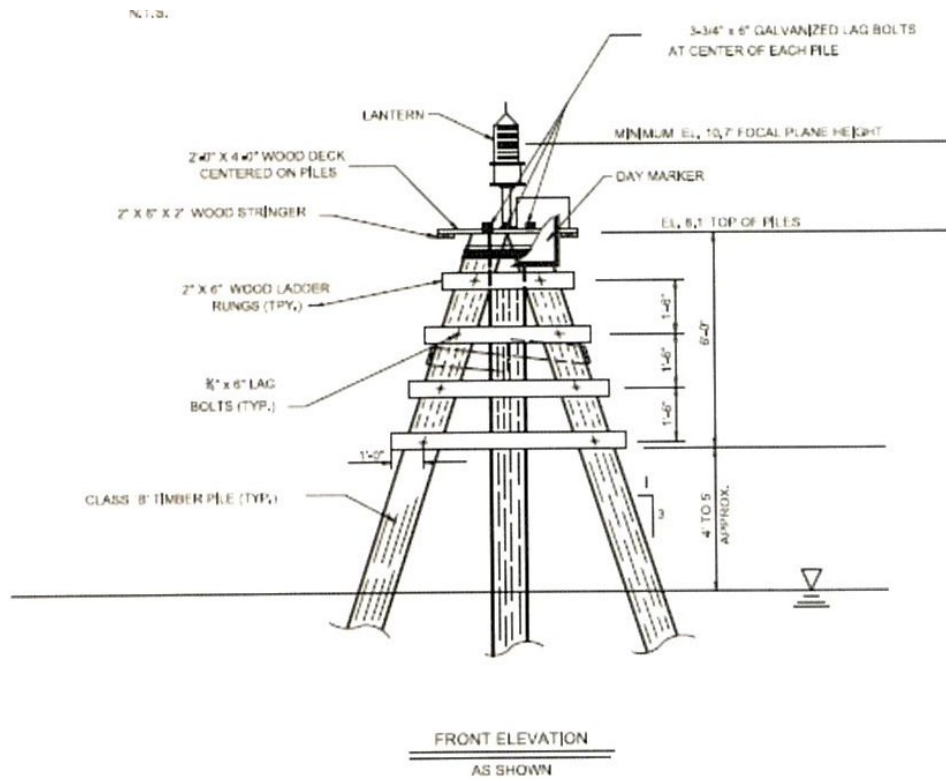


Figure 4: Navigational Light Platform

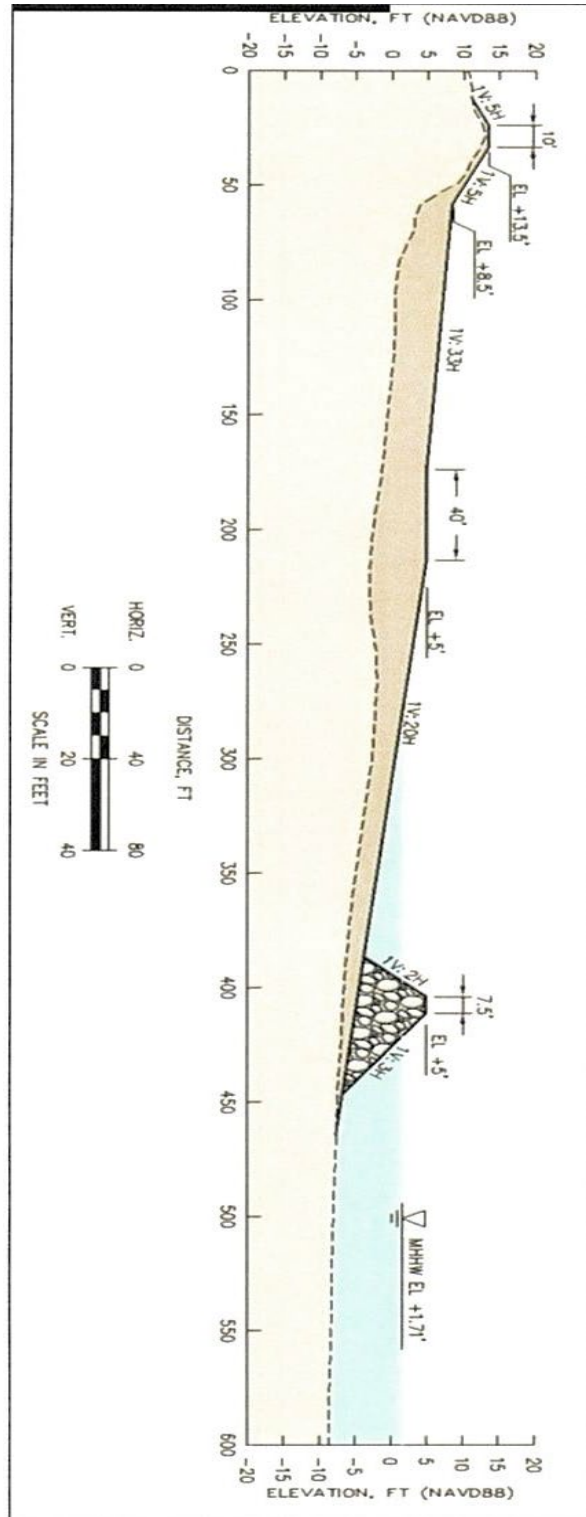


Figure 5: Beach and Dune Nourishment



Figure 6: Dredge Pipeline Pathway



Figure 7: Proposed Staging Area



Figure 8: Proposed Borrow Locations



Figure 9: Grand Isle Project Area June 2010

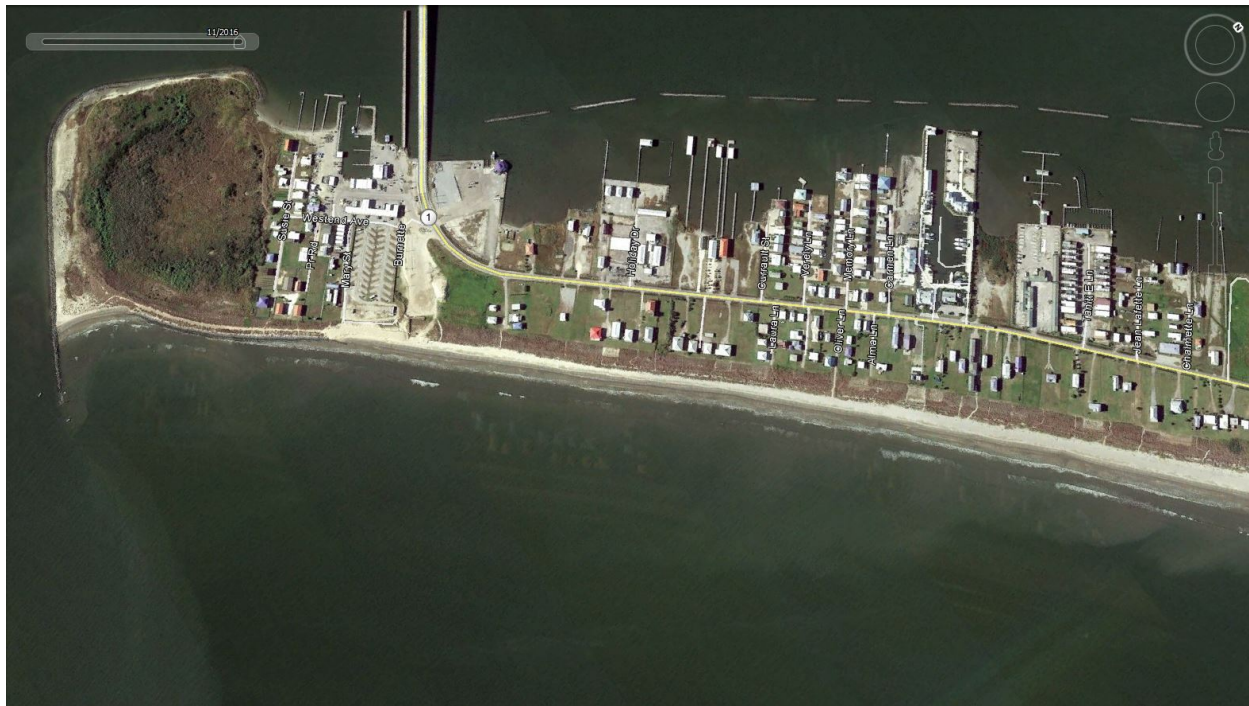


Figure 10: Grand Isle Project Area November 2016



Figure 11: Boardwalk Closed Due to Erosion



Figure 12: Exposed Geotube

APPENDIX C: THREATENED AND ENDANGERED SPECIES PROTECTION LANGUAGE

MANATEE

The West Indian manatee may be present in the project vicinity. The Contractor shall instruct all personnel associated with the project of the potential presence of manatees in the area, and the need to avoid collisions with these animals. All construction personnel shall be advised that there are civil and criminal penalties for harming, harassing, or killing manatees, which are protected under the Marine Mammal Protection Act of 1972 (EPA MMPA) and the Endangered Species Act of 1973 (EPA ESA).

The Contractor will be responsible for any manatee harmed, harassed, or killed as a result of construction activities not conducted in accordance with these specifications. All on-site personnel are responsible for observing water-related activities for the presence of manatee(s). Additionally, personnel should be instructed not to attempt to feed or otherwise interact with the animal, although passively taking pictures or video would be acceptable.

Special Operating Conditions If Manatees Are Present in the Project Area

1. If a manatee(s) is sighted within 100 yards of the project area, all appropriate precautions shall be implemented by the Contractor to ensure protection of the manatee. These precautions shall include the operation of all moving equipment no closer than 50 feet of a manatee. If a manatee is closer than 50 feet to moving equipment or the project area, the equipment shall be shut down and all construction activities shall cease to ensure protection of the manatee. Construction activities shall not resume until the manatee has departed and the 50-foot buffer has been re-established.
2. If a manatee(s) is sighted in the project area, all vessels associated with the project shall operate at "no wake/idle" speeds at all times and vessels will follow routes of deep water whenever possible, until the manatee has departed the project area. Boats used to transport personnel shall be shallow-draft vessels, preferably of the light-displacement category, where navigational safety permits.
3. If siltation barriers are used, they shall be made of material in which manatees cannot become entangled, are properly secured, and are regularly monitored to avoid manatee entrapment.

Manatee Signs

1. Prior to commencement of construction, each vessel involved in construction activities shall display at the vessel control station or in a prominent location, visible to all employees operating the vessel, a temporary sign at least 8-1/2-inch x 11-inch reading, "CAUTION: MANATEE HABITAT/IDLE SPEED IS REQUIRED IN CONSTRUCTION AREA." In the absence of a vessel, a temporary 3-foot x 4-foot sign reading "CAUTION: MANATEE AREA" shall be posted adjacent to the issued construction permit. A second temporary sign measuring 8-1/2-inch x 11-inch reading "CAUTION: MANATEE HABITAT. EQUIPMENT MUST BE SHUTDOWN IMMEDIATELY IF A MANATEE COMES WITHIN 50 FEET OF OPERATION" shall be posted at the dredge operator control station and at a location prominently adjacent to the issued construction permit. The Contractor shall remove the signs upon completion of construction.

Manatee Sighting Reports

2. Any sightings of manatees, or collisions with a manatee, shall be reported immediately to the Corps of Engineers. The point of contact within the Corps of Engineers will be Edward Creef, (504) 862-2521, FAX (504) 862-2317. In addition, collisions with, injury to, or sightings of manatees should be immediately reported to the U.S. Fish and Wildlife Service's Louisiana Ecological Services Office (337/291-3100) and the Louisiana Department of Wildlife and Fisheries, Natural Heritage Program (225/765-2821). Please provide the nature of the call (i.e., report of an incident, manatee sighting, etc.); time of incident/sighting; and the approximate location, including the latitude and longitude coordinates, if possible.

GULF STURGEON

All proposed work is located east of the Causeway Bridge and within the area designated as critical habitat for the Gulf Sturgeon, therefore the potential exists for the Gulf Sturgeon to be found in the project area. In preparation for dredging, the following actions shall be initiated:

Bucket Dredging

If bucket dredging is performed, the Contractor should induce Gulf Sturgeon to leave the immediate work area prior to any bucket dredging work regardless of water depth. The bucket will be dropped into the water and retrieved empty one (1) time. After the bucket has been dropped and retrieved, a one (1)-minute no work period must be observed. During this no dredging period, personnel should carefully observe the work area in an effort to visually detect Gulf Sturgeon. If Gulf Sturgeon are sighted, no work should be initiated until the sturgeon have left the work area. If the water turbidity makes such visual sighting impossible, work may proceed after the one (1)-minute no work period has elapsed. If more than fifteen minutes elapses with no work, then the empty bucket drop/retrieval process shall be performed again prior to re-initiating work efforts. In the event a Gulf Sturgeon is incidentally taken or injured/killed by construction activities, it shall be immediately reported to CEMVN. The point of contact within CEMVN will be Elizabeth Behrens, (504) 862-2025.

Cutterhead Dredging

The Contractor should minimize potential impacts to gulf sturgeon associated with cutterhead dredging by:

1. The cutterhead should remain completely buried in the bottom material during dredging operations. If pumping water through the cutterhead is necessary to dislodge material or to clean the pumps or cutterhead, etc., the pumping rate should be reduced to the lowest rate possible until the cutterhead is at mid-depth, where the pumping rate can then be increased.
2. During dredging, the pumping rates should be reduced to the slowest speed feasible while the cutterhead is descending to the channel bottom.

SEA TURTLE(S)

Sea turtle(s) may be present in the project vicinity. The Contractor shall instruct all personnel associated with the project of the potential presence of sea turtle(s) in the area, and the need to avoid collisions with them. All construction personnel shall be advised that there are civil and criminal penalties for harming, harassing, or killing sea turtle(s) which are protected under the the Endangered Species Act of 1973. The Contractor will be responsible for any sea turtle(s) harmed,

harassed, or killed as a result of construction activities not conducted in accordance with these specifications.

Special Operating Conditions If Sea Turtle(s) Are Present in the Project Area

1. If a sea turtle is sighted within 100 yards of the active daily construction/dredging operation or vessel movement, all appropriate precautions shall be implemented by the Contractor to ensure protection of the sea turtle(s). These precautions shall include the operation of all moving equipment no closer than 50 feet of sea turtle(s). If a sea turtle(s) is closer than 50 feet to moving equipment or the project area, the equipment shall be shut down and all construction activities shall cease to ensure protection of the sea turtle(s). Construction activities shall not resume until the sea turtle(s) has departed the area of its own volition and the 50-foot buffer has been re-established.
2. If a sea turtle is sighted in the project area, all vessels associated with the project shall operate at "no wake/idle" speeds, and vessels shall follow routes of deep water whenever possible. Boats used to transport personnel shall be shallow-draft vessels, preferably of the light-displacement category, where navigational safety permits.
3. If siltation barriers (eg. floating turbidity curtains) are proposed by the Contractor, the design must be must be approved by the Contracting Officer prior to placement. The barriers shall be made of material in which sea turtle cannot become entangled, shall be properly secured, and shall be regularly monitored to avoid species entrapment. Barriers may not block sea turtle or entry to or exit from designated critical habitat without prior agreement from the National Marine Fisheries Service's Protected Resources Division, St. Petersburg Florida.

Sea Turtle(s) Collision/Injury Reports

Any collisions with and/or injury to a sea turtle shall be reported immediately to the National Marine Fisheries Service's Protected Resources Division at (727) 824-5312 and the local authorized sea turtle stranding/rescue organization listed below.

Louisiana Department of Wildlife and Fisheries
Office of Fisheries
2000 Quail Drive
Baton Rouge, LA 70808
(225) 765-2377

PROTECTED MARINE SPECIES ENTRAPMENT PREVENTION MEASURES

Bottlenose dolphins, sea turtles and Gulf sturgeon (NOAA Trust Species) are known to inhabit coastal Louisiana waters. Bottlenose dolphins are protected under the Marine Mammal Protection Act of 1972 (MMPA) and sea turtles and Gulf sturgeons are protected under the Endangered Species Act (ESA). Because of the potential for these protected species to become entrapped within construction sites in coastal Louisiana waters, projects that utilize shallow open water areas for the construction of enclosed facilities and wetland creation will utilize the following measures to minimize and/or prevent the potential for such entrapment:

1. Prior to construction, the Corps of Engineers (COE) Technical Manager, the Contracting Officer Representative (COR) and the Contractors should conduct a site visit and meeting to develop a mutual understanding relative to compliance with the MMPA and the ESA.
2. Contractors will instruct all personnel associated with the project of the potential presence of Trust Species in the area, and the need to prevent entrapment of these animals. All construction personnel will be advised that there are civil and criminal penalties for harming, harassing, or killing these protected species. The Contractor shall be held responsible for any Trust species harassed or killed as a result of construction activities not conducted in accordance with these specifications.
3. Contractor will observe the area to be enclosed for Trust Species at least 24 hours prior to and during closure of any levee, dike or structure. This is best accomplished by small vessel or aerial surveys, with at least two experienced marine observers on board scanning for Trust species. Large areas (e.g. >300 acres) will likely require the use of more than one vessel or aerial surveys to insure full coverage of the area. These surveys will occur in a best sea state (BSS) of 3 feet or less, as Trust species are difficult to sight in choppy water.
4. Any Trust Species sighted within the area to be enclosed triggers all appropriate precautions to be implemented by the Contractor to ensure protection of the animal(s). These precautions shall include avoiding direct contact with the Trust species.
5. Any sightings of Trust Species within an enclosed project site shall be reported immediately to the COE. The point of contact within the COE will be Tammy Gilmore, (504) 862-1002 or email at tammy.h.gilmore@usace.army.mil. Coordination by the COE personnel with the National Marine Fisheries Service (NMFS) Marine Mammal Health and Stranding Response (MMHSRP) and the Louisiana State Coordinator for the Sea Turtle Stranding and Salvage Network (STSSN) will be conducted, as applicable, to determine what further actions may be required.
6. During enclosure construction, the Contractor will leave or construct at least one escape route in retention structures to allow any Trust species to exit shallow open water areas during construction activities. Escape routes in retention structures would be constructed to lead directly to open water outside

the disposal site with a minimum width of 100 feet and have a depth as deep as the deepest natural entrance into the disposal site.

7. Escape routes in retention structures would remain open until visual inspections of the enclosure have determined that no Trust species are present within the structure.
8. If observers note entrapped animals are not leaving the area, but are visually disturbed, stressed, or their health is compromised then COE may require any pumping activity to cease until the animals either leave on their own or are moved under the direction of NMFS.
 - a. In coordination with the local stranding networks and other experts, NMFS will conduct an initial assessment to determine the number of animals, their size, age (in the case of dolphins), body condition, behavior, habitat, environmental parameters, prey availability and overall risk.
 - b. If the animal(s) is/are not in imminent danger they will need to be monitored by the Stranding Network for any significant changes in the above variable.
 - c. The contractor may not attempt to scare, herd, disturb, or harass the Trust species to encourage them to leave the area. Coordination by the COE with the NMFS SER Stranding Coordinator may result in authorization for these actions.
 - d. NMFS may intervene (catch and release and/or rehabilitate) if the Trust Species are in a situation that is life threatening and evidence suggests the animal is unlikely to survive in its immediate surroundings.
 - e. Surveys will be conducted throughout the area at least twice or more in calm surface conditions (BSS 3 feet or less), with experienced marine observers, to determine whether Trust species are no longer present in the area.
9. Any Trust Species observed dead must immediately be reported to the COE (Tammy Gilmore 504-862-1002) who will then report to NMFS and/or STSSN coordinator.

APPENDIX D: CLEAN WATER ACT SECTION 404(B)(1) EVALUATION

CLEAN WATER ACT SECTION 404(b)(1) EVALUATION

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

PROJECT TITLE: Grand Isle and Vicinity, Louisiana – Beach Erosion and Hurricane Protection Project, Jefferson Parish

PROJECT DESCRIPTION

The proposed project is described in Sections 1 and 1.1 of this Environmental Assessment (EA). Key elements of the project would include the following;

(1) Breakwaters & Navigation Warning Lights

Five to ten segmented stone breakwaters would be constructed within 400 feet of the existing shoreline at the far west end of Grand Isle. Each breakwater feature would be approximately 200 feet long by 50 feet wide. There would be “gaps” 300 feet long between each breakwater. If 10 breakwater features are used, the total length of the segmented breakwaters, including the gaps, would be approximately 4,700 linear feet. The impact footprint of each breakwater feature would be approximately 10,000 square feet; thus, the total impact footprint for ten breakwaters would be approximately 2.3 acres. Rock (stone) for the breakwaters would be obtained from a duly licensed commercial source. Barge-mounted draglines and excavators would be used to place the rock and underlying geotextile at the project site. Each breakwater would require approximately 20,000 cubic yards (cy) of stone.

Navigation warning lights would be installed on the waterward side of the proposed breakwaters. One warning light structure would be installed every 3 breakwater features, with an additional warning light structure installed at the eastern end of the eastern-most breakwater feature. Thus, if the maximum of 10 breakwater features are built, there would be 4 navigation warning light structures installed. Each of these would consist of 3 pilings arranged in a tripod form, with a platform on top of the pilings supporting the warning light and solar power system.

(2) Beach & Dune Nourishment

After completing the breakwaters, sand would be placed in the area landward from the breakwaters in order to nourish approximately 32 acres of beach and 5 acres of an existing dune immediately adjacent to the beach. The total length of the beach/dune nourishment area would extend roughly 5,050 linear feet as measured parallel to the existing shoreline.

The sand fill required for the nourishment work would be obtained from one or two near-shore borrow sources located in the Gulf of Mexico. The Barataria Bay Waterway (BBWW) borrow site would occupy approximately 650 acres and would be located near the east end of Grand Isle. The existing and previously used Caminada Pass Shoal (CPS) borrow site encompasses approximately 230 acres and is situated near the west end of Grand Isle. 1,000,000 cy of sediment (sand) would be dredged using a hydraulic dredge and pumped to the beach/dune nourishment area. It may be that only one borrow site is used, but it is also possible that the entirety of one borrow site is used (dredged) along with a portion of the other borrow site. Regardless, the dredged depth would extend to elevation -20.0 feet NAVD88.

Track hoes and marsh buggies would be used to spread the sand pumped into the marsh/dune nourishment area. The staging area for this equipment would be located directly north of the nourishment area in a gravel/sand

upland lot that has access from Highway 1. After completion of the nourishment work, the affected dunes would be planted with native herbaceous species.

The anticipated impacts of the proposed project to jurisdictional Waters of the United States (WOTUS), including wetlands and other waters, are discussed in Section 4.6 of this EA. Table 1 below lists the proposed permanent fill (discharge) impacts to jurisdictional WOTUS that would result from project construction assuming all 10 breakwater features are built.

Table 1. Proposed permanent fill impacts to jurisdictional Waters of the United States.

Project Component	Acres Filled	Type of Fill	Cubic Yards of Fill
Breakwaters	2.3	Rock	200,000
Beach nourishment	29.5	Sand/Sediment	900,000
TOTAL	31.8		1,100,000

Note: The values indicated for the proposed breakwaters are based on constructing 10 breakwater features.

All of the permanent impacts indicated in Table 1 would affect “other” WOTUS (e.g. non-wetlands) that include marine intertidal rocky shore, marine intertidal unconsolidated shore, and marine subtidal unconsolidated bottom.

The proposed project would also include installing as many as 4 navigational warning lights along the water-ward side of the new breakwaters. Each light would be supported on three pilings driven into the gulf floor. With each piling having a diameter of 7 inches, installation of the pilings would result in permanent filling of a total of approximately 3.6 square feet in other WOTUS (marine subtidal unconsolidated bottom). This is considered a *de minimis* impact and thus not listed in Table 1.

Dredging would occur in one or two borrow areas; the Caminada Pass Shoal borrow site (230 acres) and the Barataria Bay Waterway borrow site (643 acres). Dredging would extend to elevation -20.0 feet NAVD88. Both of the proposed borrow sites area in open water areas (marine subtidal unconsolidated bottom) that classify as other WOTUS.

As noted, construction of the proposed segmented stone breakwaters would necessitate permanent placement of fill (rock) into as much as 2.3 acres of other WOTUS. It is possible that the barges used for breakwater construction could temporarily disturb the water bottom sediments during the construction process. It is estimated that such disturbance, if it occurs, could extend in an envelope extending roughly 50 feet beyond the base of each breakwater feature. If 10 breakwaters are constructed, the total potential temporary disturbance area in other WOTUS would be approximately 14.2 acres.

1. Review of Compliance (§230.10 (a)-(d)).

A review of this project indicates that:

a. The discharge represents the least environmentally damaging practicable alternative and if in a special aquatic site, the activity associated with the discharge must have direct access or proximity to, or be located in the aquatic ecosystem to fulfill its basic purpose (if no, see section 2 and information gathered for environmental assessment alternative);

Preliminary¹

Final²

YES	NO*	YES	NO
-----	-----	-----	----

b. The activity does not appear to: (1) violate applicable state water quality standards or effluent standards prohibited under Section 307 of the Clean Water Act; (2) jeopardize the existence of federally listed endangered or threatened species or their habitat; and (3) violate requirements of any federally designated marine sanctuary (if no, see section 2b and check responses from resource and water quality certifying agencies);

YES	NO*	YES	NO
-----	-----	-----	----

c. The activity will not cause or contribute to significant degradation of waters of the United States including adverse effects on human health, life stages of organisms dependent on the aquatic ecosystem, ecosystem diversity, productivity and stability, and recreational, esthetic, and economic values (if no, see section 2);

YES	NO*	YES	NO
-----	-----	-----	----

d. Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem (if no, see section 5).

YES	NO*	YES	NO
-----	-----	-----	----

2. Technical Evaluation Factors (Subparts C-F).

N/A

Not Significant

Significant*

a. Physical and Chemical Characteristics of the Aquatic Ecosystem (Subpart C).

- (1) Substrate impacts.
- (2) Suspended particulates/turbidity impacts.
- (3) Water column impacts.
- (4) Alteration of current patterns and water circulation.
- (5) Alteration of normal water fluctuations/hydroperiod.
- (6) Alteration of salinity gradients.

	X	
	X	
	X	
	X	
	X	
	X	

b. Biological Characteristics of the Aquatic Ecosystem (Subpart D).

- (1) Effect on threatened/endangered species and their habitat.
- (2) Effect on the aquatic food web.

	X	
	X	

(3) Effect on other wildlife (mammals, birds, reptiles, and amphibians).

	X	
--	---	--

c. Special Aquatic Sites (Subpart E).

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

X		
	X	
	X	
	X	
X		
X		

d. Human Use Characteristics (Subpart F).

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

X		
	X	
	X	
	X	
	X	

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

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

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

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

Appropriate references:

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

YES

NO*

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

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

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

Appropriate references:

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

YES NO*

5. Actions to Minimize Adverse Effects (Subpart H)

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

YES NO*

6. Factual Determination (§230.11)

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

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

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

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

²Negative responses to one of the compliance criteria at this stage indicates that the proposed project does not comply with the guidelines. If the economics of navigation and anchorage of Section 404(b)(2) are to be evaluated in the decision-making process, the "short form" evaluation process is inappropriate.

³If the dredged or fill material cannot be excluded from individual testing, the "short form" evaluation process is inappropriate.

7. Evaluation Responsibility

a. This evaluation was prepared by:

Name: Clay Carithers
Position: Environmental Manager
Organization: U.S. Army Corps of Engineers, New Orleans District
Date: 03/15/2019

b. This evaluation was reviewed by:

Name: Michael Morris
Position: Biologist
Organization: U.S. Army Corps of Engineers, New Orleans District
Date: 03/18/2019

Name:
Position:
Organization:
Date:

8. Findings

- a. The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines X
- b. The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines with the inclusion of the following conditions _____
- c. The proposed disposal site for discharge of dredged or fill material does not comply with the Section 404(b)(1) guidelines for the following reason(s):
 - (1) There is a less damaging practicable alternative _____
 - (2) The proposed discharge will result in significant degradation of the aquatic ecosystem..... _____
 - (3) The proposed discharge does not include all practicable and appropriate measures to minimize potential harm to the aquatic ecosystem _____

Date: 05/08/19


Chief, Environmental Planning Branch

APPENDIX E: AGENCY COORDINATION



BILLY NUNGESSER
LIEUTENANT GOVERNOR

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

RICHARD H. HARTLEY
DEPUTY SECRETARY

KRISTIN P. SANDERS
ASSISTANT SECRETARY

May 15, 2019

Mr. Eric M. Williams
Chief, Cultural & Social Resources Section (CEMVN-PDP-CSR)
U.S. Army Corps of Engineers, New Orleans District
Regional Planning and Environment Division, South

Re: Section106 Review Consultation for the Grand Isle Breakwaters Project, Grand Isle,
Jefferson Parish, Louisiana

Dear Mr. Williams:

This letter is in response to your submission received May 14, 2019, concerning the above-referenced project. We have reviewed the enclosed information and concur that the proposed breakwaters and the Barataria Borrow site will not affect historic properties. However, it is the opinion of the State Historic Preservation Office that the Caminada borrow should be surveyed for historic properties.

If you have any questions, please do not hesitate to contact Rachel Watson in the Division of Archaeology at (225) 342-8165 or rwatson@crt.la.gov.

Sincerely,

A handwritten signature in blue ink that reads "Kristin P. Sanders".

Kristin Sanders
State Historic Preservation Office

P.O. BOX 44247 • BATON ROUGE, LOUISIANA 70804-4247
PHONE (225) 342-8170 • FAX (225) 342-4460 • WWW.CRT.LA.GOV

JOHN BEL EDWARDS
GOVERNOR



THOMAS F. HARRIS
SECRETARY

State of Louisiana
DEPARTMENT OF NATURAL RESOURCES
OFFICE OF COASTAL MANAGEMENT

May 13, 2019

Marshall K. Harper
Chief, Environmental Planning Branch
Corps of Engineers- New Orleans District
7400 Leake Avenue
New Orleans, LA 70118
Via email: marshall.k.harper@usace.army.mil

RE: **C20190056, Coastal Zone Consistency**
New Orleans District, Corps of Engineers (COE)
Direct Federal Action
Rock breakwater construction, Grand Isle and Vicinity, Louisiana, Beach Erosion and
Hurricane Protection Project
Jefferson Parish, Louisiana

Dear Mr. Harper:

The above referenced project has been reviewed for consistency with the Louisiana Coastal Resources Program in accordance with Section 307 (c) of the Coastal Zone Management Act of 1972, as amended. The project, as proposed in this application, is consistent with the LCRP.

If you have any questions concerning this determination please contact Jeff Harris of the Consistency Section at (225) 342-7949 or jeff.harris@la.gov.

Sincerely,

/S/ Charles Reulet
Administrator
Interagency Affairs/Field Services Division

CR/SK/jdh

cc: Patricia Naquin, COE
Michael Morris, COE
Dave Butler, LDWF
Frank Cole, OCM FI
Jason Smith, Jefferson Parish

Post Office Box 44487 • Baton Rouge, Louisiana 70804-4487
617 North Third Street • 10th Floor • Suite 1078 • Baton Rouge, Louisiana 70802
(225) 342-7591 • Fax (225) 342-9439 • <http://www.dnr.louisiana.gov>
An Equal Opportunity Employer



United States Department of the Interior

FISH AND WILDLIFE SERVICE
200 Dulles Drive
Lafayette, Louisiana 70506



May 7, 2019

Colonel Michael N. Clancy
District Commander
U.S. Army Corps of Engineers
7400 Leake Avenue
New Orleans, Louisiana 70118

Dear Colonel Clancy:

Please reference the U.S. Army Corps of Engineers' (USACE) proposal to install stone breakwaters, restore adjacent beach, and nourish adjacent dune (Environmental Assessment [EA] #573) on the Gulf-side of the western end of Grand Isle, in Jefferson Parish, Louisiana. That project would protect the westernmost portion of the Grand Isle hurricane protection levee that was authorized by resolutions of the United States House of Representatives and Senate dated September 23, 1976, and October 1, 1976, respectively, under Section 201 of the Flood Control Act of 1965 (Public Law 89-298, House Document No. 94-639). The currently proposed action is authorized as part of Section 301 of the Water Resources Development Act of 1996 (WRDA, Public Law 104-303) and is funded by the Bipartisan Budget Act of 2018 (Public Law 115-123) Division B, Subdivision 1, Title IV. This letter from the Fish and Wildlife Service's (Service) Louisiana Ecological Services Office constitutes the final report of the Secretary of the Interior on this project, as required by Section 2(b) of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). A copy of the draft FWCA report was provided to the National Marine Fisheries Service and the Louisiana Department of Wildlife and Fisheries; we did not receive comments from those agencies.

Description of the Study Area

The project area is located along the Gulf shoreline of Grand Isle and in offshore waters near the island. Located approximately 54 miles south of New Orleans, Grand Isle is a barrier island separating Caminada Bay and the western end of Barataria Bay from the Gulf of Mexico. The island is approximately 7.5 miles long and 0.75 mile wide at its widest point. The seaward edge of Grand Isle consists of sand beach and a hurricane protection levee vegetated in native grasses, forbs, and shrubs that were planted on the levee and other vegetative species that also spread from nearby residences and camps. The USACE constructed the levee as an artificial dune and berm in 1985 to prevent beach erosion and provide hurricane protection. That levee feature has required periodic maintenance and repair over the years. From 2003 through 2013, various emergency and rehabilitation repairs to the Grand Isle hurricane protection levee resulted in the reconstruction of most of that hurricane protection feature. Reconstruction consisted of installing either a geotube or clay core covered with a 3-foot-thick layer of sand and planted with native dune vegetation. In 2013, approximately 2,430 linear feet of the Gulf-side of the hurricane protection levee was armored with rock in an attempt to prevent further damage and loss of the core geotube of the levee.

Grand Isle breakwaters, FCAR Page 1 of 9

A substantial portion of Grand Isle's natural habitats on the protected side of the hurricane protection levee has been converted to residential and commercial development. Although the island's year-round resident population is approximately 760 (<https://www.louisiana-demographics.com/grand-isle-demographics>), the summer population swells to more than 20,000 with seasonal residents and tourists (<https://www.louisiana-destinations.com/grand-isle.htm>). The island is a popular birding, fishing, and resort area, with approximately 62 percent of all housing units being seasonally occupied private camps and rental properties (U.S. Census Bureau 2010), which are separated from the beach by the hurricane protection levee. Sport and commercial fisheries, tourism-related service industries, and offshore oil and gas exploration and production constitute the major occupations and industries on the island. The southeastern tip of Grand Isle consists largely of the Louisiana Office of State Parks' Grand Isle State Park, which offers a variety of barrier island habitat and recreational activities for the public (e.g., swimming, fishing, bird watching, camping). An average of 375,000 visitor days per year was recorded at the state park between 1976 and 1986 (Service 1986); it is unknown whether that visitor average is still being maintained.

Fish and Wildlife Resources

The predominant habitat on Grand Isle's southern shoreline is the sand dune and open beach. (Note that most of the existing "sand dune" is the island's hurricane protection levee and consists of an earthen-filled geotube core covered by sand and vegetation). The sand dune vegetation in the project area consists of sea oats, wire grass, and annual grasses that have spread from nearby residences. Wildlife in the project area consists of various crustacean and insect species typically associated with a sand dune complex. Amphibians and reptiles are limited within the project area. The eastern narrow-mouthed toad may be present in shrub-scrub habitats on the island and suitable developed areas, and has been reported from salt marsh habitat in other portions of Louisiana; diamond-backed terrapin and Gulf salt marsh snake also use salt marsh habitat (Dundee and Rossman 1989; Vermillion 2004 pers. comm.). The waters adjacent to the project area provide important feeding, spawning, nursery, and migration habitat for a variety of estuarine fishes and shellfishes, some of which are of commercial and/or recreational importance. The study area's waters are also utilized by Atlantic bottle-nosed dolphins.

The shallow waters and/or beaches in proximity to the project area serve as foraging habitat for a number of seabirds, wading birds, and other bird species. Species known to frequent the project area include, but are not limited to, brown pelican, common loon, double-crested cormorant, reddish egret, laughing gull, ring-billed gull, black skimmer, dunlin, sanderling, and several species of plovers, sandpipers, and terns. Salt marshes on Grand Isle provide nursery habitat for various fishes, shellfishes, and crustaceans, as well as habitat for snowy and great egrets; tricolored, green, and great blue herons; black-necked stilt; white ibis; clapper rail; and seaside sparrow. Scrub-shrub habitat is used by resident and transient birds, including but not limited to, red-winged blackbird, boat-tailed grackle, yellow-rumped warbler, and palm warbler. Those habitats may also support mammals such as coyote, raccoon, swamp rabbit, and river otter. Limited areas of live oak and hackberry forest occur on the island. The Nature Conservancy (TNC) of Louisiana has preserved several small tracts of maritime forest across the island totaling approximately 41 acres, known as the Lafitte Woods Preserve (TNC 2015). That area is open to the public for non-consumptive use (e.g., bird watching, wildlife photography, education, etc.) and provides particularly important stopover habitat for various species of neotropical migratory birds.

Migratory Birds

At this time, the proposed project area does not contain suitable nesting habitat for wading birds or shorebirds that are known to occur on Grand Isle. According to draft EA #573, the USACE would coordinate with the Service to confirm that there is no nesting activity in the project area prior to construction. If nesting birds are present, the USACE would coordinate with the Service to develop specific measures to avoid impacts to those species. If a detailed nesting prevention plan is deemed necessary, the USACE would prepare the appropriate documentation in coordination with the Service. Given the current conditions of the project area, the Service agrees with the USACE's proposed action plan regarding any potential need to avoid nesting birds in the action area prior to or during construction.

Threatened and Endangered Species

Endangered species that may occur in coastal waters of the study area are Kemp's ridley sea turtle (*Lepidochelys kempii*), leatherback sea turtle (*Dermochelys coriacea*), sperm whale (*Physeter catodon*), humpback whale (*Megaptera novaeangliae*), sei whale (*Balaenoptera borealis*), and black right whale (*Eubalaena glacialis*). Threatened species that may occur in coastal waters of the project vicinity are West Indian manatee (*Trichechus manatus*), green sea turtle (*Chelonia mydas*) and Atlantic loggerhead sea turtle (*Caretta caretta*). The National Marine Fisheries Service (NMFS) is responsible for all federally listed whales and sea turtles in the marine environment, while the Service is responsible for manatees and sea turtles as they come onshore to nest. Although listed sea turtles are occasionally stranded on Grand Isle, there are no known occurrences of sea turtles nesting on the island; therefore, nesting turtles should not be affected. According to draft EA #573, the USACE is consulting with the NMFS regarding listed sea turtles in the marine environment, as well as the threatened Atlantic (Gulf) sturgeon.

Two threatened species that occur within the project area are the piping plover (*Charadrius melodus*) and the red knot (*Calidris canutus rufa*). Designated piping plover critical habitat is located on Grand Isle within that portion of the project area that includes "... the Gulf shoreline of Grand Isle from the Gulf side of the hurricane protection levee to MLLW [mean low low water] ..." (Service 2001). At the time of this document's writing, there is no designated critical habitat for the red knot.

The USACE addressed potential effects to federally listed species in their draft EA #573 and determined that the proposed action would not affect the red knot or the piping plover and its critical habitat. With the incorporation of the attached manatee protection measures, the USACE also determined that the proposed action is not likely to adversely affect the West Indian manatee. The Service provided concurrence with the USACE's determinations via our May 7, 2019, letter commenting on draft EA #573. Therefore, no further consultation for the proposed action will be necessary for manatees, red knots, and piping plovers or their critical habitat, unless: 1) the scope or location of the proposed project changes in a manner that the potential effects to listed species or designated critical habitat exceed those discussed in the draft EA; 2) new information reveals that the action may adversely affect listed species or designated critical habitat; or 3) a new species is listed or critical habitat designated. Additional consultation as a result of any of the above conditions or for changes not covered via our May 7, 2019, concurrence should occur before changes are made and finalized.

Project Description and Impacts

On the westernmost end of Grand Isle, wave action erodes the beach and dune, which repeatedly exposes the geotube core to the elements, decreasing the longevity of the geotube and increasing the need for maintenance events. The ongoing erosion of the beach also creates instability for the hurricane protection levee and increases the cost and frequency of maintenance events, as well as the risk of a levee breach in the project area. Currently, the project area contains a small (less than 0.5-acre) beach area near the Caminada jetty that may be unavailable during high-tide events, and no beach exists along the Gulf-side of the hurricane protection levee for that portion that is covered with rock (approximately 3,800 linear feet). The rock levee does not currently support much, if any, wildlife habitat.

The intent of the proposed project is to fortify the west end of the island from wave action by installing a minimum of five and a maximum of 10 stone segmented breakwaters in shallow water within approximately 400 feet of the shoreline on the western Gulf-side of Grand Isle. The project would also involve restoring approximately 32 acres of beach and nourishing approximately 5 acres of existing dune using a nearby offshore borrow source. Although the USACE is evaluating both project features concurrently, the USACE proposes to sign separate Findings of No Significant Impact (FONSI) and implement the project features in a phased manner where construction of the breakwaters would occur in 2019 and nourishment of the beach and dune would occur in 2020.

Each segmented breakwater would be approximately 200 feet in length, 50 feet in width, and placed approximately 300 feet apart. The stone breakwaters would be constructed using barge-mounted draglines and excavators. All supplies would be barged to the project site. A geotextile fabric would be installed first before stone is placed. Navigational light platforms would also be constructed on every third breakwater using a barge-mounted pile driver to install the necessary pilings. Contractor personnel would be housed on a quarter boat or in commercial hotels near the project site. Field offices would be on the barge or at a commercially acquired office on the island.

Permanent and temporary impacts would vary depending upon the number of breakwaters installed. Five breakwaters would result in approximately 1.15 acres while 10 breakwaters would result in approximately 2.3 acres of permanent impacts to waterbottoms. Approximately 2.0 acres of the total 2.3 acres of breakwater impacts would remain Water of the United States. The USACE anticipates that temporary impacts to approximately 14.63 acres of waterbottoms may occur if barges and construction equipment scrape the waterbottoms during construction activities, but should naturally return to pre-existing conditions with wave action once construction is complete.

The USACE proposes to restore approximately 32 acres of beach and nourish approximately 5 acres of existing dune using approximately 1,000,000 cubic yards of sand fill. Approximately 900,000 cubic yards of that total fill would be placed in open water for beach restoration. The USACE is investigating two potential borrow sources: (1) an existing borrow site at the eastern end of the island located along the right descending bank of the Barataria Bay Waterway that was used for previous nourishment work; and (2) the Caminada Pass Shoal borrow site. A hydraulic dredge would be used to dredge the material and pump it to the island. Track hoes and marsh buggies would be used to shape and grade the fill material on the island. Upon completion of nourishment activities, the dune would be planted with bitter panicum (*Panicum amarum*) and sea oats (*Uniola paniculata*). A staging area would be provided directly north of the project area in an existing gravel/sand lot that has access from

Louisiana Highway 1. Contractor personnel would be housed in commercial hotels near the project site, and field offices will be located at the staging area.

The proposed project area would include the footprints of each project feature (Table 1), the construction rights-of-way, and all associated temporary work areas, access routes, and storage areas. The USACE estimates that implementation of the proposed action would require a maximum of 180 calendar days for installing the breakwaters in 2019 and 210 calendar days for implementing the beach restoration and dune nourishment in 2020. The current plan anticipates that all construction would be completed by the end of calendar year 2020.

Table 1. The estimated acreage of footprint impacts for each proposed project feature associated with installing breakwaters and conducting beach and dune nourishment on Grand Isle.

Project Feature	Footprint (acres)	
	Permanent	Temporary
Breakwaters	2.3	14.63
Beach and Dune Nourishment	37*	--
Barataria Bay Waterway Borrow Site	650	--
Caminada Pass Shoal Borrow Site	230	--

* The vast majority of impacts will be in open water due to the lack of beach within the project area.

Conclusions and Recommendations

Prior to the damage from hurricanes, tropical storms, and natural erosion processes, the dune and beach habitat associated with the hurricane protection levee provided foraging habitat for various resident and migratory birds and other wildlife. The levee or “dune” also serves as hurricane protection for residential and commercial developments, while the beach is used by the public for recreational purposes. Erosional forces have repeatedly exposed the geotube core of the levee in various places within the project area, which decreases the longevity of the geotube, increases the frequency of maintenance and repair actions, and increases risk of a levee breach. The proposed breakwaters would lessen wave action in the area and the proposed beach and dune nourishment would restore 32 acres of beach habitat that has been lost. Thus, the currently proposed project would both reduce further damage to the levee and improve the availability of beach habitat to wildlife. Construction impacts to fish and wildlife resources would be temporary and minimal, and over the long-term, project implementation would contribute to less need for recurring maintenance of the levee.

Due to the history of storm damage and erosion in the project area, few alternatives remain for reducing further damages to the hurricane protection levee and any remaining wildlife habitat. The preferred alternative offers the least environmentally damaging alternative while still maintaining project objectives. Although the proposed action would consist of work along the Gulf shoreline and within a portion of the dune system along Grand Isle, the work as currently described consists mainly of construction in open water and adding sand to cover the existing rock along the hurricane protection levee. Accordingly, the Service concurs with the Corps’ determination that no mitigation would be required for potential impacts to beach and dune habitats. In addition, the proposed action would not impact any vegetated wetlands; therefore, the Service concurs with the Corps’ determination that no wetland mitigation would be required for the proposed action.

After reviewing the proposed action, its impacts to fish and wildlife resources, and the need for protection from future storm events, the Service offers the following recommendations for inclusion in the USACE's currently proposed action:

1. The perimeter of the outer work limits should be staked, marked, and maintained throughout construction for the beach and dune nourishment project feature. All workers should remain within the proposed outer work limits for the duration of construction and no activities should occur beyond those work limits to minimize disturbance to federally listed shorebirds that may occur near the project area.
2. Contract personnel should be educated regarding the potential presence of federally listed shorebirds and the importance of avoiding disturbance to birds (e.g., avoid purposely flushing birds) present near the project area.
3. The existing exposed rock should be covered with at least 3 feet of sand to provide sufficient substrate for replanted vegetation to grow and stabilize the dune habitat. Planted vegetation should consist of sea oats, bitter panicum, and other native sand dune species. Those plant species are more likely to survive the harsh dune environment, and would capture wind-blown sand to aid in dune stabilization.
4. Once the beach nourishment is complete and beach access can resume, restoration of the existing boardwalk crossover located within the proposed project area should also be included in the project design. Restoring the existing walkway would encourage the public not to walk on or across the dune, which could reduce the loss of vegetation by preventing damage to the plants and their root systems.
5. Monitoring of the replanted dune should be conducted for a minimum of 3 years to ensure that dune restoration over the rock will not adversely affect the success of revegetation and the stabilizing effect of that vegetation.

According to draft EA #573, the USACE has agreed to incorporate recommendations 1, 2, 3, and 5, as well as a commitment to ensure protection of birds that may attempt to nest in the project area prior to or during construction. The Service commends the USACE for inclusion of those measures, and encourages the USACE to reconsider implementation of recommendation 4 in order to protect the dune feature once public access resumes following construction activities.

We appreciate the opportunity to provide comments on the proposed action, as well as the USACE's continued cooperation during the project planning process. If you have any questions or require additional information, please contact Mrs. Brigette Firmin (337-291-3108) of this office.

Sincerely,



Joseph A. Ranson
Field Supervisor
Louisiana Ecological Services Office

Grand Isle breakwaters, FCAR, Page 6 of 9

Attachment

Copies provided via electronic mail:

USACE, New Orleans, LA (Attn: Michael Morris, Tammy Gilmore)
NMFS, Baton Rouge, LA (Attn: Craig Gothreaux)
LDWF, Baton Rouge, LA (Attn: Kyle Balkum)
LDNR, Baton Rouge, LA

Literature Cited

- Dundee, H. A., and D. A. Rossman. 1989. The amphibians and reptiles of Louisiana. Louisiana State University Press. Baton Rouge, Louisiana. 300 pp.
- The Nature Conservancy (TNC). 2015. Places we protect: Grand Isle, Louisiana. <http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/louisiana/placesweprotect/grand-isle.xml>. Accessed on February 23, 2015.
- U.S. Census Bureau. 2010. 2010 Census Interactive Population Search. Available at <http://www.census.gov/2010census/popmap/ipmtxt.php>. Accessed on February 5, 2015.
- U.S. Fish and Wildlife Service (Service). 1986. Fish and Wildlife Draft Coordination Act Report, Grand Isle and Vicinity, Louisiana, Beach Erosion and Hurricane Protection Project. Unpublished report submitted to the U.S. Army Corps of Engineers, New Orleans District, New Orleans, Louisiana.
- U.S. Fish and Wildlife Service (Service). 2001. Final determination of critical habitat for wintering piping plovers. Federal Register 66:36037-36086.
- Vermillion, B. 2004. Personal communication with Bill Vermillion, U.S. Fish and Wildlife Service.



United States Department of the Interior

FISH AND WILDLIFE SERVICE
200 Dulles Drive
Lafayette, Louisiana 70506



May 7, 2019

Mr. Marshall K. Harper
Chief, Environmental Planning Branch
U.S. Army Corps of Engineers
7400 Leake Avenue
New Orleans, Louisiana 70118-3651

Dear Mr. Harper:

The Fish and Wildlife Service's Louisiana Ecological Services Office (Service) has reviewed the U.S. Army Corps of Engineers' (USACE) draft Environmental Assessment (EA) #573 and draft Finding of No Significant Impact (FONSI) for the Grand Isle and Vicinity Project in Jefferson Parish, Louisiana. That draft EA and draft FONSI communicate the USACE's evaluation of potential impacts associated with the proposed construction of up to 10 breakwaters and approximately 32 acres of beach, as well as nourishment of 5 acres of existing dune on Grand Isle, Louisiana. The Service offers the following comments in accordance with the National Environmental Policy Act (NEPA) of 1969 (83 Stat. 852; 42 U.S.C. 4321 et seq.), the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), and the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

General Comments

The subject draft EA and draft FONSI are well written and adequately describe the potential impacts associated with the proposed construction of up to 10 breakwaters and approximately 32 acres of beach, as well as nourishment of approximately 5 acres of existing dune on Grand Isle, Louisiana. The Service provides the following specific comments for incorporation into the final EA and FONSI.

Specific Comments

Page 34, Section 4.5 Threatened and Endangered Species, West Indian Manatee, Sentence 3 – This sentence states that the manatee protection measures found in Appendix D would be implemented during the proposed construction activities. However, there were no protection measures included in Appendix D. The Service, therefore, recommends that the attached manatee protection measures be included in Appendix D in the final EA.

Page 34, Section 4.5 Threatened and Endangered Species, Sea Turtles and Gulf Sturgeon, Paragraph 2, Sentence 7 – This sentence states that the protection measures for sea turtles and Gulf sturgeon found in Appendix D would be implemented during the proposed construction activities for the beach and dune nourishment project feature. However, there were no protection measures included in Appendix D. The Service, therefore, recommends that the proposed protection measures for those species be included in Appendix D in the final EA.

Fish and Wildlife Coordination Act

The Service appreciates the USACE's incorporation of the recommendations provided in our April 1, 2019, draft FWCA Report. The Service anticipates providing a final FWCA Report to the USACE by May 7, 2019.

Threatened and Endangered Species

In the draft EA, the USACE determined that the proposed action is not likely to adversely affect the threatened West Indian manatee because manatees are unlikely to be present in the action area during construction activities for all of the proposed project features. To minimize any potential impacts to that species, the USACE would also implement the attached manatee protection measures. Accordingly, the Service concurs with the USACE's determination.

The USACE also determined that the proposed action would have no effect on the threatened red knot and the threatened piping plover or its designated critical habitat. A March 14, 2019, site visit conducted by biologists from the Service and USACE confirmed that incoming waves are breaking on the existing riprap along the toe of the hurricane protection levee within the proposed project area. Although there is potential for a narrow strip of sand to be exposed at an unusually low tide event, current site conditions do not provide suitable habitat for red knots and piping plovers because there is no beach platform remaining in the project area during normal tidal events. Likewise, the project area no longer provides the primary biological features (PBFs) or primary constituent elements (PCEs) of designated piping plover critical habitat. The proposed beach and dune nourishment features would, when completed, restore the PBFs and PCEs of designated piping plover critical habitat once the benthic prey community is established on the newly formed beach platform. Accordingly, the Service concurs with the USACE's determination that the proposed action would not adversely affect the red knot and the piping plover or its critical habitat.

No further consultation for the proposed action will be necessary for manatees, red knots, and piping plovers or their critical habitat, unless: 1) the scope or location of the proposed project changes in a manner that the potential effects to listed species or designated critical habitat exceed those discussed in the draft EA; 2) new information reveals that the action may adversely affect listed species or designated critical habitat; or 3) a new species is listed or critical habitat designated. Additional consultation as a result of any of the above conditions or for changes not covered in this consultation should occur before changes are made and or finalized.

The Service appreciates the opportunity to provide comments on the draft EA and FONSI for the proposed action. The Service also appreciates the USACE's continued cooperation in the

conservation of threatened and endangered species. If you or your staff have any questions regarding our comments in this letter, please contact Mrs. Brigitte Firmin (337-291-3108) of this office.

Sincerely,



Joseph A. Ranson
Field Supervisor
Louisiana Ecological Services Office

Attachment

cc: NMFS, Baton Rouge, LA
NMFS, St. Petersburg, FL
EPA, Dallas, TX
LDWF, Baton Rouge, LA (Attn: Kyle Balkum)
LDWF, Natural Heritage Program, Baton Rouge, LA (Attn: Nicole Lorenz)
LDNR, Coastal Management Division, Baton Rouge, LA
CPRA, Baton Rouge, LA

JOHN BEL EDWARDS
GOVERNOR



CHUCK CARR BROWN, PH.D.
SECRETARY

State of Louisiana

APR 30 2019

DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL SERVICES

Mr. Michael Morris
US Army Corps of Engineers, New Orleans District
CEMVN-PDS-C
7400 Leake Avenue
New Orleans, LA 70118

AI No.: 121543
Activity No.: CER20190001

RE: Grand Isle and Vicinity, Louisiana Beach Erosion and Hurricane Protection Project
Water Quality Certification WQC 190314-01
Jefferson Parish

Dear Mr. Morris:

The Louisiana Department of Environmental Quality, Water Permits Division (LDEQ), has reviewed the application to hydraulically dredge sand fill material from near shore borrow sites located in the Gulf of Mexico and place in open water of the Gulf of Mexico on the land side of stone fill breakwaters constructed in shallow water placed within 400 feet of shoreline of Grand Isle in open water of the Gulf of Mexico to help prevent beach erosion in Jefferson Parish.

The information provided in the application has been reviewed in terms of compliance with State Water Quality Standards, the approved Water Quality Management Plan and applicable state water laws, rules and regulations. LDEQ determined that the requirements for a Water Quality Certification have been met. LDEQ concludes that the discharge of fill will not violate water quality standards as provided for in LAC 33:IX.Chapter 11. Therefore, LDEQ hereby issues US Army Corps of Engineers, New Orleans District - Grand Isle and Vicinity, Louisiana Beach Erosion and Hurricane Protection Project Water Quality Certification, WQC 190314-01.

Should you have any questions concerning any part of this certification, please contact Elizabeth Hill at (225) 219-3225 or by email at elizabeth.hill@la.gov. Please reference Agency Interest (AI) number 121543 and Water Quality Certification 190314-01 on all future correspondence to this Department to ensure all correspondence regarding this project is properly filed into the Department's Electronic Document Management System.

Sincerely,

A handwritten signature in blue ink that reads "Scott Guilliams".

Scott Guilliams
Administrator
Water Permits Division

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

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

From: [Jeff Harris](#)
To: [Naquin, Patricia Shoucair \(Trish\) CIV USARMY CEMVN \(USA\)](#)
Subject: [Non-DoD Source] RE: C20190056 COE Breakwaters and beach nourishment, Grand Isle (UNCLASSIFIED)
Date: Thursday, May 09, 2019 12:24:07 PM

Trish--

To clarify my comment below, no further CZM coordination is needed *as far as LDWF's comments are concerned.* Our consistency review continues. My apologies for being unclear.

The consistency review has been a bit delayed by workload. My deadline is next Friday, May 17, but I hope to have the review completed and a decision letter for you by Tuesday the 14th. At this point I don't believe there is any additional information needed or actions to be taken on your part.

--Jeff

-----Original Message-----

From: Jeff Harris
Sent: Tuesday, May 7, 2019 2:13 PM
To: Naquin, Patricia Shoucair (Trish) CIV USARMY CEMVN (USA) <patricia.leroux@usace.army.mil>
Subject: RE: C20190056 COE Breakwaters and beach nourishment, Grand Isle (UNCLASSIFIED)

Trish--

LDWF has informed me that they are satisfied with the Corps' response to their comments, so, provided you do what you told them you're going to do, no further CZM coordination is needed on this point.

I'm hoping to get this one wrapped up this week or next, but Life is doing what it can to thwart my efforts.

--Jeff

-----Original Message-----

From: Naquin, Patricia Shoucair (Trish) CIV USARMY CEMVN (USA) <patricia.leroux@usace.army.mil>
Sent: Tuesday, May 7, 2019 12:59 PM
To: Jeff Harris <Jeff.Harris@LA.GOV>; Morris, Michael A CIV USARMY CEMVD (US) <Michael.A.Morris@usace.army.mil>
Subject: RE: C20190056 COE Breakwaters and beach nourishment, Grand Isle (UNCLASSIFIED)

Jeff -

I was looking at the document forwarded from LDWF on 4/22/2019. It asks for a survey if there is anything within 1000-2000 feet. However the only thing in the area is a dune and houses. Do you need anything additional from us prior to issuing the CZM? Thanks!

Trish Naquin
x1544

-----Original Message-----

From: Jeff Harris [<mailto:Jeff.Harris@LA.GOV>]
Sent: Wednesday, May 01, 2019 4:02 PM
To: Naquin, Patricia Shoucair (Trish) CIV USARMY CEMVN (USA) <patricia.leroux@usace.army.mil>; Morris, Michael A CIV USARMY CEMVD (US) <Michael.A.Morris@usace.army.mil>
Subject: [Non-DoD Source] RE: C20190056 COE Breakwaters and beach nourishment, Grand Isle (UNCLASSIFIED)

Trish, Mike--

I'm not going to be able to send formal comments on EA 573, but the only comment I have is just a reminder that the work that's described, but not planned for construction at this time, will need a consistency determination at the appropriate time.

--Jeff

-----Original Message-----

From: Naquin, Patricia Shoucair (Trish) CIV USARMY CEMVN (USA) <patricia.leroux@usace.army.mil>
Sent: Monday, April 29, 2019 1:09 PM
To: Jeff Harris <Jeff.Harris@LA.GOV>
Subject: RE: C20190056 COE Breakwaters and beach nourishment, Grand Isle (UNCLASSIFIED)

Jeff it is on there. There has been a lot of maintenance on the website lately, which is beyond my control unfortunately.

Please let me know if you have any other questions

Trish Naquin
x1544

-----Original Message-----

From: Jeff Harris [<mailto:Jeff.Harris@LA.GOV>]
Sent: Thursday, April 25, 2019 3:46 PM
To: Naquin, Patricia Shoucair (Trish) CIV USARMY CEMVN (USA) <patricia.leroux@usace.army.mil>
Subject: [Non-DoD Source] RE: C20190056 COE Breakwaters and beach nourishment, Grand Isle (UNCLASSIFIED)

Hi, Trish--

I've started to look at EA #573, and hope to have comments for you by the deadline.

The cover letter says that the EA can be downloaded from BlockedBlockedBlocked<https://www.mvn.usace.army.mil/environmental/nepa/>, but I can't find the document on the website. Can you direct me to the right location?

Thanks,

--Jeff

-----Original Message-----

From: Naquin, Patricia Shoucair (Trish) CIV USARMY CEMVN (USA) <patricia.leroux@usace.army.mil>
Sent: Monday, April 22, 2019 9:57 AM
To: Jeff Harris <Jeff.Harris@LA.GOV>
Cc: Gilmore, Tammy F CIV USARMY CEMVN (USA) <Tammy.F.Gilmore@usace.army.mil>; Morris, Michael A CIV USARMY CEMVD (US) <Michael.A.Morris@usace.army.mil>; Carithers, Clayton V MVN <Clayton.V.Carithers@usace.army.mil>
Subject: RE: C20190056 COE Breakwaters and beach nourishment, Grand Isle (UNCLASSIFIED)

Jeff -

Thank you for the letter from the LDWF. We have reviewed their comments and determined that all information is covered in EA #573 which is currently out for public review.

Should you have any questions or additional comments, please do not hesitate to ask.

Trish Naquin
x1544

-----Original Message-----

From: Jeff Harris [mailto:Jeff.Harris@LA.GOV]
Sent: Monday, April 22, 2019 9:35 AM
To: Morris, Michael A CIV USARMY CEMVD (US) <Michael.A.Morris@usace.army.mil>
Subject: [Non-DoD Source] FW: C20190056 COE Breakwaters and beach nourishment, Grand Isle

Good morning, Mike-

Attached is a comment letter from the Louisiana Department of Wildlife and Fisheries, regarding the referenced project. Please review their comments and send me confirmation that the Corps of Engineers will comply.

Thanks,

--Jeff
(225) 342-7949

From: Dave Butler <dbutler@wlf.la.gov>
Sent: Wednesday, April 17, 2019 8:53 AM
To: Jeff Harris <Jeff.Harris@LA.GOV>
Subject: FW: Comments to: C20190056 COE Breakwaters and beach nourishment, Grand Isle

Jeff,
Attached are LDWF comments for C20190056.
Thanks,

Dave Butler
Permits Coordinator
Louisiana Department of Wildlife and Fisheries
2000 Quail Drive
Baton Rouge, LA 70808
225-763-3595 (Baton Rouge Direct)
504-286-4173 (New Orleans Direct)
225-765-2625 (FAX)

CONFIDENTIALITY NOTICE

This email communication may contain confidential information which also may be legally privileged and is intended only for the use of the intended recipients identified above. If you are not the intended recipient of this communication, you are hereby notified that any unauthorized review, use, dissemination, distribution, downloading, or copying of this communication is strictly prohibited. If you are not the intended recipient and have received this communication in error, please immediately notify us by reply email, delete the communication and destroy all copies.

COMPUTER SYSTEM USE/CONSENT NOTICE

This message was sent from a computer system which is the property of the State of Louisiana and the Department of Natural Resources (DNR). It is for authorized business use only. Users (authorized or unauthorized) have no explicit or implicit expectation of privacy. Any or all uses of this system and all files on this system may be intercepted, monitored, recorded, copied, audited, inspected, and disclosed to Department of Natural Resources and law enforcement personnel. By using this system the user consents to such interception, monitoring, recording, copying, auditing, inspection, and disclosure at the discretion of DNR.

 Reply  Reply All  Forward



Wed 5/8/2019 12:58 PM

Craig Gothreaux - NOAA Federal <craig.gothreaux@noaa.gov>

[Non-DoD Source] Re: Grand Isle EA 573

To Naquin, Patricia Shoucair (Trish) CIV USARMY CEMVN (USA)

Cc kelly.shotts@noaa.gov

 You replied to this message on 5/8/2019 12:59 PM.
We converted this message into plain text format.

Patricia,

The NMFS Habitat Conservation Division has review draft EA #573 and FONSI and does not object to the issuance of permits for this project.

Thank you for your coordination,
Craig

On Wed, May 8, 2019 at 11:52 AM Naquin, Patricia Shoucair (Trish) CIV USARMY CEMVN (USA) <patricia.leroux@usace.army.mil <mailto:patricia.leroux@usace.army.mil> > wrote:

Craig -

Just doing a quick follow up to see if NMFS had any comments on the EA

Patricia S. Naquin
Biologist/Environmental Resource Specialist
Coastal Environmental Planning Section
US Army Corps of Engineers- New Orleans District
CEMVN-PDS-C
7400 Leake Ave
New Orleans, LA 70118
Office 504-862-1544

APPENDIX F: HAZARDOUS, TOXIC AND RADIOACTIVE WASTE ESA

The Phase 1 HTRW report may be found at

<https://www.mvn.usace.army.mil/Environmental/NEPA/>

APPENDIX G: PUBLIC COMMENTS

Waldemar S. Nelson, P.E. (1916 - 2016)
Charles W. Nelson, P.E. +
Kenneth H. Nelson, P.E. +
James B. Lane, P.E. +†
Stephen M. Pumbia, P.E. +†
David R. Stewart, P.E. +†
Virginia N. Dooze, Corp. Sec.
Barton W. Harris, P.E. +†
Arthur J. Smith, III, P.E. +†
Thomas W. Wells, P.E. +†
Leanne M. Geohagan, P.E. +
Robert W. Griffin, P.E. +†
O. L. Hess, III, P.E. +
Michael D. Harrison, P.E. +†
Anthony D. Hoffman, P.E. +
Stephen O. Johns, P.E. +†
Lyle F. Kuhlmann, P.E. +



WALDEMAR S. NELSON AND COMPANY
INCORPORATED
ENGINEERS AND ARCHITECTS
www.wsnelson.com

1200 ST. CHARLES AVENUE
NEW ORLEANS, LA 70130
Phone (504) 523-5281
Facsimile (504) 523-4587

2 NORTHPOINT DRIVE
SUITE 300
HOUSTON, TX 77060
Phone (281) 999-1889
Facsimile (281) 999-6757

Joseph R. Lawton, III, P.E. +, PMP
Richie A. Melancon, P.E. +†
Jack H. Noalis, II, P.E. +†
Robert C. Olivier, R.A. +†
Stephen E. Prados, P.E. +
William E. Rushing, Jr., P.E. +†
Wayne D. Talley, P.E. +†
William F. Berg, P.E. +†
Stephen W. Carlson, P.E. +
Steven A. Clewin
Robert W. Lovingsgood, P.E. +
David S. Montgomery, P.E. +†
R. Jason Oris, P.E. +

+ Licensed in Louisiana
† Licensed in Texas

Please Respond to the New Orleans Address

May 3, 2019

Mrs. Patricia Naquin
USACE Regional Planning South
7400 Leake Ave.
New Orleans, Louisiana 70118

RE: Draft EA # 573 – Grand Isle, LA. Breakwaters

Dear Mrs. Naquin:

These comments are as requested in the Public Notice beginning April 18, 2019 and ending May 4, 2019. As time permits after the comment period, I would like to request an opportunity to meet with you and your technical staff responsible for the design of the project, to elaborate on these comments in the interest of assisting USACE and the people of Louisiana in getting the best design possible for the proposed five to ten offshore breakwaters. I have reviewed the draft EA, and believe these comments and suggestions would not impact the environmental investigations or conclusions reached, and may in some ways provide additional habitat options for the marine life around the breakwaters.

My primary comment is that it would be prudent to consider concrete caisson breakwater sections as a part of the rubble mound breakwaters proposed. It appears that the water depths and bottom contours would be suitable for a system where the core of the breakwater would be a concrete barge floated into place at high tide and ballasted down until it is seated on the sea bed. The dimensions of the float-in caisson would be optimized for the water depth for the breakwater. After placement of the open top concrete caisson, stone or sand would be placed inside compartmented spaces to secure it temporarily, until a conventional 2:1 (horizontal:vertical) sloping stone layer would be placed on the seaward side of the caisson. Depending on site conditions and design wave characteristics, a similar, perhaps 1.5:1 sloping stone layer could be added to the landside of the breakwater.

Concrete barge utilization is well proven in the Louisiana coastal zone, and has been in practice for many years. Concrete caisson breakwaters have been used in major ports around the world since the 1890s. Although these used various systems to build the caissons 'in place', the ability to pre-fabricate these and float them into final position is completely feasible. Such a system was used by Allied forces during the invasion of Normandy during WW II. Those breakwaters created a harbor built in a few days, protecting the incoming materiel and manpower to carry out the invasion.

A concept sketch for a system as described above is attached, taken from a proposed project for beach protection and nourishment in the Caribbean. In it, an inverted "T" shaped concrete caisson is used to replace the inner core of a conventional rubble mound breakwater. A rectangular cross section could also be feasible, or preferred. In

Providing Professional Services Since 1945

N:\02\00154\CA\EA\ Draft EA_573_6_3_2019.docx

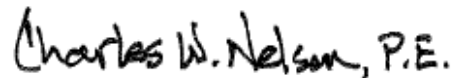
the modified sketch, you can visualize the installation sequence referenced above. Further work is needed to determine the impact on stone size and ultimate volume of stone, since these parameters are what would be providing an opportunity for materials reductions, and thus cost savings. These savings would be available to pay for the increased cost of manufacturing, delivering and placing the concrete barge. If cost savings justify this approach, there are multiple benefits from the concept, as outlined herein:

- 1) Potential savings from the delivered and in-place cost of part of the stone needed for a conventional rubble mound breakwater
- 2) Potential schedule improvement due to on-shore construction of the inner core of the breakwater
- 3) Possible use of pumped sand fill for the inner compartments of the caisson barge, rather than stone placed by cranes or conveyor systems
- 4) Definite reduction in the number of days to place armor stone, since the total volume could be lessened
- 5) Less exposure to weather delays, since fewer offshore days would be required
- 6) The option of designing a system such that, if ever needed, the breakwater could be de-constructed, and the concrete caisson barges moved to another location (this has been done in other installations, where a concrete barge supported oil production until the oil reservoir was depleted, then was removed)
- 7) An improved survivability of the breakwater in the event of larger than design conditions occurring in the future. The mass of the concrete barge core, filled with rock or sand, would be several orders of magnitude more than the largest armor stone feasible for use on the sloping faces of a rubble mound structure.
- 8) An opportunity to prove a concept at Grand Isle which could become a solution for other locations as sea level rise, beach erosion and shoreline protection are addressed at other locations

There may be additional benefits which would become identified in the course of a comparison of costs, schedule and survivability prior to implementation of the project. We would be pleased to lead or become a participating member in such a value engineering comparison.

I would appreciate your acknowledgement of receipt of this correspondence, which is being e-mailed on May 3, 2019. A hard copy will be mailed on this date as well, and so should be post-marked prior to the May 4, 2019 date for ending public comment. I also would like to reiterate my request for a meeting to discuss this topic further, as your schedule permits.

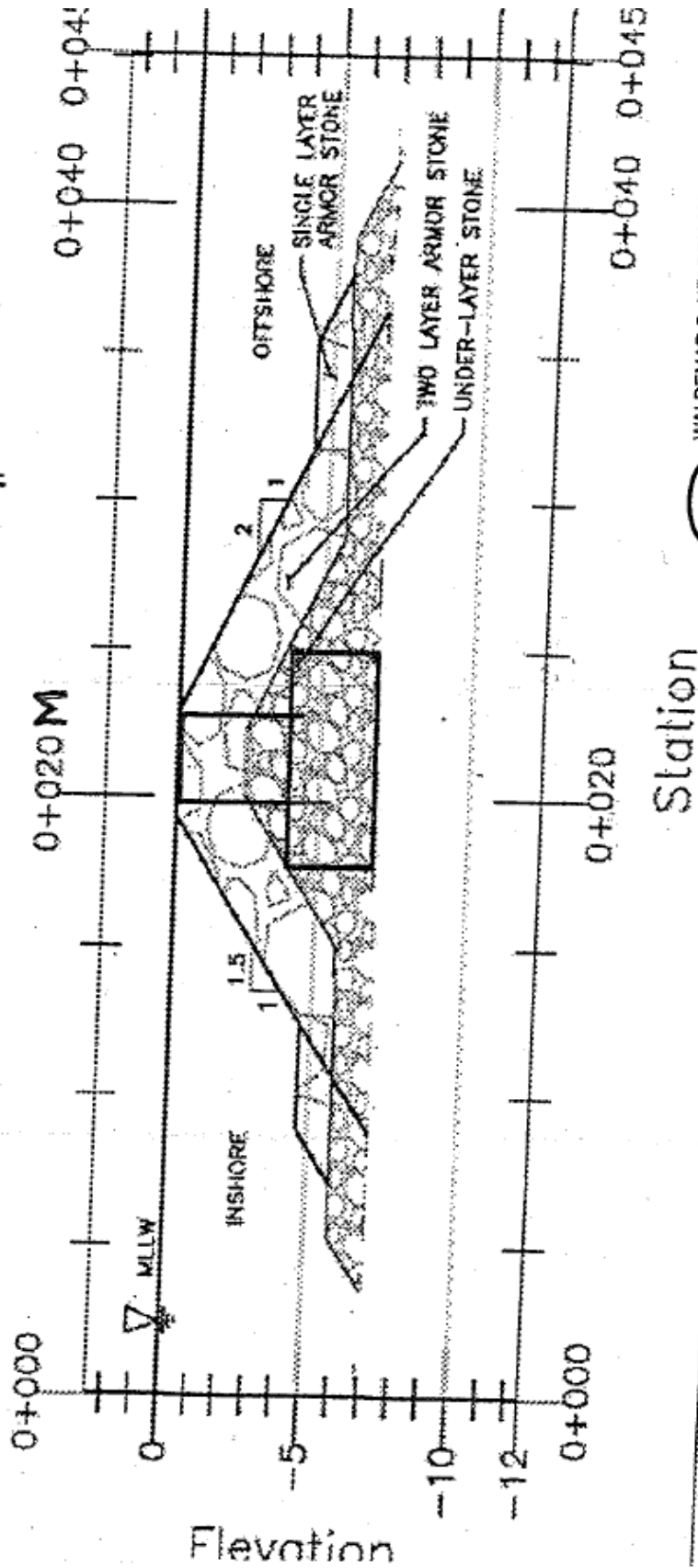
Sincerely,



Charles W. Nelson, P.E.
Coastal & Oceanographic Engineer
Chairman
WALDEMAR S. NELSON AND COMPANY
Incorporated
Engineers and Architects

CWN/khm

Profile View of REEF #1-B



WALDEMAR S. NELSON AND COMPANY
INCORPORATED
ENGINEERS AND ARCHITECTS

CHARLES W. NELSON, P.E.
Chairman

1200 St. Charles Avenue
New Orleans, LA 70130-4334
2 North Point Drive, Suite 300
Houston, TX 77060-3235
www.wsnelson.com

New Orleans (504) 593-5284
Houston: (281) 999-1989
Switchboard: (504) 523-5281
charles.nelson@wsnelson.com