Mississippi Valley Division,
Regional Planning and Environment Division South

Grand Isle and Vicinity Louisiana Beach Erosion and Hurricane Project PL 84-99, Jefferson Parish, Louisiana

Final Environmental Assessment #608

April 2026

EA608-202-00-B2P-1770651673

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SECTION 1
Introduction

The U.S. Army Corps of Engineers (USACE), Mississippi River Valley Division, Regional Planning and Environment Division South (RPEDS), has prepared this Environmental Assessment #608 (EA #608) for the New Orleans District (CEMVN) to evaluate potential impacts associated with Grand Isle Breakwater Construction in the city of Grand Isle, in Jefferson Parish, Louisiana (Project or Proposed Action) which entails the construction of up to thirty-five (35) segmented stone breakwaters and up to twenty (20) navigational light platforms (NLPs) in the 16,000-foot gap located between the existing western and eastern breakwater fields.

Preparation of EA #608 began prior to the recission of the Council on Environmental Quality's former National Environmental Policy Act (NEPA)-implementing regulations (40 Code of Federal Regulations (CFR) Parts 1500-1508) and the former USACE NEPA Engineering Regulation (ER) 200-2-2. This EA was completed in accordance with the NEPA (42 U.S. Code Part 4321, et seq.) and was informed by new administration policies and the Department of Defense NEPA Implementing Procedures, published on June 30, 2025. Pursuant to Part 1.2(a) of these Procedures, CEMVN considered the Proposed Action and its effects when determining the appropriate level of NEPA review. This EA #608 provides sufficient information on the potential adverse and beneficial environmental effects to allow the District Commander, USACE, CEMVN, to make an informed decision on the appropriateness of an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).

1.1 PROPOSED ACTION

The Proposed Action would consist of construction of up to 35 segmented stone breakwaters and up to 20 NLPs in an existing 16,000-foot gap between western and eastern breakwater fields along the Gulf of America (Gulf) side of Grand Isle, LA. For more details see Section 2.2.

1.2 AUTHORITY

The Grand Isle and Vicinity, Louisiana Beach Erosion and Hurricane Protection Project (Project), was authorized by Section 204 of the Flood Control Act of 1965 (79 STAT 1077) (P.L. 89-298) substantially in accordance with the recommendation of the Chief of Engineers in House Document 84, 89th Congress. Section 301(b)(6) of the Water Resources Development Act of 1996 (WRDA 1996) (P.L. 104-303) (110 STAT 16 3710), modified the original project to authorize the construction of a permanent levee and breakwater system. The Bipartisan Budget Act of 2018 (P. L. 115-123), Division B, Subdivision 1, Title IV (BBA-18) provided funding to construct the breakwaters authorized pursuant to WRDA 1996.

Section 8102(a) of WRDA 2022 and USACE Section 8102 of WRDA 2022 and the USACE Implementation Guidance: MEMORANDUM FOR COMMANDING GENERAL, U.S. ARMY CORPS OF ENGINEERS, SUBJECT: Implementation Guidance for Section 8102 (a) of the Water Resources Development Act of 2022, Response to Natural Disasters, dated Dec 1, 2023, authorizes the Secretary of the Army to repair and restore any federally authorized hurricane or shore protective structure or project damaged or destroyed by wind, wave, or water action of other than an ordinary nature to the pre-storm level of protection, to the design level of protection, or, notwithstanding the authorized dimensions of the structure or project, to a level sufficient to meet the authorized purpose of such structure or project, whichever provides greater protection, when in the discretion of the Chief of Engineers (Commanding General), such repair and restoration is warranted for the adequate funding of the structure or project for hurricane or shore protection, including to ensure the structure or project is functioning adequately to protect against projected changes in wave action or height or storm surge (including changes that result from relative sea level change over the useful life of the structure or project). If requested by the non-Federal Interest, the Commanding General may include the structure or project (including the addition of new project features) to address major deficiencies, increase resilience, increase benefits from the reduction of damages from inundation, wave action, or erosion, or implement nonstructural alternatives to the repair or restoration of the structure.

1.3 PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the Proposed Action is to improve the performance and longevity of beach nourishment projects, ultimately reducing the scope of future repairs following high and low frequency storm events. Modeling shows there is a higher retention of sand when breakwaters are in place when compared to existing conditions without breakwaters during non-storm years. The additional breakwaters would reduce beach erosion and increase sand accretion along the gulf side beach which serves as the protection berm between the gulf and the risk reduction sand dune. This, along with the NLPs, in turn would reduce the frequency of beach renourishment efforts by the Non-Federal Sponsor to maintain the beachfront, ultimately reducing the need for future investment. Renourishment of the beach is an Operation, Maintenance, Repair, Replacement, and Rehabilitation responsibility of the Non-Federal Sponsor for the Grand Isle Project.

1.4 PRIOR NEPA DOCUMENTS

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. Record of Decision (ROD): August 1979.

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 cuspate sand bar in Grand Isle State Park and extension of the east-and west-end jetties on Grand Isle. July 2, 1987.

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

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-Caminada Breakwaters. Section 103 Project to construct seven staggered rock breakwaters off Cheniere-Caminada Pass. FONSI: April 29, 1997.

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 #573 – Grand Isle and Vicinity, Louisiana Beach Erosion and Hurricane Protection Project, Jefferson Parish, Louisiana – Assessed the construction of five (5) to ten (10) stone segmented breakwaters on the western Gulf-side of Grand Isle. FONSI: May 17, 2019.

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.

SECTION 2
Alternatives Including the Proposed Action

2.1 ALTERNATIVE 1 – NO-ACTION (FUTURE WITHOUT PROJECT)

NEPA requires that a federal agency must consider a "No Action" alternative in addition to the Proposed 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.

Beach erosion would continue shoreward in the unprotected 16,000-foot gap until it reaches the storm risk reduction sand dune in the FWOP condition. The dune would be directly impacted by storm events and would not adequately perform as intended. What once was land would become Waters of the U.S. Habitat and nesting areas for wildlife would decrease. Infrastructure would become unstable which could result in failure as the island gradually becomes uninhabitable as dune and beach convert into open water.

The existing east and west breakwater fields would continue to provide protection for their sheltered beach areas. The calm waters behind them would continue slowing the rate of longshore sediment transport, creating shallow areas behind, and ultimately building beach toward the rear of each breakwater in a scalloped formation. The corresponding beach expansion would provide greater protection for the dune and the island behind it.

2.2 ALTERNATIVE 2 – PROPOSED ACTION (FUTURE WITH PROJECT)

Alternative 2 (Proposed Action) would include constructing up to 35 segmented stone breakwaters and up to 20 NLPs on the Gulf side of Grand Isle, Louisiana within 400 feet of shore (Figure 2-1). These breakwaters would form a new breakwater field connecting two existing breakwater fields. Activities consist of barging stone to the construction site where it would be placed to construct breakwaters and could include the construction of NLPs.

The design for the Proposed Action 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. Multiple breakwater alignments were considered for optimum design and placement (Appendix C). Additionally, a modeling report called "*Grand Isle Breakwaters Analysis & Design Final Report*" was prepared for CPRAB which analyzed alternatives (October 3, 2024). 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.

Figure 2-1. Project Area, Grand Isle, Louisiana

Barging Access

All access would be through open water. Material would be loaded onto barges and access to the breakwater construction area could be through two existing passes (Barataria Pass to the east or Caminada Pass to the west), or from the Gulf. There would be no dredging for access associated with the Proposed Action. Because of this limitation, the exact elevation contour in which breakwaters would be constructed and the exact distance from shore would vary based on site conditions and the draft of the barges.

Breakwater Construction

Breakwaters would consist of geotextile, core and bedding stone, and armor stone (Figure 2-2). Approximately 230,000 tons of armor stone, 42,000 tons of core and bedding stone, and 74,000 square yards of geotextile would be installed. All breakwaters would be constructed within 400 feet of shore, but the distance offshore could vary across the proposed breakwater alignment due to barge access constraints. In addition, the length and gap of each breakwater could also vary across the alignment due to barge access constraints. Each segmented breakwater would be approximately 250 feet long with a maximum width of 65 feet and a top elevation of +6 feet North American Vertical Datum of 1988 (NAVD 88). The resulting breakwaters would be approximately 4-6 feet from the seafloor or approximately 3 to 5 feet above the water surface, depending on water surface elevation.

Each individual breakwater would be approximately 250 feet apart. All activities associated with the construction of the breakwaters would be water based and via barge. Barge mounted draglines and excavators would be used to place the geotextile fabric and rock.

The additional breakwaters would reduce beach erosion and increase sand accretion by reducing longshore sediment transport through salient and/or tombolo formation along the gulf side beach. This would serve as the protection berm between the gulf and the risk reduction sand dune.

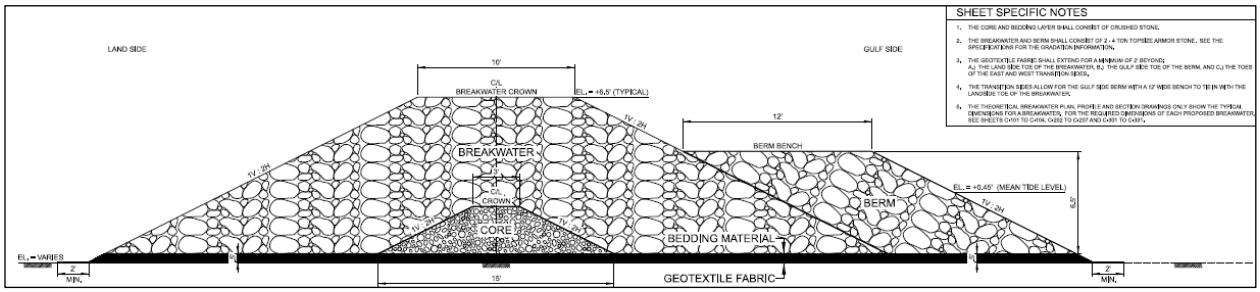

Figure 2-2. Breakwater Cross Section

Navigational Light Platforms

For safety purposes, up to twenty (20) NLPs would be installed along the line of newly constructed breakwaters (Figure 2-3). The NLPs would measure two feet wide by 4 feet wide and could 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 NLP would be mounted.

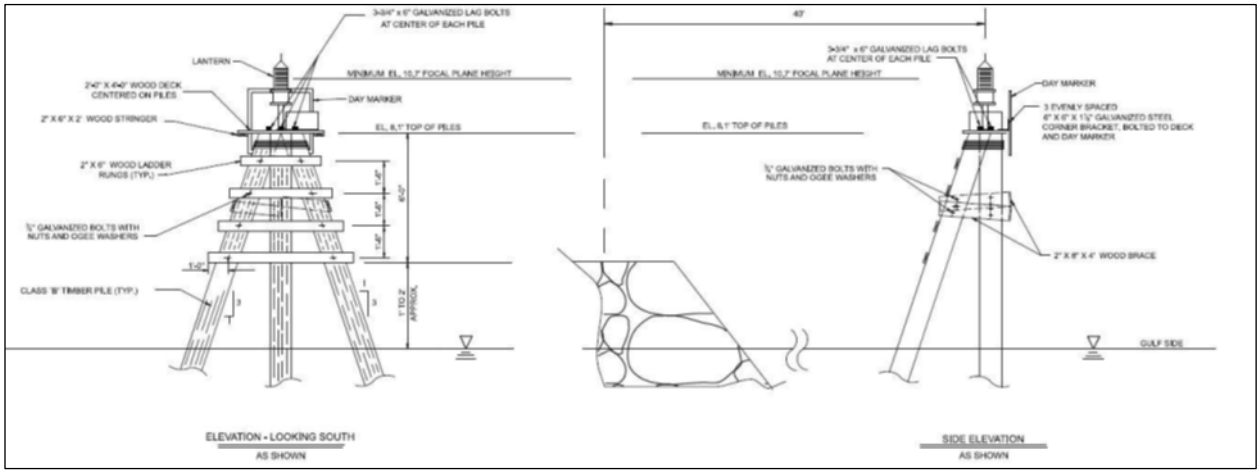

Figure 2-3. NLP on Tripod Structure

SECTION 3
Data Gaps and Uncertainty

3.1 BREAKWATER PLACEMENT

There would be some uncertainty associated with the location of the breakwaters. The target placement is at the -4-foot NAVD 88 contour. There were surveys taken as recently as March 2025 to develop Plans and Specifications for this Project, but the near shore environment gulfward of Grand Isle is dynamic and it is very likely to be slightly different when construction would begin.

3.2 HYDRODYNAMIC AND SEDIMENT TRANSPORT MODELING

The NFS and CEMVN modeled several different breakwater design configurations from 0 to -6-foot contours to assess long-term day-to-day performance to finalize design. Tropical storm and hurricane conditions were only modeled for the Proposed Action configuration. This data gap did not allow for a quantified comparison of tropical storm and hurricane performance among design configurations considered, but it is assumed that placement within 400 feet of shore would perform similarly during large storm events based on available modeling.

3.3 RESULTING GEOMORPHOLOGY

Resulting breakwater construction could result in either tombolo formation, where the beach reaches all the way to the breakwater, or salient formation, where there is open water between the breakwater at the beach. The uncertainty of the placement of the breakwaters and the uncertainty of how the barrier system would respond to breakwaters could result in either tombolo or salient formation. Either formation could disrupt longshore transport. However, tombolo formations typically disrupt longshore transport more than salient formations. Ideally, breakwater construction design would minimize the disruption of longshore transport to the maximum extent practicable. With the current design placing breakwaters near the -4-foot NAVD 88 contour, the predominant geomorphology would likely be tombolo formations. If the alignment were to shift gulfward, it is possible that the salient formations could occur. Model results for the -4-foot NAVD88 contour suggest tombolo formation with some longshore transport continuing to occur offshore of the breakwaters.

SECTION 4
Affected Environment

4.1 DESCRIPTION OF THE PROJECT AREA

The Project Area is located just off the beach of Grand Isle, Louisiana, which is located in the Gulf of Mexico, in the lower 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. 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 the northeast to southwest direction and is approximately 0.75 mile wide at its center.

4.2 DESCRIPTION OF THE WATERSHED

A watershed is an area of land drained by a particular set of streams and rivers. Of the twelve major watersheds within Louisiana, the Proposed Action would be located within the Barataria Basin on the right descending bank of the Mississippi River in Jefferson Parish, Louisiana (Figure 4-1). The Barataria Basin is located immediately south and west of New Orleans, Louisiana and is a significant geographical feature of the state. The entire Barataria Basin contains 152,120 acres of swamp, 173,320 acres of fresh marsh, 59,490 acres of intermediate marsh, 102,720 acres of brackish marsh, and 133,600 acres of saline marsh. A chain of barrier islands separates the basin from the Gulf. The southern half of the basin consists of tidally influenced marshes connected to a large bay system behind the barrier islands. The Basin has experienced the second greatest land loss of the coastal Louisiana basins, with a net loss of approximately 432 square miles or 277,000 acres of wetlands since 1932.

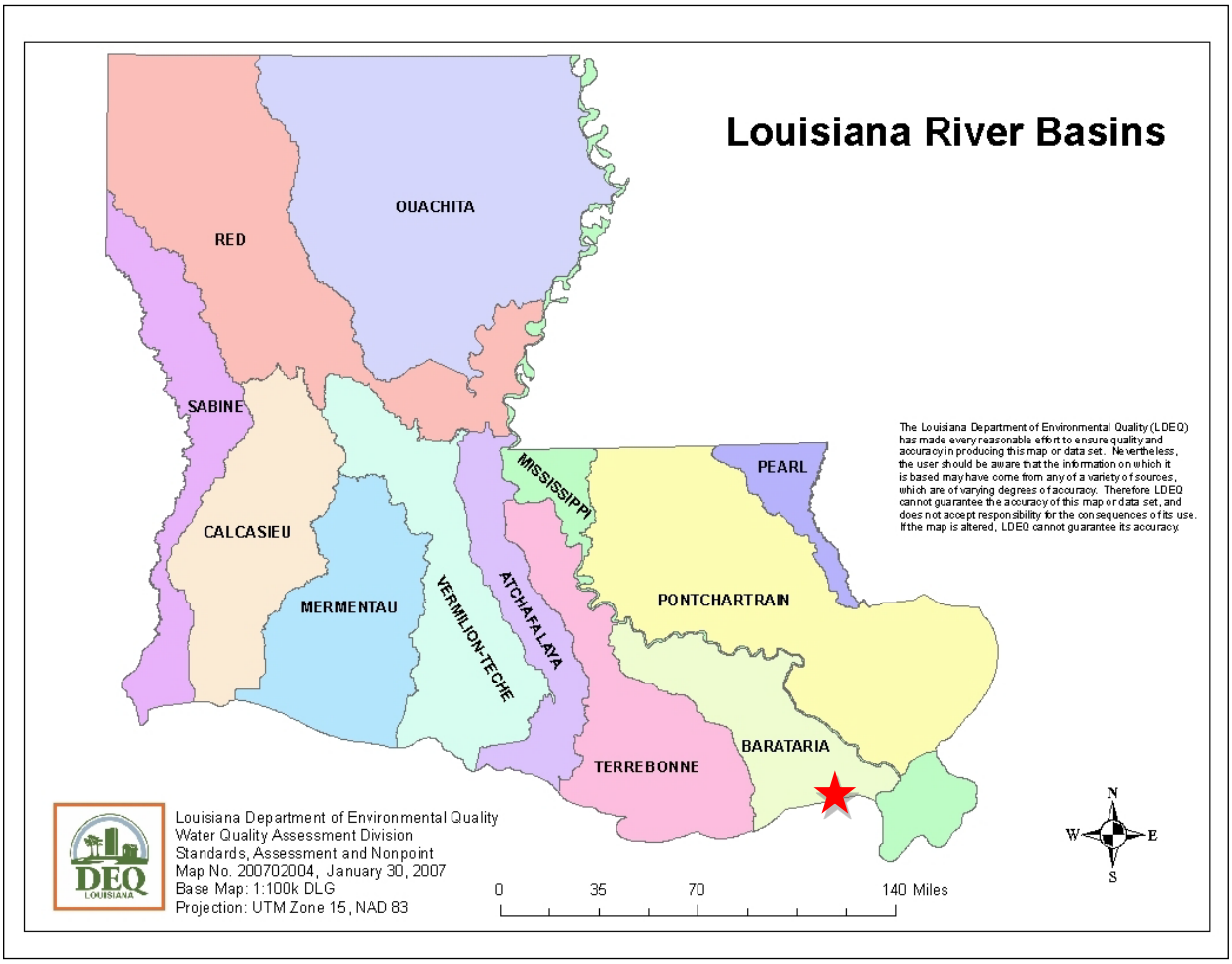

Figure 4-1. Louisiana River Basins (Map provided by Louisiana Department of Environmental Quality). The Mississippi River Basin is Shown in Green. The Location of the Proposed Action is Represented by a Red Star

4.3 CLIMATE

The climate in the southern coast of Louisiana and on Grand Isle is semitropical, primarily influenced by the Gulf of Mexico, and largely determined by the 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.

The Project Area is humid and subtropical with a strong maritime character. Warm, moist, southeasterly winds from the Gulf of Mexico prevail throughout most of the year, with occasional cool, dry fronts dominated by northeast high-pressure systems. The influx of cold air occurs less frequently in autumn and only rarely in summer. In winter, the average temperature is 53˚F and the average daily minimum temperature is 43˚F. In summer, the average temperature is 82˚F and the average daily maximum temperature is 91˚F (Table 4-1). Summer thunderstorms are common, and tornadoes strike occasionally. The total annual precipitation is about 61.6 inches. Of this, 23.6 inches usually falls in June through October. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 16 inches (Southern Regional Climate Center | Dashboard (tamu.edu)).

Table 4-1. Monthly Climate Averages (Table provided by The Weather Channel)

Climate Data for Grand Isle, Louisiana													
Month	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Year**
Record high °F (°C)	83 (28)	82 (28)	86 (30)	91 (33)	95 (35)	99 (37)	100 (38)	100 (38)	97 (36)	94 (34)	86 (30)	82 (28)	100 (38)
Mean daily maximum °F (°C)	63 (17)	66 (19)	71 (22)	77 (25)	84 (29)	88 (31)	90 (32)	90 (32)	87 (31)	79 (26)	72 (22)	65 (18)	78 (25)
Daily mean °F (°C)	54 (12)	57 (14)	62 (17)	69 (21)	77 (25)	81 (27)	83 (28)	83 (28)	81 (27)	72 (22)	64 (18)	56 (13)	70 (21)
Mean daily minimum °F (°C)	44 (7)	47 (8)	53 (12)	60 (16)	69 (21)	74 (23)	76 (24)	76 (24)	74 (23)	63 (17)	56 (13)	47 (8)	62 (16)
Record low °F (°C)	14 (−10)	12 (−11)	16 (−9)	35 (2)	48 (9)	50 (10)	65 (18)	62 (17)	52 (11)	34 (1)	24 (−4)	10 (−12)	10 (−12)
Average precipitation inches (mm)	5.1 (130)	4.9 (120)	4.7 (120)	2.2 (56)	4.5 (110)	7.2 (180)	8.0 (200)	7.6 (190)	6.2 (160)	4.7 (120)	3.4 (86)	4.7 (120)	63.2 (1,592)
Source: The Weather Channel (Monthly Averages) [19]													

4.4 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 over wash 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.

4.5 SEA LEVEL CHANGE

Global sea level has been changing at an accelerating rate. Since 1880, the global sea level has risen by 8-9 inches, and the rate of this change has more than doubled from 0.06 inches per year to 0.14 inches per year over the past 100 years. This increase is primarily caused by the thermal expansion of seawater as it warms and the addition of water from melting glaciers and ice sheets. The burning of fossil fuels has released greenhouse gases that trap heat in the Earthly environment, causing the warming of the atmosphere and ocean that drives the change in sea level.

The impacts of rising sea levels pose a significant threat to coastal communities and ecosystems worldwide. Rising seas lead to more frequent and severe coastal flooding, erosion, and more destructive storm surges. This threatens infrastructure such as roads, power plants, and water supplies in coastal areas where a large percentage of the global population resides. The intrusion of saltwater into freshwater sources contaminates drinking water and harms agriculture. The rising and warming waters also damage vital coastal habitats like coral reefs and mangroves, leading to a loss of biodiversity.

4.6 RELEVANT RESOURCES

This section contains a description of relevant resources that could be impacted by the Proposed Action. The important resources described are those recognized by laws, executive orders, regulations, and other standards of national, state, or regional agencies and organizations; technical or scientific agencies, groups, or individuals; and the public.

Table 4-2 provides summary information of the institutional, technical, and public importance of these resources.

Wetlands have been considered and found to not be affected by the Proposed Action. No portion of the Proposed Action area has been designated a Louisiana Natural and Scenic River; therefore, a Scenic Rivers permit is not warranted. Finally, the Proposed Action is located within the Louisiana Coastal Zone.

The following relevant resources listed in Table 4-2 are discussed in this EA. Table 4-3 contains a list of relevant resources located in the Project Area and describes those resources that may be impacted, directly or indirectly, by construction.

Table 4-2. Relevant Resources: 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, River 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 WOTUS), including wetland 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 understands the economic value of certain types of WOTUS, particularly navigable waterways and those used for recreational and commercial purposes.
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.
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.

Resource	Institutionally Important	Technically Important	Publicly Important
Essential Fish Habitat	Magnuson-Stevens Fishery Conservation and Management Act of 1996, Public Law 104-297	Federal and state agencies recognize the value of Essential Fish Habitat (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.
Beaches	Coastal Zone Management Act of 1972, Coastal Barrier Resources Act of 1982, and Coastal Barrier Improvement Act of 1990	State and Federal agencies recognize the value of beaches and shore dunes.	Environmental organizations and the public support the preservation of vital habitat such as nesting sites for migratory birds (ex. piping plover).
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, National Resources Conservation Service (NRCS), EPA, LDWF, and LDCE 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 (NHPA), as amended, the Native American Graves Protection and Repatriation Act of 1990; the Archeological Resources Protection Act of 1979; and USACE's Tribal Consultation Policy (2012).	Federal, State, and Tribal stakeholders document and protect cultural resources including archaeological sites, districts, buildings, structures, and objects that are significant in American history, architecture, archaeology, engineering, and/or sites of religious and cultural significance based on their association or linkage to past events, to historically important persons, 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 to 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 NEPA of 1969, the Coastal Barrier Resources Act of 1990, Louisiana Natural 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.

Resource	Institutionally Important	Technically Important	Publicly Important
Socio-Economic Resources	River and Harbor Flood Control Act of 1970 (PL 91-611).	Influencing factors of health, education, and overall well-being.	Social concerns and items affecting area economy are of significant interest to community.
Air Quality	Clean Air Act of 1963 and the 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.
Water Quality	Clean Water Act of 1977, Fish and Wildlife Coordination Act, Coastal Zone Management Act of 1972, and Louisiana State & Local Coastal Resources Act of 1978.	USACE, USFWS, NMFS, NRCS, USEPA, and State DNR and wildlife/history offices recognize value of fisheries and good water quality. 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 NEPA 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.
Hydrology	Coastal Zone Management Act of 1972, Marine Protection, Research, and Sanctuaries Act, Clean Water Act of 1972, Rivers and Harbors Act of 1899, Endangered Species Act	Critical element in understanding the movement, distribution, and quality of water in the environment.	Vital to water quality protection and maintenance of healthy ecosystems, and water resources management for drinking water, agriculture, and recreation.
Sediment Dynamics	USACE ER 1110-2-8153, and Fish and Wildlife Coordination Act, Marine Protection, Research, and Sanctuaries Act of 1990	Sediment erosion, transport, accumulation, and their impacts on the natural environment under ocean dynamics.	Public makes high demands on preservation and enhancement of storm protection features. There is a high value that the public places on fishing and boating, as measured by the large number of fishing licenses sold in Louisiana; and the large per-capita number of recreational boat registrations in Louisiana.

Table 4-3. Relevant Resources In and Near the Project Area

Relevant Resource	Impacted	Not Impacted
Barrier Systems	**X**	
Waters of the United States	**X**	
Soils and Water Bottoms	**X**	
Aquatic Resources / Fisheries	**X**	
Essential Fish Habitat	**X**	
Beaches	**X**	
Wildlife	**X**	
Threatened and Endangered Species	**X**	
Cultural Resources		**X**
Recreation Resources	**X**	
Aesthetics	**X**	
Socio-economic Resources	**X**	
Air Quality	**X**	
Noise	**X**	
Hydrology	**X**	
Water Quality	**X**	
Sediment Dynamics	**X**	

4.7 BARRIER SYSTEMS

General 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*), 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 songbirds 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).

4.8 WATERS OF THE UNITED STATES

General Existing Conditions. Two broad categories of WOTUS are often referred to as wetlands and “other waters” or other WOTUS. 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. On average the state loses 10 – 30 square miles of coastal wetlands each year. Both of these categories exist within the project area vicinity.

Grand Isle is a barrier island and is thus surrounded by jurisdictional 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. 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.

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, and may be classified as marine, subtidal, unconsolidated bottom using the modified Cowardin classification system (FGDC, 2013). In the immediate area of the proposed breakwaters construction, other WOTUS encompass areas that may be classified as: marine, intertidal, 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 Grand Isle shoreline, including beaches, is subject to significant erosion caused by wave action, wind, and currents.

4.9 SOILS AND WATER BOTTOMS

General Existing Conditions. Coastal Louisiana is defined by a variety of beach soils and water bottoms. The freshwater and saltwater marsh soils found in the state include Scatlake, Allemands, and Creole soils. These alluvial soil deposits are rich in nutrients and primarily consist of gravel, sand and clay with the occasional layer of peat and shell. Throughout history they have been eroded and shaped by water to form headland beaches, barrier islands, and shoals.

4.10 AQUATIC RESOURCES/FISHERIES

General Existing Conditions. The open-water habitats of the study area include the Gulf of Mexico to the south, bays and marshes to the north, and a significant shallow breach in the headland facilitating direct exchange between Gulf and Barataria Bay waters. These habitats support a pelagic water-column biota structured around primary, secondary, and consumer trophic levels.

Primary production is dominated by phytoplankton, with diatoms comprising approximately 90% of the phytoplankton community in the northern Gulf. Phytoplankton and bacteria support a zooplankton community consisting of both holoplankton (permanently planktonic organisms) and meroplankton (larval stages of invertebrates and vertebrates). While phytoplankton drift with currents, zooplankton exhibit active movement (DOI MMS 2002).

Floating Sargassum provides habitat for over 100 animal species, including hydroids, copepods, fish, crabs, gastropods, polychaetes, bryozoans, anemones, and sea spiders (DOI MMS 2002). Sea turtles utilize Sargassum as a refuge and foraging ground during their early life stages.

The Central Gulf typically features soft, muddy substrates dominated by polychaetes. Benthic habitats support bacteria, algae, and seagrasses, with abundance limited by substrate availability and light penetration. Coralline red algae and other benthic algae can thrive in depths up to 180 meters when turbidity is low (DOI MMS 2002). While offshore seagrasses are uncommon, they are more prevalent in estuarine environments behind barrier islands.

The surf zone along Grand Isle supports a diverse assemblage of invertebrates and fish. Dominant invertebrates include various crab species (lesser and greater blue crabs, fiddler crabs, ghost crabs) and shrimp (brown, white, and pink). Common fish species include croakers, silver perch, ladyfish, speckled and white trout, bluefish, Spanish mackerel, red

and black drum, and several shark species (bull, spinner, black-tipped). Juvenile offshore species also seasonally utilize these shallow waters.

4.11 ESSENTIAL FISH HABITAT

General Existing Conditions. The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires Federal agencies to consult with the National Marine Fisheries Service (NMFS) on activities that may adversely affect EFH. EFH is defined as those waters and substrate necessary to fish for spawning, breeding, or growth to maturity for species regulated under a Federal fisheries management plan.

Federally managed species likely to occur in the proposed Project Area are managed under the following Fishery Management Plans for the Gulf: shrimp, red drum, reef fish, coastal migratory pelagic fishes and other marine biota, and highly migratory species. Table 4-4 identifies those federally managed species, their life stages and EFH, which may occur in the Project Area. Table 4-5 lists those highly migratory species in the study area that have the potential to be impacted by the proposed actions of the Project.

Table 4-4. Essential Fish Habitat for Life Stages of Species Managed by the Gulf Fishery Management Council in Eco Region 4: Grand Isle, Louisiana.

Species	Life Stage	Essential Fish Habitat
Cobia	Adults, Spawning-Adults, Early-juvenile, and eggs	Nearshore, pelagic
Gray (mangrove) snapper	Adults, Spawning adults	Nearshore, Soft-bottoms, Shoal-banks
Gray snapper	Adults	Nearshore, Sand Shell
Greater amberjack	Adults	Nearshore, pelagic
King mackerel	Early juvenile, Late-juvenile	Nearshore, pelagic
Lane snapper	Adults, Early-juvenile, Late juvenile, post-larvae	Nearshore, Shoal-banks, SAV, soft bottom, sand shell
Red drum	Adults, Late juvenile, Eggs	Nearshore, Pelagic, Sand Shell
White Shrimp	Larvae	Nearshore, Pelagic

Table 4-5. Essential Fish Habitat for Life Stages of Highly Migratory Species Managed by the NMFS in Eco Region 4: Grand Isle, Louisiana

Common Name	Scientific Name	Life Stage	EFH
Scalloped Hammerhead Shark	*Sphyrna lewini*	Neonate	All nearshore waters to > 54 m
Blacktip Shark	*Carcharhinus limbatus*	Neonate & Juvenile	All nearshore waters
		Adult	All nearshore waters
Bull Shark	*Carcharhinus limbatus*	Juvenile	Nearshore waters Terrebone Bay to Mississippi River Delta
Finetooth Shark	*Carcharhinus isodon*	Juvenile & Adult	Nearshore water east of Terrebonne Bay
Atlantic Sharpnose Shark	*Rhizoprionodon terraenovae*	Neonate, Juvenile and Adult	All nearshore and offshore waters Freeport to the mouth of the Mississippi

4.12 BEACHES

General Existing Conditions. Sandy beaches occupy approximately one third of coastlines globally. Grand Isle has seven miles of public sandy beaches adjacent to the proposed Project Area that are popular recreationally and play an important economic and cultural role for the communities. Serving as a first line of defense against daily wave action, the beach acts as a natural buffer between sand dunes and the infrastructure behind them.

4.13 WILDLIFE

General Existing Conditions. In the United States, coastal wetlands are most abundant on the southeastern Atlantic coast and on the northern Gulf (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 4-6 lists the major wildlife utilizing coastal wetlands in Louisiana (Nyman et al. 2013).

Table 4-6. Notable Wildlife Utilizing Coastal Wetlands in Louisiana

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

Coastal marshes and their associated water bodies, adjacent beaches, and sandbars contain diverse aquatic and 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 would be directly affected by habitat loss. Others have complex indirect relationships with the shoreline ecosystem.

The area is known to support bottlenose dolphins. These are commonly seen on a daily basis from the shores of the island. The shallow waters and/or beaches adjacent to the Project Area serve as foraging habitat for a number of seabirds, wading birds, and other bird species.

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 anadensis*), 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 American have been observed utilizing the Gulf Coast mashes (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, a population projection to 2050 for 14 prominent avifauna species and/or species groups.

4.14 THREATENED AND ENDANGERED SPECIES

General Existing Conditions. The U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) lists ten federally threatened and endangered species known to, or that could potentially occur, within the Project Area, including: piping plover (*Charadrius melodus*), rufa red knot (*Calidris canutus rufa*), Eastern black rail (*Laterallus jamaicensis*), West Indian manatee (*Trichechus manatus*), Kemp's ridley *(Lepidochelys kempii*), Hawksbill (*Eretmochelys imbricate*), and Loggerhead (*Caretta caretta*) sea turtles.

There is one federally proposed threatened species known to, or that could potentially, occur in the Project Area and that is the Monarch butterfly (*Danaus plexippus*). (Table 4-7)

Table 4-7. Threatened and Endangered Species Potentially occurring in Proposed Project Area

Common Name	Scientific Name	Group	Status
West Indian Manatee	*Trichechus manatus*	Mammal	T
Piping Plover	*Charadrius melodus*	Bird	T, CH
Rufa Red Knot	*Calidris canutus rufa*	Bird	T, proposed CH
Eastern Black Rail	*Laterallus jamaicensis ssp. jamaicensis*	Bird	T
Kemp's ridley Sea Turtle	*Lepidochelys kempii*	Reptile	E, proposed CH
Hawksbill Sea Turtle	*Eretmochelys imbricata*	Reptile	E
Loggerhead Sea Turtle	*Careta caretta*	Reptile	T
Green Sea Turtle	*Chelonia mydas*	Reptile	T
Leatherback Sea Turtle	*Dermochelys coriacea*	Reptile	E
Giant Manta Ray	*Mobula birostris*	Fish	T
Monarch Butterfly	*Danaus plexippus*	Insect	Proposed T

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

West Indian manatee: The West Indian manatee is an aquatic mammal that inhabits warm coastal waters of not less than 68 °F. They occur along the U.S. Atlantic and Gulf of Mexico coasts, throughout the Caribbean, and as far south as Brazil's Atlantic coastline. This includes the Mississippi and Atchafalaya Rivers in South Louisiana. The West Indian manatee can tolerate saltwater when traveling from site to site but are primarily found in rivers and estuaries. Suitable habitat does not exist within the Project Area. Manatee could on rare occasion be found in the Mississippi River adjacent to Donaldsonville.

Rufa red knot: The rufa subspecies of the red knot is listed as threatened under the Endangered Species Act (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. Grand Isle is designated as proposed critical habitat for migrating rufa red knots.

Piping plover: 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. Their designated critical habitat identifies specific areas that are essential to the conservation of the species.

Eastern black rail: The eastern black rail is listed as a threatened species under the ESA. Eastern black rails are a subspecies of black rail that inhabit tidal salt marsh wetlands along the Atlantic and Gulf Coasts of the United States. The eastern black rail is very rare and difficult to detect, with low occupancy rates, low resilience to stochastic events, and high extinction probability across its extant range (McGowan et al. 2020). The eastern black rail has also undergone an apparent population collapse across large parts of its range in recent decades (Stevens and Conway 2021), likely due to wetland loss due to human development and sea level change. Consequently, the eastern black rail was listed as threatened under the ESA in 2020 (U.S. Department of the Interior 2020) and remains highly vulnerable to changes in sea level because of their reliance on tidal wetlands and the narrow range of water levels they tolerate (Stevens and Conway 2021). The eastern black rail prefers its habitat is high elevation marshes and inland coastal prairies. Since the study area does not contain this habitat type, it is highly unlikely that the eastern black rail would be found within the proposed project area.

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 (formerly 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. 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.

In 2014, the National Oceanic and Atmospheric Administration (NOAA) Fisheries designated Sargassum habitat in the Gulf 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. The Kemp's ridley sea turtle has proposed critical habitat in Grand Isle.

Giant manta ray: In 2018, NOAA Fisheries listed the Giant manta ray (*Mobula birostris*) as threatened under the ESA. The giant manta ray is found worldwide in tropical, subtropical, and temperate bodies of water and is commonly found offshore, in oceanic waters, and in productive coastal areas. The species has also been observed in estuarine waters, oceanic inlets, and within bays and intercoastal waterways. As such, giant manta rays can be found in cool water, as low as 19°C, although temperature preference appears to vary by region.

For example, off the U.S. East Coast, giant manta rays are commonly found in waters from 19 to 22°C, whereas those off the Yucatan peninsula and Indonesia are commonly found in waters between 25 to 30°C. The giant manta ray is a migratory species and seasonal visitor along productive coastlines with regular upwelling, in oceanic island groups, and near offshore pinnacles and seamounts. The timing of these visits varies by region and seems to correspond with the movement of zooplankton, current circulation and tidal patterns, seasonal upwelling, seawater temperature, and possibly mating behavior.

Monarch butterfly: Monarch butterflies are listed as proposed threatened under the ESA. Adult monarch butterflies are large and conspicuous, with bright orange wings surrounded by a black border and covered with black veins. The bright coloring of a monarch serves as a warning to predators that eating them can be toxic. In many regions where monarchs are present, monarchs breed year-round. Individual monarchs in temperate climates, such as eastern and western North America, undergo long-distance migration, and live for an extended period. In the fall, in both eastern and western North America, monarchs begin migrating to their respective overwintering sites. This migration can take monarchs distances of over 3,000 km (1,864 miles) and last for over two months. In early spring (February-March), surviving monarchs break diapause and mate at the overwintering sites before dispersing. The same individuals that undertook the initial southward migration begin flying back through the breeding grounds and their offspring start the cycle of generational migration over again. The biggest threats to monarchs are herbicides, insecticides, and changing climate conditions (U.S. Fish and Wildlife Service 2025, Midwest Association of Fish and Wildlife Agencies (MAFWA) 2023, and Western Association of Fish & Wildlife Agencies (WAFWA) 2025). Milkweed is one of the primary food sources for Monarch butterflies and is an essential food source for their migration and in the study area it is unknown of the abundance or presence of milkweed. Because the proposed project would be constructed in water and not on land, and there would be no food source, it is unlikely that the Monarch butterfly would be found in the project area.

Bald Eagle (*Haliaeetus leucocephalus*): Although it is delisted, the bald eagle is still protected by the Bald and Golden Eagle Protection Act 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 Marine Mammal Protection Act of 1972 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.

4.15 CULTURAL RESOURCES

General 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.

Cultural resources within the proposed Project Area were identified based on a review of the National Register of Historic Places (NRHP) database, the Louisiana Division of Archaeology (LDOA), Louisiana Cultural Resources Map (LDOA Website), Historic aerial photography, historic map research, and a review of cultural resources survey reports. Twenty-six (26) cultural resources and remote sensing surveys have been conducted in the Grand Isle vicinity. These investigations have resulted in the identification of fourteen (14) archaeological sites, two (2) cemeteries, four (4) NRHP listed properties, and one (1) Historic District. None of these cultural resources are located within the Proposed Action right-of-away.

4.16 TRIBAL RESOURCES

Historic and General Existing Conditions. In addition to cultural resources or historic properties considered eligible for the National Register of Historic Places, USACE's 2023 Tribal Consultation Policy requires the agency to determine if the Proposed Action significantly adversely effects Tribal Rights, Tribal lands, and protected tribal resources (also see Section 7. E.O. 13175) (Table 4-8). Tribal interest varies by geographic limits and USACE uses the most inclusive approach to consultation and coordination. There are

eleven (11) Federally-recognized Tribes with aboriginal/historic interest in the Project Area. The tribes are: 1) the Alabama Coushatta Tribe of Texas, 2) the Alabama-Quassarte Tribal Town, 3) the Chitimacha Tribe of Louisiana, 4) the Choctaw Nation of Oklahoma, 5) the Coushatta Tribe of Louisiana, 6) the Jena Band of Choctaw Indians, 7) the Mississippi Band of Choctaw Indians, 8) the Muscogee (Creek) Nation, 9) the Seminole Nation of Oklahoma, 10) the Seminole Tribe of Florida, and 11) the Tunica-Biloxi Tribe of Louisiana.

Table 4-8. 2023 USACE Tribal Consultation Policy Definitions

Category	Definition
Tribal rights	Those rights legally accruing to a Federally-recognized Tribe or tribes by virtue of inherent sovereign authority, unextinguished aboriginal title, treaties, statutes, judicial decisions, executive orders or agreement and that give rise to legally enforceable remedies.
Tribal lands	Any lands title to which is: either held in trust by the United States for the benefit of any Federally-recognized Indian tribe or individual or held by any Federally-recognized Indian tribe or individual subject to restrictions by the United States against alienation.
Protected tribal resources	Those natural resources and properties of traditional or customary religious or cultural importance, either on or off Tribal lands, retained by, or reserved by or for, Federally-recognized Tribes through treaties, statutes, judicial decisions or executive orders.

According to available government records, there are no tribal lands, nor are there specific tribal treaty rights related to access or traditional use of the natural resources in the Project Area. There are, however, many protected tribal resources within the Project Area representing pre-contact utilization of the landscape, burial practices, and continued historic period occupation. To augment CEMVN's background research into the interested Federally-recognized Tribes and the types of tribal resources that have the potential to be within the Project Area, CEMVN consulted with Federally-recognized Indian tribes on the proposed action via Section 106 consultation correspondence on 10 October 2025 with a determination of No Historic Properties Affected. The Alabama-Quassarte Tribal Town concurred with the determination on October 13, 2025 and the Choctaw Nation of Oklahoma concurred with the determination on November 13, 2025; no other Tribal responses were received.

4.17 RECREATION RESOURCES

General Existing Conditions. This resource is institutionally important because of the Federal Water Project Recreation Act of 1965, as amended, and the Land and Water Conservation Fund Act of 1965, as amended. Recreational resources are technically important because of the high economic value recreational activities contribute to local, state, and National economies. Recreation resources are publicly important because of the 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.

Tables 4-9 through 4-11 show the number of fishing licenses, hunting licenses, and boat registrations, respectively, in the vicinity of the study area. The fishing and hunting license and boat registration data are provided by the Louisiana Department of Wildlife and Fisheries (https://www.wlf.louisiana.gov/page/recreational-fishing-licenses-and-permits). Accessed 3/12/2025.

Table 4-9. Fishing Licenses Sold in the Vicinity of Project Area - Fiscal Year 2019

Parish	Resident Freshwater	Resident Saltwater	Non-resident Freshwater	Non-resident Saltwater
Jefferson	22,422	21,224	333	307
Plaquemines	2,656	2,561	20	17
Lafourche	12,071	11,085	52	48
State / Parish Average	5,059	3,100	26	19

Table 4-10. Hunting Licenses Sold in the Vicinity of the Project Area - Fiscal Year 2019

Parish	Resident	Non-resident	Resident Duck Only	Non-resident Duck Only
Jefferson	3,163	9	1,725	7
Plaquemines	2,561	748	446	2
Lafourche	2,821	1	1,549	1
State / Parish Average	2,043	3	683	2

Table 4-11. Active Boat Registrations in the Vicinity of the Project Area - Fiscal Year 2019

Parish	Boat Registrations
Jefferson	16,529
Plaquemines	3,420
Lafourche	12,010
State / Parish Average	4,790

Recreation opportunities were examined in and around the study area. The Project Area is located on the southwest side of the island which faces the Gulf. The only access by car to the island is from LA-1 from the mainland. The island can be reached by boat from numerous boat launches in the area. At the east end of Grand Isle is the mile-long Grand Isle State Park, with the only state-owned and operated beach on the Louisiana Gulf Coast. The park offers a wide variety of recreational activities, with fishing being the main. A 900-foot fishing pier extending into the gulf is one of the park's focal points. This fishing pier is in great demand, being the only large public fishing pier on the Louisiana gulf coast. Crabbing is allowed, but traps are required to be tagged per LDWF regulations. There is an additional, recently renovated, 960-foot pier adjacent to LA-1 on the bay side which also serves both residents and tourists. The camping area of the park features 49 campsites with options for tent camping on the beach. No utilities are provided on the beach for campers; however, there is a nearby bathhouse with potable water. In the park, as well as other portions of the beach and in the water, surf fishing, swimming, bathing, crabbing, sunbathing, picnicking, camping, sightseeing, and walking for pleasure are popular activities. Despite limited facilities, 64,959 visitors used the park in 2004-2005. This estimate was obtained from the Louisiana Department of Culture, Recreations, and Tourism Office of State Parks and based on random sampling of day use.

Swimming in the gulf and pass waters off the east end sand spit has been restricted due to hazardous currents in the area. Because of this, only passive recreational pursuits, such as sightseeing, sunbathing, and birdwatching are allowed on the east end of the spit. The International Grand Isle Tarpon Rodeo attracts thousands of visitors each year contributing to the local economy. In addition, the Grand Isle Migratory Bird Celebration (Grand Isle Bird Festival) is an annual three-day event that promotes birdwatching and raises awareness of the island's ecologically valuable bird habitat.

4.18 AESTHETIC RESOURCES

General Existing Conditions. This resource is institutionally important because of the laws and policies that affect visual resources, most notably the 1969 NEPA, the Coastal Barrier Resources Act of 1990, Louisiana's National Scenic Rivers Act of 1988, and the National Scenic Byway Program. Visual resources are publicly and technically important because of the high value placed on the preservation of unique natural and cultural landscapes.

The visual resources on Grand Isle are characterized by a diverse landscape that combines natural beauty with cultural and historical significance. Situated at the southern end of the

Lafourche/Terrebone Scenic Byway (LA-1), the island's seven miles of gulf beach offer breathtaking views of the Gulf, with sandy dunes, sea oats, and beach vegetation creating a picturesque backdrop. The study area on the southwestern portion of island is mainly comprised of the sandy beaches and dunes that the island is known for. On the eastern side the beaches transition to the saltwater marshes within Grand Isle State Park. The surrounding waters, including Barataria Bay and Caminada Bay, provide a scenic setting for boating and fishing, with an abundance of marine life and bird species adding to the visual interest. The island's interior features a mix of coastal marshes, mangrove stands and scattered wooded areas. The islands frontal sand dunes are elevated to 13 and ½ feet and are vegetated by bitter panicum and sea oats on the gulf side, and remnants of black mangrove and salt marsh on the bay side.

The island's visual character is rooted in its natural barrier island form, shaped by the evolution from residential and commercial development. Land use along the gulf side is almost exclusively single-family residential. Structures are elevated and offer views over the dune out to the Gulf. The historic Grand Isle Cemetery, with its whitewashed tombs, wrought iron crosses, and surrounding live oaks offers historic points of interest of visual and cultural value. Grand Isle State Park's three-tiered lookout provides panoramic views encompassing the intrinsic qualities of the island as well as views to the historic ruins of Fort Livingston on nearby Grand Terre Island.

4.19 SOCIOECONOMIC RESOURCES

Population. Grand Isle is located on the lower edge of the Barataria Basin of the Mississippi River Deltaic Plain, about 50 miles south of New Orleans. It is the only inhabited barrier island in Louisiana, located in Jefferson Parish. Historical population trends for Jefferson Davis Parish are documented in Table 4-12 . The population has been fluctuating over the years since 1980 with Moody Analytics predicting an overall decrease going into 2040 and onwards. Looking specifically at Grand Isle's population, the estimate from 2023 was 644, about 2% of the total population in Jefferson Davis Parish. Grand Isle has experienced a slight gradual increase in the population since 2010.

Table 4-12. Total Population: 1980-2050

Location	1980	1990	2000	2010	2020	2030	2040	2050
Jefferson Parish	32,290	30,680	31,500	31,640	32,220	31,150	30,350	29,040
Source: Moody Analytics, United States Census Bureau								

Housing. Although the population trends seem to be fluctuating over the years, the number of households in Jefferson Davis Parish has been gradually increasing over time as documented in Table 4-13. Grand Isle on its own has also been experiencing an increase in the number of households since 2010 and in 2023 the number of households was around 1,703, making up about 13% of the amount in Jefferson Davis Parish as a whole.

Table 4-13. Total Number of Households: 1980-2050

Location	1980	1990	2000	2010	2020	2030	2040	2050
Jefferson Parish	10,470	10,610	11,530	11,800	12,170	12,330	12,440	12,200
Source: Moody Analytics, United States Census Bureau								

Community and Regional Growth. Income per capita serves as a proxy for the overall health of an economy which is important to investigate in order to evaluate the overall social and economic environment. Income per capita trends for Jefferson Davis Parish are documented below in Table 4-14. Income per capita has been historically increasing, with the biggest jump being from 2000 to 2010, and Moody Analytics predicts that it will continue to increase till 2050. Grand Isle alone has also been experiencing a gradual increase in per capita income, with the income being 35,590 in 2023. Grand Isle has consistently stayed pretty close to the per capita income of the whole Parish despite having a fairly low population.

Table 4-14. Per Capita Income: 1980-2050

Location	1980	1990	2000	2010	2020	2030	2040	2050
Jefferson Parish	7,329	11,949	18,117	32,145	44,424	62,037	80,363	109,782
Source: Moody Analytics, United States Census Bureau								

Business Activity and Employment. The majority of the business activity driving economic growth in Grand Isle includes tourism, recreation, seafood, and petroleum. Documented below are the employment statistics for Jefferson Davis Parish (Table 4-15 and 4-16). From 1990 to 2010 there was a consistent increase in employment until a significant dip in 2020. During the Covid-19 pandemic in 2020, businesses were not able to operate at full capacity and contribute to the economic activity both in the larger parish as well as Grand Isle in particular. This is further illustrated with the unemployment rate hitting an all-time high for Jefferson Davis Parish, at 8.2%. However, even throughout the pandemic and Hurricane Ida, Grand Isle was able to bounce back and still continue to gradually increase their employment numbers.

Table 4-15. Total Employment: 1980-2050

Location	1990	2000	2010	2020	2030	2040	2050
Jefferson Parish	11,110	12,050	12,260	11,480	11,900	11,940	12,010

Table 4-16. Unemployment Rate: 1980-2050

Location	1990	2000	2010	2020	2030	2040	2050
Jefferson Parish	6.8	5.7	7.1	8.2	4.5	4.9	5

4.20 AIR QUALITY

General Existing Conditions. The U.S. Environmental Protection Agency (USEPA) Office of Air Quality Planning and Standards has set National Ambient Air Quality Standards (NAAQS) for six principal pollutants, called “criteria” pollutants. They are carbon monoxide, nitrogen dioxide, ozone, lead, particulates of 10 microns or less in size (PM-10 and PM-2.5), and sulfur dioxide (SO_2) (Table 4-17). Ozone is the only parameter not directly emitted into the air but forms in the atmosphere when three atoms of oxygen (03) are combined by a chemical reaction between oxides of nitrogen (NOx) and volatile organic compounds (VOC) in the presence of sunlight. Motor vehicle exhaust and industrial emissions, gasoline vapors, and chemical solvents are some of the major sources of NOx and VOC, also known as ozone precursors.

Table 4-17. Primary and Secondary NAAQS: Six Contaminants Established by EPA

Pollutant [links to historical tables of NAAQS reviews]		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide (CO)		primary	8 hours	9 ppm	Not to be exceeded more than once per year
			1 hour	35 ppm	
Lead (Pb)		primary and secondary (1)	Rolling 3 month average	0.15 µg/m^3	maximum arithmetic mean of 3 consecutive monthly means in a 3-year period
Nitrogen Dioxide (NO_2)		primary	1 hour	100 ppb	Annual 98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		primary and secondary	1 year	53 ppb (2)	Annual Mean
Ozone (O_3)		primary and secondary (3)	8 hours	0.070 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle Pollution (PM)	$PM_{2.5}$	primary	1 year	9.0 µg/m^3	annual mean, averaged over 3 years
		secondary	1 year	15.0 µg/m^3	annual mean, averaged over 3 years
		primary and secondary	24 hours	35 µg/m^3	98th percentile, averaged over 3 years
	PM_{10}	primary and secondary	24 hours	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO_2)		primary (4)	1 hour	75 ppb	Annual 99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary (5)	1 year	10 ppb	annual mean, averaged over 3 years

(1) In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 µg/m3 as a calendar quarter average) also remain in effect.

(2) The level of the annual NO_2 standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.

(3) Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O_3 standards are not revoked and remain in effect for designated areas. Additionally, some areas may have certain continuing implementation obligations under the prior revoked 1-hour (1979) and 8-hour (1997) O_3 standards.

(4) The previous SO_2 standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2)any area for which an

implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous SO_2 standards or is not meeting the requirements of a SIP call under the previous SO_2 standards (40 CFR 50.4(3)). A SIP call is an EPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the required NAAQS.

(5) The 2024 rulemaking added a new annual secondary NAAQS in 40 CFR Part 50 without altering the 1971 secondary 3-hour SO_2 NAAQS. Note that some areas may have certain continuing implementation obligations.

Strong sunlight and hot weather can cause ground-level ozone to form in harmful concentrations in the air. The Clean Air Act General Conformity Rule (58 FR 63214, November 30, 1993, Final Rule, Determining Conformity of General Federal Actions to State or Federal Implementation Plans) dictates that a conformity review be performed when a Federal action generates air pollutants in a region that has been designated a non-attainment or maintenance area for one or more NAAQS. A conformity assessment would require quantifying the direct and indirect emissions of criteria pollutants caused by the Federal action to determine whether the Proposed Action conforms to Clean Air Act requirements and any State Implementation Plan (SIP).

The general conformity rule was designed to ensure that Federal actions do not impede local efforts to control air pollution. It is called a conformity rule because Federal agencies are required to demonstrate that their actions “conform with” (i.e., do not undermine) the approved SIP for their geographic area. The purpose of conformity is to (1) ensure Federal activities do not interfere with the air quality budgets in the SIPs, (2) ensure actions do not cause or contribute to new violations, and (3) ensure attainment and maintenance of the NAAQS.

The Jefferson Parish is currently in attainment for all NAAQS; therefore, no conformity determination is required.

4.21 HYDROLOGY

General Existing Conditions. As the only inhabited barrier island in Southern Louisiana, Grand Isle is vulnerable to frequent impacts from tropical storms and hurricanes. The islands’ existing storm protective features include a western and eastern breakwater field, as well as a beach and dune system for storm surge protection. Despite these features, the increased occurrence of storms and hurricanes severely hinder the island. Analyses of NOAA tide gauge records show Coastal Louisiana have experienced 1 to 3 feet of relative sea level change over the past 100 years. These increased sea levels allow storm surge to propagate further inland than in the past, which affect coastal and transition areas. Severe erosion has been observed across the island with or without a storm event. Intense wave action and frequent storms have accelerated shoreline erosion, particularly along unprotected sections of the beach. In areas without breakwaters, the repeated impacts of storms and hurricanes have made shoreline maintenance increasingly challenging.

4.22 WATER QUALITY

General Existing Conditions. The water quality near Grand Isle is heavily influenced by the Mississippi River, which deposits significant amounts of fine-textured silts and clays, leading to dynamic turbidity and sedimentation. While levees have altered natural sediment

distribution, ongoing coastal restoration projects, which involve dredging and placement of sediment, can temporarily increase local turbidity. Water temperature in this area fluctuates seasonally and averages a low of 58º F in January and a high of 84º F in July/August. A concern for the region is the seasonal “Dead Zone,” an area of low dissolved oxygen that forms in the summer. Nutrient pollution from the Mississippi River spurs the growth of large algal blooms. As the algae decompose, they consume the water’s oxygen. This forces marine life like fish and shrimp to relocate while killing organisms that cannot move. The size of the zone varies annually, influenced by river discharge and storm activity.

4.23 NOISE AND VIBRATION

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

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

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

There are many different sources of noise throughout or near 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).

4.24 SEDIMENT DYNAMICS

General Existing Conditions. To understand the sediment dynamics occurring at Grand Isle, a Delft3D-FM model was applied. Model results indicate that Grand Isle is predominantly

influenced by west-to-east longshore sediment transport. The primary driver of this transport is the Caminada Pass ebb shoal, which supplies and directs the sediment towards the existing western breakwater field. The western breakwaters also play a significant role in growing and maintaining the beach by protecting it from wave action and trapping sediments supplied from offshore. These features are expected to extend the beach seaward until an equilibrium between sedimentation and erosion is reached within the breakwater area. Under the existing conditions, the unprotected nearshore area between the existing breakwater fields experiences an increase in wave energy, leading to greater beach erosion and shoreline retreat.

SECTION 5
Environmental Consequences

5.1 BARRIER SHORELINES, HEADLANDS, AND ISLANDS

Future Conditions with No-Action. With 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 accelerated land loss in unprotected beach front areas. 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 bridge the 16,000-foot gap located between the existing western and eastern breakwater fields. 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 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, maintenance of the beach area through accretion as calmer waters leeward of breakwaters allows suspended sediment to settle and accumulate, creating shallow waters.

5.2 AQUATIC RESOURCES/FISHERIES

Future Conditions with No-Action. Under the No-Action Alternative (Alternative 1), the construction of the proposed breakwaters and NLPs would not take place. 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.

Future Conditions with the Proposed Action. With implementation of the Proposed Action, there would be no permanent direct impacts to fisheries in the area. Sessile and benthic organisms beneath the breakwaters and NLPs would experience initial mortality due to direct contact with construction materials and localized increases in turbidity. Temporary displacement of existing fish and crustacean populations in the Project Area would be expected during breakwater and NLPs construction. 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. In addition, vibration and noise associated with pile driving activities would result in the temporary displacement of nekton species within the vicinity. Nekton populations would return to pre-construction levels post construction.

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.

5.3 ESSENTIAL FISH HABITAT

Future Conditions with No-Action. Under the No-Action Alternative (Alternative 1), the construction of the proposed breakwaters and NLPs would not take place, allowing for the continued degradation of Essential Fish Habitat (EFH) along Grand Isle. Persistent erosional forces could result in increased saltwater intrusion and increase the salinity of the adjacent marshes, converting this critical habitat to open water. This represents a direct loss of the nursery and foraging functions that characterize this EFH, diminishing its availability and value for the species that depend on it.

Future Conditions with the Proposed Action. Under the Proposed Action Alternative (Alternative 2), shallow water, sandy bottoms, and periodically inundated beach areas would be transformed into breakwaters and NLPs. The species utilizing the EFH listed in Table 4-4 would experience minimal adverse effects due to the loss or temporary unavailability of habitat, including estuarine sandy bottoms, nearshore sand shoals, and nearshore sand/shell bottoms. Importantly, similar habitats are readily available in the vicinity, and these impacts are likely to be temporary. Consequently, managed species are not expected to suffer significant or long-term adverse effects. Noise from construction related activities would cause a temporary dispersal of mobile fish and shellfish, including managed species away from the site.

Additionally, species identified in Table 4-4 and 4-5 that rely on water column EFH in the Project Area may experience slight temporary adverse effects due to increased turbidity. However, these impacts are anticipated to be minimal and temporary, given the abundance of comparable habitats nearby.

Sessile organisms such as benthic worms, bivalve mollusks, and snails serve as critical food sources for managed species, including brown shrimp, white shrimp, and Gulf stone crab. Various life stages of managed species, including juvenile and neonatal Atlantic sharpnose sharks, gray snappers, and red drums, prey on these organisms. Adult managed finfish, such as red drum, may also feed on benthic fauna, though to a lesser extent. While some of these benthic species may be affected by the project features, there is a robust population of these organisms available for predation within and adjacent to the Project Area. It is anticipated that these species would recolonize similar habitats once construction is completed.

5.4 BEACHES

Future Conditions with No-Action. Under the No-Action Alternative, the 16,000-foot stretch of beach between the east and west breakwater fields would remain unprotected. Current landward erosion would continue towards the protective dune. The dune would receive the brunt of tropical storm surge events, leaving it at a higher risk of failure to perform as designed.

Future Conditions with the Proposed Action. Under the Proposed Action Alternative breakwater construction would occur, providing a first line of defense between the pounding surf and the beach. Longshore sediment transport would be interrupted in the calm area between the breakwaters and the shoreline creating shallow areas until salient formations or tombolos are formed.

5.5 WILDLIFE

Future Conditions with No-Action. Under the No-Action Alternative, breakwaters would not be constructed to complete the breakwater field. Conditions at the unprotected stretch of Grand Isle beach and dune would continue to degrade at an accelerated rate when compared to areas that are breakwater protected. Erosional forces would continue to wear away at the shoreline unabated 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 B), the Proposed Action would have no permanent adverse impacts on protected birds. Construction of the breakwaters and beach nourishment, which involves placing fill in 18 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.

5.6 THREATENED AND ENDANGERED SPECIES

Future Conditions with No-Action. Under the No-Action Alternative, 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 also be no indirect impacts to the following species: West Indian manatee, green, loggerhead, hawksbill, Kemp's ridley, and leatherback sea turtles. The piping plover, rufa red knot and eastern black rail 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. The placement of breakwaters could provide the potential for the creation of new bird nesting habitat that has been lost through shoreline erosion and site degradation.

An analysis of the proposed action's potential effects to the below ESA trust species is summarized below. See Appendix B for details, consultation status, and documentation.

Rufa Red Knot and Piping Plover
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. The USACE has determined that the proposed project would not likely adversely affect the rufa red knot and piping plover.

Eastern Black Rail
The proposed project area does not contain high marsh suitable for eastern black rails to inhabit and would have no adverse effect on this species. The USACE has determined that the proposed project would not likely adversely affect the eastern black rail.

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 B will be implemented. The USACE has determined that the proposed project would not likely adversely affect the West Indian manatee.

The USFWS provided concurrence with the USACE's determinations on December 15, 2025. Therefore, no further consultation for the proposed action will be necessary 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 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.

Marine Turtles
CEMVN has determined that the project may affect but is not likely to adversely affect sea turtles. Justification for this determination is because all in-water construction work would be conducted using a drag line or excavator for strong & barge mounted rig for pilings which is not known to cause take of sea turtles. Also, the area where construction would occur is an active beach that is regularly used recreationally. Lastly, this area is already supporting vessel traffic daily, so this effort would simply contribute to the regular disturbance that is already occurring. The USACE has determined that the proposed project would not likely adversely affect the green, loggerhead, hawksbill, Kemp's ridley, and leatherback sea turtles.

Giant Manta Ray
CEMVN has determined that the project is not likely to adversely affect rays. Justification for this determination is because all in-water construction work would be conducted using a drag line or excavator for strong & barge mounted rig for pilings which is not known to cause take of rays. Also, the area where construction would occur is an active beach that is regularly used recreationally. Lastly, this area is already supporting vessel traffic daily, so this effort would simply contribute to the regular disturbance that is already occurring. The USACE has determined that the proposed project would not likely adversely affect the giant manta ray.

Indirect Impacts
It is anticipated that the breakwaters would decrease shoreline erosion and could create habitat for the piping plover, rufa red knot, and other shorebirds.

5.7 WATERS OF THE UNITED STATES

Future Conditions with No-Action. Under the No-Action Alternative, the proposed deposition of fill into a total of approximately 18 acres of jurisdictional WOTUS would not occur. Under this scenario, there would likely be an increase in the acreage of WOTUS in the general Project Area as the unprotected shoreline of Grand Isle between the existing eastern and western breakwater fields is likely to continue to erode. This would result in conversion of beach habitat to 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).

Future Conditions with the Proposed Action. Under the Proposed Action Alternative, 18 acres of WOTUS water bottoms would be permanently impacted. The breakwaters would reduce wave energy, but they could also disrupt longshore sediment transport and water flow. The reduced wave energy would reduce erosion and promote the deposition of

sediment. In the FWP condition, less WOTUS acreage would be expected than in the FWOP condition because less beach habitat would be converted to open water.

5.8 SOILS AND WATER BOTTOMS

Future Conditions with No-Action. With the No-Action Alternative, there would be no direct or indirect impacts to water bottoms off the beach of Grand Isle. Current shoreline feeding zones for wading and waterfowl would become increasingly deeper as the beachfront recedes. Water bottom acreage would increase as beach erosion continues to progress.

Future Conditions with the Proposed Action. Under the Proposed Action Alternative, 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 up to 35 breakwaters, there would be approximately 18 acres of permanent impacts to water bottoms in WOTUS. Breakwater placement would initially destroy slow-moving and sessile benthic organisms where 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, aided by wave action shifting sand and organisms back into the impact zone.

5.9 CULTURAL RESOURCES

Future Conditions with No-Action. With the No-Action Alternative, Grand Isle would continue to be eroded by sea level transgression and hurricane and storm damage. While no cultural resources are located within the currently Proposed Action right-of-way, erosion progression of the island could potentially have an adverse effect on the cultural resources located within the Grand Isle vicinity, particularly those located on the island itself.

Future Conditions with the Proposed Action. No known cultural resources are located within the Proposed Action right-of-way. Previous cultural resources investigations and a review of historic records documenting prior disturbance caused by natural disturbance and human development demonstrate there are no intact deposits of unknown cultural resources within the Proposed Action right-of-way. Thus, the Proposed Action would have no adverse effect on cultural resources. Furthermore, the Proposed Action would likely provide protection against the continuous erosion of Grand Ise caused by sea level transgression and future hurricane and storm damage. By impeding erosion of Grand Isle, the Proposed Action would, in turn, protect cultural resources located within the vicinity of the island from rising sea levels and storm damage, particularly any cultural resources located on the island itself.

5.10 RECREATION

Future Conditions with No-Action. With the No-Action Alternative, recreational opportunities 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. Recreation resources along the southwestern shore would see a decline as wave and wind action from storms

would degrade the beaches which provide a natural barrier to the island and provide habitat to birds and wildlife in addition to the normal beachgoing recreational activities.

Future Conditions with the Proposed Action. Under the Proposed Action, there would be temporary adverse impacts to recreational resources while the breakwaters are being created. The recreational environment in and around the construction of the breakwaters would see an increased presence of construction equipment and noise. Water turbidity would see an increase, decreasing the fishing opportunities along the southwestern shoreline. Residents and tourists walking along the beach would have to temporarily find alternate routes. Once construction is complete, recreational opportunities would experience positive long-term impacts as the breakwaters create additional habitat for fish, increasing the fishing opportunities and tourism. The breakwaters would reduce beach erosion and continue to allow tourists and residents to use the beaches for recreational activities.

5.11 AESTHETIC (VISUAL) RESOURCES

Future Conditions with No-Action. With the No-Action Alternative, visual resources such as landform, vegetation, and viewsheds would most likely evolve over time from the natural processes, future land-use trends, and localized maintenance practices. Land deposits would continue to shift and erode due to unimpeded wind and wave action. The scenic qualities along the southwestern shore would see a decline as wind and wave action from storms would degrade the beaches which provide a natural barrier to the island and provide habitat to native vegetation and wildlife.

Future Condition with the Proposed Action. Under the Proposed Action, there would be both short-term and long-term impacts to aesthetics resources along the shoreline. During construction, there would be an increase in construction equipment and materials needed to create the breakwaters. These visual impacts are short-term, however, there would be long-term impacts to the viewshed as the breakwaters would become a permanent fixture of the view from the dunes into the gulf. The constructed breakwaters would mirror the existing breakwaters on the southeastern side of Grand Isle and would be consistent with the visual quality that currently exists. The placement of these breakwaters is necessary where erosion from wave action threatens the beach which contributes to the visual resources on the island.

5.12 SOCIOECONOMIC RESOURCES

Future Conditions with No-Action. Under the No-Action Alternative, business activity and employment in Grand Isle is likely to be impacted as conditions in Grand Isle worsen. Without the construction of breakwaters, there would be a loss of both habitat and land usage that would impact the main sources of economic growth in Grand Isle which include recreation, tourism, and fishing. All other socioeconomic factors would not be impacted, and trends should continue as previously predicted by Moody Analytics.

Future Conditions with the Proposed Action. Under the Proposed Action, there would be temporary positive impacts to employment during construction of the breakwaters, lasting as long as construction lasts. There would be additional positive long-term impacts to business

activity in the area, specifically impacting recreation, tourism, and fishing in the area due to the decrease in beach erosion, protecting both habitat and land usage in Grand Isle.

5.13 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. Once all construction activities associated with proposed work cease, air quality within the vicinity is expected to return to pre-construction conditions. The ambient air quality in Jefferson Parish would not change from current conditions, and the status of attainment for the parish would not be altered.

5.14 HYDROLOGY

Future Conditions with No-Action. With No-Action, significant shoreline erosion exceeding 200 feet was predicted immediately east of the existing western breakwaters. The shoreline retreat extended up to approximately 2.3 miles from the West Jetty, after which the shoreline gradually advanced seaward near the western end of the eastern breakwaters (around 3.7 miles from the West Jetty), where the greatest shoreline advancement occurred.

Future Conditions with the Proposed Action. With implementation of the Proposed Action, substantial sediment accretion was observed east of the existing western breakwaters, particularly in the westernmost portion of the modeled area (0.6 to 2.3 miles from the West Jetty). However, shoreline growth gradually decreased eastward, and localized shoreline retreat occurred near the western end of the eastern breakwaters—an area that previously experienced notable progradation under the without-breakwater condition. This pattern may indicate shoreline readjustment toward a more natural orientation after years of progradation influenced by the eastern breakwaters.

Although the model results for the with and without breakwater conditions showed opposite shoreline trends near the west end of the eastern breakwaters, both scenarios indicated that the shoreline beyond this point remained stable, with negligible differences between the two cases. This suggests that the proposed breakwaters would primarily affect local shoreline dynamics and are unlikely to influence sediment transport or morphology in the vicinity of the existing eastern breakwaters.

5.15 WATER QUALITY

Future Conditions with No-Action. Under the No-Action Alternative, there would be no potential for direct or indirect effects to water quality because construction of the Proposed Action would not occur. Turbidity, sedimentation, and other water quality indicators would be anticipated to remain at average seasonal levels.

Future Conditions with the Proposed Action. Under the Proposed Action, there would be temporary negative impacts to turbidity. These effects would return to preconstruction levels shortly following project completion. The impacts on sedimentation would be positive, restorative, and protective for the beach through the interruption of longshore sediment transport in the littoral zone between the breakwaters and the shoreline creating shallow areas until salient formations or tombolos are formed.

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) and apply for coverage under a General Permit, as appropriate, for review and approval by USACE. The construction contractor would then be required to apply for and obtain a Stormwater General Permit under the Louisiana Pollution Discharge Elimination System 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.

5.16 NOISE AND VIBRATION

Future Conditions with No-Action. There would be no direct or indirect impacts to noise and vibration as a result of the No-Action alternative. 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 vessels 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.

SECTION 6
Cumulative Impacts

The Council on Environmental Quality's (CEQ) regulations (40 CFR 1500-1508) implementing the procedural provisions of the 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 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 of Grand Isle. Implementation of the Proposed Action may result in temporary impacts to wildlife, threatened & endangered (T&E) species, aquatic resources, EFH, WOTUS, water quality, and recreational opportunities 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, 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 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.

SECTION 7
Hazardous, Toxic, and Radioactive Waste

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. ER 1165-2-132 identifies that HTRW policy is to avoid the use of project funds for HTRW removal and remediation activities. A Phase I Environmental Site Assessment (ESA), HTRW 21-05, dated February 12, 2026, was completed by CEMVN for the Project Area. A copy of the Phase 1 ESA will be maintained on file at the U.S. Army Corps of Engineers, New Orleans District Headquarters.

No HTRW was identified within or near the project site's footprint. Although two dry and plugged oil/gas wells, three petroleum product pipelines, six VSQG sites, and one TRI site were identified within one mile of the proposed project site, there was no evidence of any HTRW issues associated with those sites that would affect the breakwaters project. Based on the initial site assessments and the ESA, the probability of encountering HTRW for the proposed action is low.

SECTION 8
Coordination and Public Involvement

Preparation of this EA #608 and FONSI were coordinated with appropriate Congressional, Federal, State and local interests, as well as environmental groups and other interested parties. Compliance with these laws was accomplished upon a 16-day public and agency review of this EA.

SECTION 9
Compliance with Environmental Laws and Regulations

9.1 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 was accomplished following a 16-day public and agency review of the draft EA #608 and associated draft Finding of No Significant Impact. The draft EA was published for public review and comment February 12, 2026, through February 27, 2026. Comments from the public are addressed in Appendix D of this Final EA #608.

9.2 CLEAN AIR ACT OF 1970

The Clean Air Act sets goals and standards for the quality and purity of air. It requires the Environmental Protection Agency to set 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.

9.3 CLEAN WATER ACT OF 1975 – SECTION 401 AND SECTION 404

The CWA sets and maintains goals and standards for water quality and purity. Section 401 requires a Water Quality Certification (WQC) from the LDEQ that a proposed project does not violate established effluent limitations and water quality standards. CEMVN applied for a WQC and coordination was completed on March 18, 2026. LDEQ concluded the activity will not violate water quality standards as provided for in LAC 33:IX.Chapter 11. (Appendix A)

As required by Section 404(b)(1) of the CWA, an evaluation to assess the short- and long-term impacts associated with discharge of dredged and fill materials into waters of the United States resulting from this Project was initiated December 2, 2025. The 404(b)(1) evaluation was completed and signed on March 19, 2026. (Appendix A)

9.4 COASTAL ZONE MANAGEMENT ACT OF 1972

The Coastal Zone Management Act 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 LDCE. In a letter dated December 3, 2025, LDCE concurred with CEMVN’s Coastal Zone Consistency Determination. (Appendix B)

9.5 ENDANGERED SPECIES ACT OF 1973

The ESA is designed to protect and recover T&E species of fish, wildlife and plants. CEMVN initiated consultation August 14, 2025, with USFWS and identified several T&E species that are known to occur in the Project Area. T&E species that may occur are the eastern black rail (Laterallus jamaicensis ssp. jamaicensis), hawksbill sea turtle (Eretmochelys imbricata), Kemp's ridley sea turtle (Lepidochelys kempii), Atlantic loggerhead sea turtle (Caretta caretta), piping plover (Charadrius melodus), rufus red knot (Calidris canutus rufa), and West Indian manatee (Trichechus manatus). Because all construction is water based with no impacts to beach habitats, the USFWS reviewed the project for effects to Federal trust species under their jurisdiction and currently protected by the ESA of 1973 and found the project, as proposed, is "not likely to adversely effect" those species on December 15, 2025. (Appendix B)

An Expedited Informal Consultation under Section 7 of the Endangered Species Act was submitted to NMFS on October 14, 2025, and assigned the ECO number of SERO-2025-02841. The NMFS concurred "with the agency's (USACE) conclusions that the proposed action is not likely to adversely affect the NMFS ESA-listed species and/or designated critical habitat" in a letter dated January 30, 2026. (Appendix B)

9.6 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 (CAR) 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 #608 and a Final CAR was received on March 18, 2026.

CEMVN's responses to the USFWS recommendations in the Final CAR (Appendix B) are as follows:

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

1. The impacts to Essential Fish Habitat should be discussed with the NMFS to determine if the project complies with the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) (Magnuson-Stevens Act; P.L. 104-297, as amended) and its implementing regulations.

USACE Response: Concur. The CEMVN has coordinated with the NMFS. The NMFS completed EFH coordination requirements for the proposed action through the review and

comment period of EA #608, and determined the project complies with the MSFCMA and its implementing regulations.

2. West Indian manatees occasionally enter Louisiana coastal waters and streams during the warmer months (i.e., June through September). During in-water work in areas that potentially support manatees all personnel associated with the project should be instructed about the potential presence of manatees, manatee speed zones, and the need to avoid collisions with and cause injury to manatees. All personnel should be advised that there are civil and criminal penalties for harming, harassing, or killing manatees, which are protected under the Marine Mammal Protection Act of 1972, the Endangered Species act of 1973, and state law. Additionally, personnel should be instructed not to attempt to feed or otherwise interact with manatees, although passively taking pictures or video would be acceptable. For more detail on avoiding contact with manatees refer to the Endangered and Threatened Species section of this document, contact this office, and reference the *Protective Measures for West Indian Manatee in the below attachment.*

USACE Response: Concur. Manatee protection language is located in Appendix B and will be included in the construction Plans and Specifications.

3. If implementation of the proposed action has the potential to directly or indirectly affect the eastern black rail, red knot, piping plover or its critical habitat or the hawksbill sea turtle, Kemp's ridley sea turtle, or loggerhead sea turtle on land, beyond what was previously considered in the Service's August 14, 2025, IPaC Project code: 2025-0135497 and the December 15, 2025 not likely to adversely affect concurrence, then consultation with this office should be reinitiated.

USACE Response: Concur. The CEMVN worked closely with the Service on this project and coordinated regarding implementation of the Proposed Action. The project was reviewed for effects to Federal trust resources under USFWS jurisdiction and currently protected by the ESA Act of 1973. The project, as proposed, was determined not likely to adversely affect those resources.

4. Contact Kelly Shotts (727-824-5312) at the NMFS Regional office in St. Peterburg Office in St. Petersburg, Florida, for information concerning sea turtle species in the marine environment.

USACE Response: Concur. A request to initiate expedited informal consultation under ESA Section 7 was filed with NMFS on October 14, 2025, and assigned the ECO number of SERO-2025-02841. The NMFS concurred "with the agency's (USACE) conclusions that the proposed action is not likely to adversely affect the NMFS ESA-listed species and/or designated critical habitat" in a letter dated January 30, 2026.

5. The Service recommends that the Louisiana's Coastal Protection and Restoration Authority (CPRA) and the USACE contact the Service and the LDWF for additional consultation if: 1) the scope or location of the proposed project is changed significantly, 2) new information reveals that the action may affect listed species or designated critical habitat, 3) the action is modified in a manner that causes effects to listed species or designated critical habitat, or 4) 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 or finalized."

USACE Response: Concur. The CEMVN has and will continue to coordinate with the resource agencies, including the USFWS, and CPRA if the proposed project changes in scope or location; new information becomes available that affects listed species or their designated habitat; if the action is modified in ways that affect listed species; or if new species become listed or habitats are designated as critical habitat.

9.7 MAGNUSON-STEVENS FISHERIES CONSERVATION AND MANAGEMENT ACT

The Magnuson-Stevens Fisheries Conservation and Management Act (MSFCMA), as amended, Public Law 104-208, addresses the authorized responsibilities for the protection of 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 MSFCMA. In those findings, the CEMVN and NMFS agreed to complete EFH coordination requirements for federal civil works projects through the review and comment on NEPA documents prepared for those projects. On March 18, 2026, NMFS responded by email stating EFH consultation requirements of the MSFCMA have been fulfilled and they do not object to the proposed activity. (Appendix B)

9.8 NATIONAL HISTORIC PRESERVATION ACT OF 1966

Section 106 of the National Historic Preservation Act (NHPA) 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 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 November 3, 2025, SHPO concurred that the proposed breakwater and NLP construction would have no effect on historic properties. (Appendix B)

9.9 TRIBAL CONSULTATION

NEPA, Section 106 of the NHPA, Executive Order (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 offered 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, Alabama-Quassarte Tribal Town, Chitimacha Tribe of Louisiana, Choctaw Nation of Oklahoma, Coushatta Tribe of Louisiana, Jena Band of Choctaw Indians, Mississippi Band of Choctaw Indians, Muscogee (Creek) Nation, Seminole Nation of Oklahoma, Seminole Tribe of Florida, and Tunica-Biloxi Tribe of Louisiana. The Alabama-Quassarte Tribal Town concurred with the determination on October 13, 2025, and the Choctaw Nation of Oklahoma concurred with the determination on November 13, 2025; no other Tribal comments were received.

9.10 ENVIRONMENTAL COMMITMENTS

The following commitments are an integral part of the Proposed Action:

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.

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.

The construction contractor would be required to: (A) Prepare SWPPP for review and approval by CEMVN and apply for coverage under a General Permit as appropriate; (B) Obtain a Stormwater General Permit from the 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 Conservation and Energy.

The construction contractor would be required to comply with USFW and NMFS guidelines for protecting West Indian manatees, sea turtles, and bottlenose dolphins during construction of the proposed project.

SECTION 10
Conclusion

The Proposed Action, Alternative 2, involves the construction of up to 35 segmented stone breakwaters and up to 20 NLPs in shallow waters within 400 feet of the shoreline of Grand Isle, Louisiana. The breakwaters would be constructed at the current -4 ft NAVD 88 contour. With implementation of the Proposed Action, a total of approximately 18 acres of water bottoms would be permanently impacted. Impacts to Barrier Systems, Waters of the U.S., Soils and Water Bottoms, Aquatic Resources, Essential Fish Habitat, Beaches, Wildlife, Threatened and Endangered Species, Cultural Resources, Recreation Resources, Aesthetics, Socioeconomics, Air Quality, Water Quality, Noise Quality, Hydrology, and Sediment Dynamics will be insignificant.

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, resiliency would increase and damages from erosion would be reduced in the 16,000-foot gap between the west and east end offshore breakwaters.

SECTION 11
Prepared By

Environmental Assessment #608 and the associated Finding of No Significant Impact were prepared by Mr. Mario Price, Biologist, U.S. Army Corps of Engineers, New Orleans District; Regional Planning and Environment Division South, MVN-PDS-R; 7400 Leake Avenue; New Orleans, Louisiana 70118.

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SECTION 12
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SECTION 13
Acronyms and Abbreviations

CBRA	Coastal Barriers Resources Act
CEMVN	New Orleans District
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CPRAB	Coastal Protection and Restoration Authority Board of Louisiana
CWA	Clean Water Act
dB	Decibel
dBA	Weighted Decibel
DNL	Day-Night Average Sound Level
DOI MMS	Department of Interior Minerals Management Service
EA	Environmental Assessment
EFH	Essential Fish Habitat
e.g.	for example
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
ER	Engineer Regulation
ESA	Endangered Species Act
et al.	and others
FGDC	Federal Geographic Data Committee
FONSI	Finding of No Significant Impact
FR	Federal Register
FWOP	Future without Project
FWP	Future with Project
GFMC	Gulf Fishery Management Council
Gulf	Gulf of America
HTRW	Hazardous, Toxic, and Radioactive Waste
LDCE	Louisiana Department of Conservation and Energy

LDEQ	Louisiana Department of Environmental Quality
LDWF	Louisiana Department of Wildlife and Fisheries
MAFWA	Midwest Association of Fish and Wildlife Agencies
MBTA	Migratory Bird Treaty Act
MSL	Mean Sea Level
NAAQS	National Ambient Air Quality Standards
NHPA	National Historic Preservation Act
NAVD 88	North American Vertical Datum of 1988
NLP	Navigational Light Platform
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPL	National Priority List
NRCS	National Resources Conservation Service
NEPA	National Environmental Policy Act
NFS	Non-Federal Sponsor
NHPA	National Historic Preservation Act
ppb	Parts per Billion
ppm	Parts per Million
ROD	Record of Decision
RPEDS	Regional Planning Environment Division South
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SWPPP	Stormwater Pollution Prevention Plan
T&E	Threatened & Endangered
µg/m³	Micrograms per Cubic Meter
USACE	United States Army Corps of Engineers
USACE ER	USACE Engineer Regulations
USEPA	U.S. Environmental Protection Agency
USC	United States Code
USFWS	United States Fish and Wildlife Service
WAFWA	Western Association of Fish & Wildlife Agencies

WOTUS	Water of the United States
WRDA	Water Resources Development Act