DEPARTMENT OF THE ARMY
U.S. CORPS OF ENGINEERS, NEW ORLEANS DISTRICT
7400 LEAKE AVENUE
NEW ORLEANS, LOUISIANA 70118-3651

DRAFT FINDING OF NO SIGNIFICANT IMPACT (FONSI)

CALCASIEU RIVER AND PASS
CONSTRUCTION OF EROSION PROTECTION FEATURES CHANNEL-SIDE OF CONFINED DISPOSAL FACILITIES 7, 10, AND 11
CALCASIEU PARISH, LOUISIANA
EA #580

The U.S. Army Corps of Engineers, New Orleans District (USACE) has conducted a draft Environmental Assessment (EA) in accordance with the National Environmental Policy Act of 1969, as amended. The draft EA dated March 2021, for the Calcasieu River and Pass, Construction of Erosion Protection Features Channel-Side of Confined Disposal Facilities 7, 10, and 11 addresses the construction of the stone armoring structures for the confined disposal facilities (CDF) numbers 7, 10, and 11 in the Calcasieu River, Lake Charles, Calcasieu Parish, Louisiana.

The EA, incorporated herein by reference, evaluated stone armoring alternatives that would prevent wave erosion impacts to the CDFs in the study area. The EA evaluated the no action alternative and the Recommended Plan. The recommended plan includes:

- The construction of a rock dike at CDF-10 and either rock dike or bank stone paving at CDF-7 and CDF-11. These stone features would protect the CDFs from bank-line erosion due to ship wakes and wave energy.

- An approximately 2,900-foot long foreshore dike would be constructed on the channel-side of CDF-10 near mile 26 of the Calcasieu Ship Channel. The dike would be constructed to a maximum elevation of approximately +5.0 feet NAVD88, with a crown width of approximately 6 feet. Side-slopes on the channel-facing side of the dike would be 1-foot vertical on 3-feet horizontal (1V:3H), and slopes on the landward-facing side would be 1V:2H. The dike would be tied into the existing bank line on the upper and lower limits of the CDF. About 12 acres of shallow open water between the dike and existing boundary of the facility would be converted to uplands during subsequent channel or facility maintenance events.

- If a rock dike is constructed on the channel-side of CDF-7 and/or CDF-11, the dike would be constructed in the Calcasieu River; the placement of the structure would be dependent on the distance between the existing bank line and navigation thoroughfare, water depths within these boundaries, and the water bottom's existing slope extending out from the bank line. Approximately 5,900 feet of rock dike armoring would be constructed at CDF-7 near channel mile 30 and 4,200 feet of rock dike armoring would be constructed at CDF-11 near channel mile 26. The

rock dike armoring structures would be constructed to a maximum elevation of approximately +5.0 feet NAVD88, with a crown width of approximately 6 feet. Side-slopes on the channel-facing side of the rock dike would be 1-foot vertical on 3-foot horizontal (1V:3H), and slopes on the landward-facing side would be 1V:2H. The base width of the rock dike would be approximately 42 feet. The rock dike armoring structures would be tied into the existing bank line on the upper and lower limits of CDF-7 and CDF-11, respectively.

- If bank stone paving is constructed on the channel-side of CDF-7 and/or CDF-11, approximately 5,900 feet of bank stone paving would be constructed on the channel-side of CDF-7 near ship channel mile 30 and 4,200 feet of bank stone paving would be constructed on the channel-side of CDF-11 near ship channel mile 26. The bank line fronting these facilities would be graded to a slope of 1V:3H, and a minimum 3-foot thick layer of armor stone would be installed on top of the graded surface.

- The foreshore rock dike and/or bank stone paving features along the Calcasieu River boundaries of CDF-7, 10, and 11 would prevent wave erosion impacts to the disposal sites that are used for maintenance of the Federal navigation project, Calcasieu River and Pass, Louisiana. This area was historically used for placement of dredged material that was removed from the Calcasieu River navigation channel during maintenance dredging activities.

The potential effects of the recommended plan were evaluated and are summarized in Table 1 below.

Table 1: Summary of Potential Effects of the Recommended Plan

	Insignificant effects	Insignificant effects as a result of mitigation	Resource unaffected by action
Aquatic resources/wetlands	☒	☐	☐
Fish and wildlife habitat	☒	☐	☐
Threatened/Endangered species/critical habitat	☒	☐	☐
Cultural resources	☐	☐	☒
Recreation resources	☒	☐	☐
Air quality	☐	☐	☒
Hazardous, toxic & radioactive waste	☐	☐	☒
Hydrology and water quality	☒	☐	☐
Navigation	☒	☐	☐
Tribal trust resources	☐	☐	☒

All practicable and appropriate means to avoid or minimize adverse environmental effects were analyzed and incorporated into the recommended plan. Best management practices will be implemented to minimize impacts.

No compensatory mitigation is required as part of the recommended plan.

Pursuant to section 7 of the Endangered Species Act of 1973, as amended, the U.S. Fish and Wildlife Service (FWS), on August 3, 2020, concurred with USACE's determination that the recommended plan will not likely adversely affect the continued existence of the following federally listed species: West Indian manatee, loggerhead sea turtle, green sea turtle, Kemp's Ridley sea turtle, leatherback sea turtle, and hawksbill sea turtle. All terms and conditions, conservation measures, and reasonable and prudent alternatives and measures resulting from this consultation shall be implemented in order to minimize take of endangered species and avoid jeopardizing the species.

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, the U.S. Army Corps of Engineers determined that the recommended plan has no potential to cause adverse effects on historic properties. In a letter dated October 29, 2020, the Louisiana State Historic Preservation Officer (SHPO) concurred with the determination of no effect on historic properties.

Pursuant to the Clean Water Act of 1972, as amended, the discharge of dredged or fill material associated with the recommended plan has been found to be compliant with section 404(b)(1) Guidelines (40 CFR 230). The Section 404(b)(1) evaluation was completed on *** **, 2021.

A water quality certification pursuant to section 401 of the Clean Water Act was obtained from the Louisiana Department of Environmental Quality on *** ** 2021. All conditions of the water quality certification shall be implemented to minimize adverse impacts to water quality.

The USFWS will review the proposed action in accordance with the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 USC 661 et seq.) and provide a Fish and Wildlife Coordination Act Report with project specific recommendations.

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

1. If the proposed action is changed significantly or is not implemented within one year MVN 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 (USFWS memo dated August 3, 2020).

2. If any unrecorded cultural resources are determined to exist within the proposed project boundaries no work will proceed in the area containing these cultural

resources until an MVN archeologist has been notified and final coordination with the SHPO and the Tribal Historic Preservation Officer has been completed.

The proposed action has been coordinated with appropriate Federal, state, and local agencies and businesses; organizations; and individuals through distribution of EA #580 for their review and comment. EA #580 is attached hereto and made a part of this FONSI.

This office has assessed the potential environmental impacts of the proposed action. Based on this assessment, a review of the comments made on EA #580, and the implementation of the environmental design commitments listed above, a determination has been made that the proposed action would have no significant impact on the human environment. Therefore, an Environmental Impact Statement will not be prepared.

DRAFT

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Date

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STEPHEN F. MURPHY
COL., EN
Commanding

DRAFT ENVIRONMENTAL ASSESSMENT

CALCASIEU RIVER AND PASS
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LAKE CHARLES, CALCASIEU PARISH, LOUISIANA
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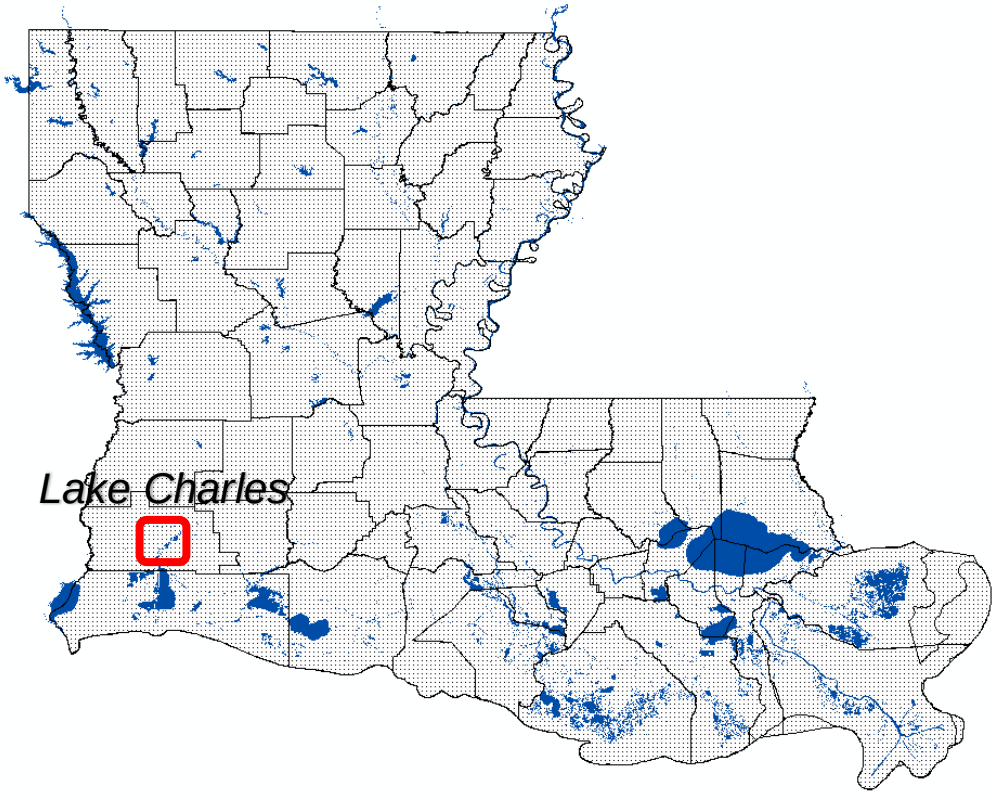

U.S. Army Corps of Engineers
Mississippi Valley Division
Regional Planning and Environment Division South

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CALCASIEU RIVER AND PASS
CONSTRUCTION OF EROSION PROTECTION FEATURES CHANNEL-SIDE OF CONFINED DISPOSAL FACILITIES 7, 10, AND 11
LAKE CHARLES, CALCASIEU PARISH, LOUISIANA

DRAFT EA #580

1.0 INTRODUCTION

The U.S. Army Corps of Engineers (USACE), Mississippi River Valley Division, Regional Planning and Environment Division South, has prepared this Environmental Assessment (EA) for New Orleans District (MVN) to evaluate the potential impacts associated with the construction of stone options of foreshore rock dikes and/or bank paving features along the channel-side of Calcasieu River confined disposal facilities (CDF) 7, 10, and 11 to prevent wave erosion and ship-wake impacts to the disposal sites. The proposed project is located near Lake Charles, Louisiana, in Calcasieu Parish (Figure 1) and would consist of the construction of rock dike and/or bank paving features in the Calcasieu River, located near Calcasieu Ship Channel miles 30 and 26 (Figures 2 & 3).

This draft EA has been prepared in accordance with the National Environmental Policy Act of 1969 and the Council on Environmental Quality's Regulations (40 CFR 1500-1508), as reflected in the USACE Engineering Regulation ER 200-2-2. This draft EA provides sufficient information on the potential adverse and beneficial environmental effects of the proposed action to allow the District Commander, USACE, MVN, 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

MVN proposes to construct stone armoring features along the channel-side of confined disposal facilities (CDF) 7, 10, and 11. The features would consist of a rock dike at CDF-10 and either rock dike or bank stone paving at CDF-7 and CDF-11. These stone features would protect the CDFs from bank line erosion due to ship wakes and wave energy.

An approximately 2,900-foot long foreshore rock dike would be constructed 200 feet from the existing bank line of CDF-10, near mile 26 of the Calcasieu Ship Channel. The dike would be constructed to a maximum elevation of approximately +5.0 feet North American Vertical Datum of 1988 (NAVD 88), with a crown width of approximately 6 feet. Side-slopes on the channel-facing side of the dike would be 1-foot vertical on 3-foot horizontal (1V:3H), and slopes on the landward-facing side would be 1V:2H (Figure 4). The dike

would transition to bank paving where it ties into the upper and lower limits of the CDF. About 12 acres of shallow open water between the dike and existing boundary of the facility would be converted to uplands during subsequent channel or facility maintenance events.

If a rock dike is constructed on the channel-side of CDF-7 and/or CDF-11, the placement of the structure would be dependent on the distance between the existing bank line and navigation thoroughfare, water depths within these boundaries, and the water bottom's existing slope extending out from the bank line. Approximately 5,900 feet of rock dike armoring would be constructed at CDF-7 near channel mile 30 and 4,200 feet of rock dike armoring would be constructed at CDF-11 near channel mile 26. The rock dike armoring structures would be constructed to a maximum elevation of approximately +5.0 feet NAVD 88, with a crown width of approximately 6 feet. Side-slopes on the channel-facing side of the rock dike would be 1-foot vertical on 3-foot horizontal (1V:3H), and slopes on the landward-facing side would be 1V:2H. Depending on water depths and slopes within the construction area, the base width of the rock dike would be approximately 42 feet. The rock dike armoring structures would be tied into the existing bank line on the upper and lower limits of CDF-7 and CDF-11, respectively.

If bank stone paving is constructed on the channel-side of CDF-7 and/or CDF-11, approximately 5,900 feet of bank stone paving would be constructed on the channel-side of CDF-7 near ship channel mile 30; and approximately 4,200 feet of bank stone paving would be constructed on the channel-side of CDF-11 near ship channel mile 26. The bank line fronting these facilities would be graded to a slope of 1V:3H, and a minimum 3-foot thick layer of armor stone would be installed on top of the graded surface (Figure 5).

The foreshore rock dike and/or bank paving features along the Calcasieu River boundaries of CDF-7, 10, and 11 would prevent wave erosion impacts to the disposal sites that are used for maintenance of the Federal navigation project, Calcasieu River and Pass, Louisiana. This area was historically used for placement of dredged material removed from the Calcasieu River navigation channel during maintenance dredging activities.

Flotation channels would be constructed parallel to some of the rock dike and bank paving construction sites. Flotation access channels would be excavated to a maximum depth of about -7.0 feet NAVD 88 and a maximum bottom width of about 80 feet. The flotation channel backfill material would be temporarily stockpiled between the channel and existing bank line. The stockpiled material would later be used as backfill for the flotation channels or degraded within the stockpiled areas.

The construction of foreshore dikes and bank stone paving would be performed by barge-mounted cranes equipped with buckets or draglines. Excavation of flotation access channels would be performed by a barge-mounted mechanical dredge. Periodic

maintenance may be required to replace, repair, or reposition stone that may shift or become dislodged over time. Approximately 106,000 tons of stone would be placed along the bank lines of CDF-7, 48,000 tons of stone would be placed at CDF-10, and 71,000 tons would be placed at CDF-11.

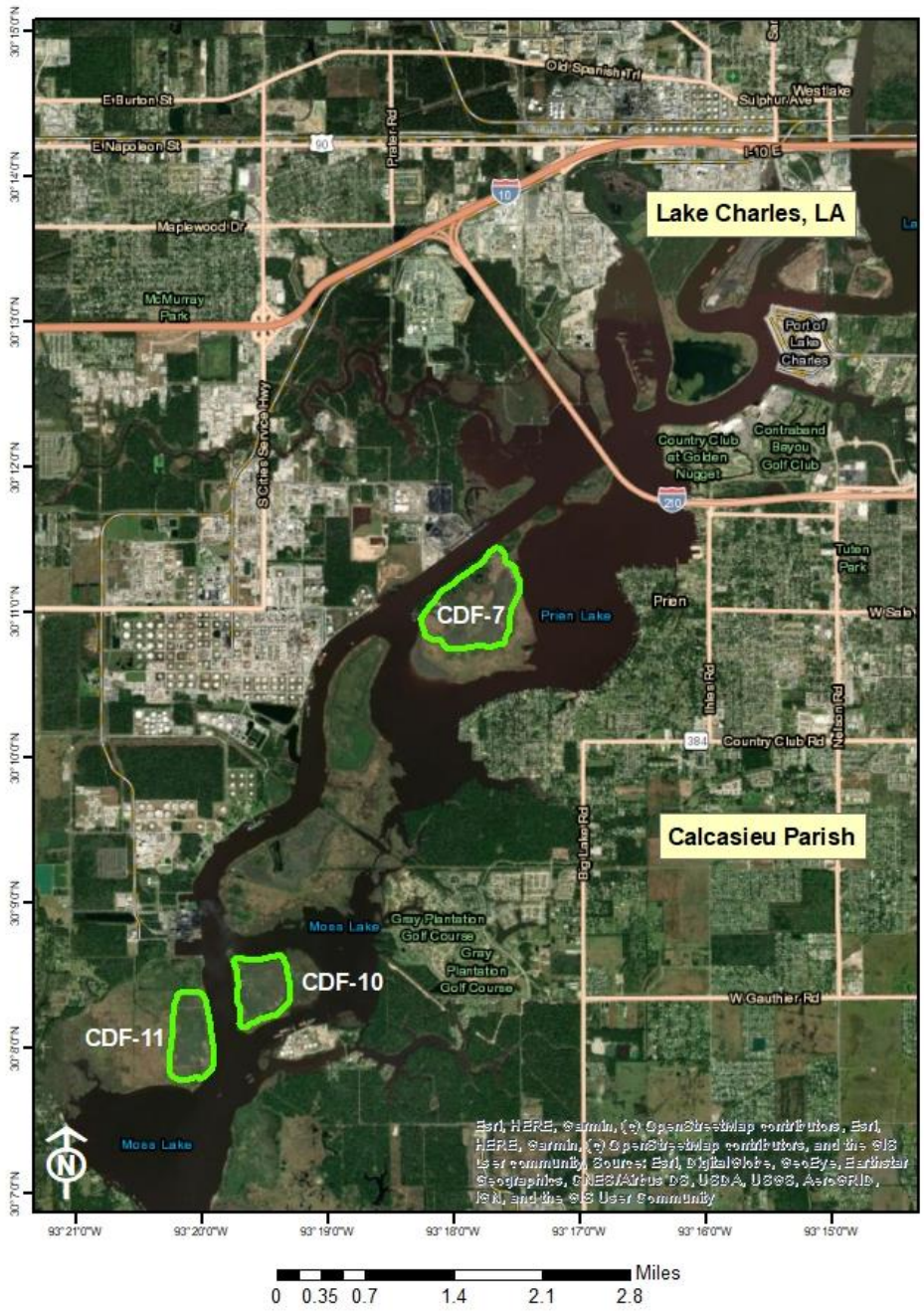

Figure 1. Project location for CDF-7, 10, & 11

Figure 2. Bank stone paving location for CDF-7

Figure 3. Rock dike location for CDF-10 and bank stone paving or rock dike location for CDF-11

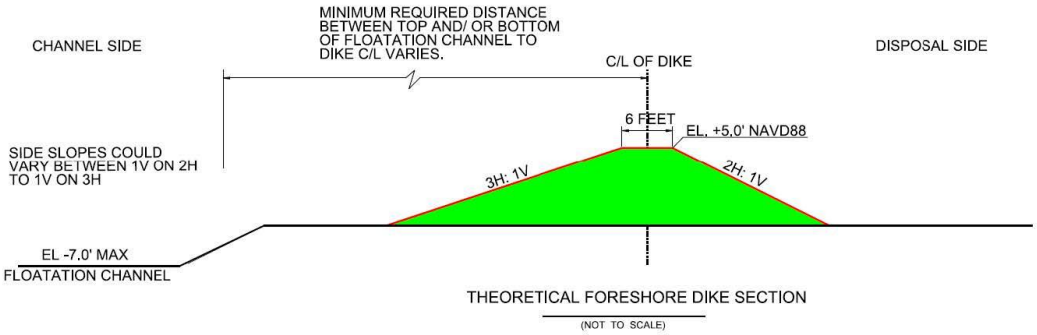

Figure 4. Diagram of the rock dike armoring structure

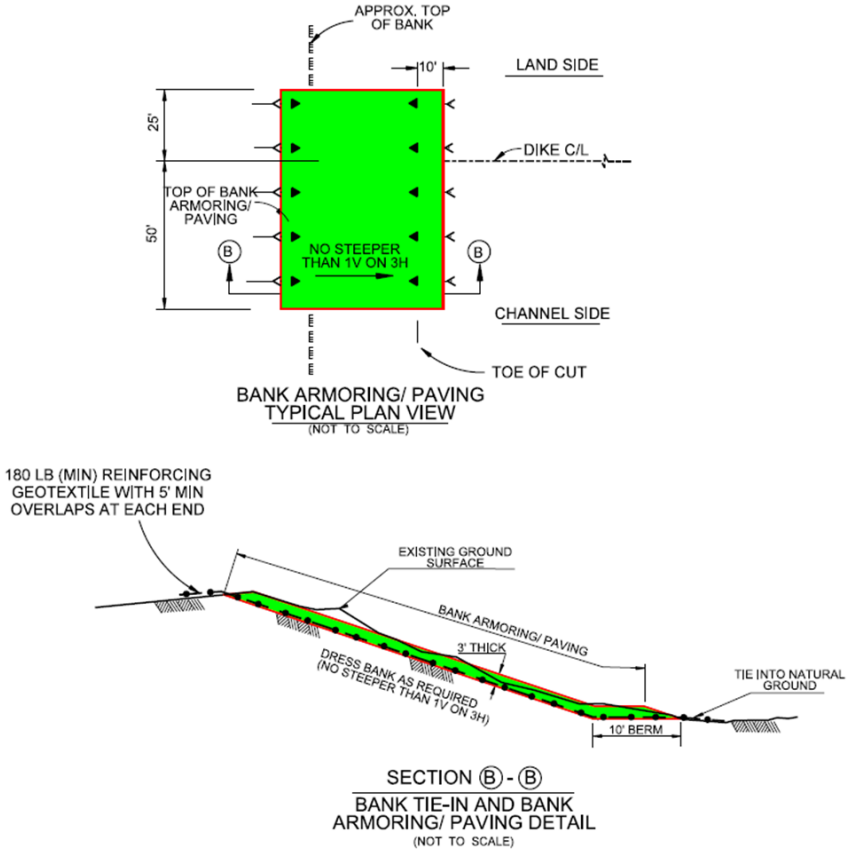

Figure 5. Drawings depicting the proposed bank stone paving

1.2 Purpose and Need for the Proposed Action

The lands fronting the channel-side of CDFs 7, 10, and 11 have slowly eroded through the years and little to no buffer exists between the Calcasieu River and the earthen containment dikes of these facilities. Stone protection features would restore this buffer and reduce the likelihood of an uncontrolled release of dredged material back into the channel due to dike failure. Additionally, the void space between the proposed foreshore dike and CDF-10 would be reclaimed for the disposal of dredged-material. Erosion protection and increased accommodation space for dredged material would extend the useful life of these CDFs for future maintenance of the navigation channel.

1.3 Authority

The proposed action was authorized by the Rivers and Harbors Act of July 24, 1946, House Document 190, 79th Congress, 2nd Session and prior Rivers and Harbors Acts. These authorities provide for a channel, 35 feet deep and 250 feet wide which extends from the wharves of the Lake Charles Harbor and Terminal District (including the loop around Clooney Island) to the Gulf of Mexico via Calcasieu Lake and through Calcasieu Pass. Additionally, a channel 35-37 feet deep and 250 feet wide between the jetties and the approach channel 37 feet deep by 400 feet wide seaward to the 37-foot contour of the Gulf of Mexico floor is further authorized.

The Rivers and Harbors Act of July 14, 1960, House Document 436, 86th Congress, 2nd Session, provides for an approach channel having a depth of 42 feet below Mean Low Gulf (MLG) level over a bottom width of 800 feet from the Gulf of Mexico to the jettied channel; a channel 40 feet deep from the jettied end and shoreline over a bottom width of 400 feet; and a channel 40 feet deep over a bottom width of 400 feet from the shoreline at River Mile 0.0 to the wharves of the Port of Lake Charles at Mile 34.1. Additionally, this act provided for enlargement of the existing turning basin at Mile 29.6 to a depth of 40 feet; and a mooring basin at about Mile 3.0 having a width of 350 feet, a length of 2,000 feet, and a depth of 40 feet; extension of the ship channel bottom width of 250 feet below MLG over a bottom width of 250 feet from the wharves of the Port of Lake Charles, Mile 34.1 to the vicinity of the bridge on U.S. Highway 90 at Mile 36.0, and a turning basin of the same depth at the upper end having a width of 750 feet and a length 1,000 feet; and maintenance of the existing channel 12 feet deep by 200 feet wide from the ship channel to Cameron, Louisiana, via the old channel of the Calcasieu River.

1.4 Prior Reports

A Final EIS for the Continued Operation and Maintenance of Calcasieu River and Pass (Including Salt-Water Barrier); Coon Island; Devil's Elbow; Calcasieu River Basin, Louisiana, was prepared by MVN in 1976, with a Statement of Findings (SOF) signed in March 1977. A final Dredged Material Management Plan (DMMP) and Supplemental EIS (SEIS), dated November 22, 2010, for the Calcasieu River and Pass, Louisiana project

(Calcasieu Ship Channel) provides documentation in support of a management plan for the placement of material dredged during the maintenance and operation of the Calcasieu Ship Channel and berthing areas for a minimum 20-year period. The Record of Decision (ROD) for the SEIS was signed on December 16, 2010. The DMMP/SEIS has re-defined the Calcasieu River and Pass, Louisiana project's dredged disposal options.

Additional related environmental reports for Federal actions near the proposed project area include the following EAs: "Lake Charles Ship Channel, Cameron and Calcasieu Parishes, Louisiana, Marsh Creation," with the FONSI signed on January 29,1992; "Calcasieu Ship Channel Bayou Black Remediation," with the FONSI signed on January 24, 1996; "East Fork, Calcasieu Pass – Assumption of Maintenance," with the FONSI signed on October 12, 1999; "Sabine Refuge Marsh Creation, Cameron Parish," with the FONSI signed on December 28, 2000; "Calcasieu River and Pass, Louisiana, Turner Bay Disposal Area," with the FONSI signed on March 6, 2001; "Calcasieu River and Pass, Louisiana, Bank Stabilization and Dike Protection of Confined Disposal Facilities, Cameron Parish, Louisiana," with the FONSI signed on December 14, 2001; "Sabine Refuge O&M Beneficial Use Marsh Creation Disposal Area," with the FONSI signed on August 15, 2006; "Calcasieu River and Pass, Foreshore Rock Dikes and Bank Armoring, Cameron Parish, Louisiana," with the FONSI signed on August 19, 2009; "Calcasieu River and Pass, Louisiana, Placement of Dredged Material in Calcasieu Lake", with the FONSI signed on June 20, 2013; "Calcasieu River and Pass, Rock Dike Construction Project, Calcasieu Lake, East of Hackberry, Cameron Parish, Louisiana", with the FONSI signed on September 28, 2018; and "Calcasieu River and Pass, Rock Dike Construction Project, Lake Side of Confined Disposal Facilities Number 17 and 19, Calcasieu Lake, East of Hackberry, Cameron Parish, Louisiana", with the FONSI signed August 27, 2019.

1.5 Public Concerns

The citizens of Calcasieu Parish, and Louisiana in general, are concerned about the loss of wetlands in the Calcasieu River Basin (USACE 2010). Since the 1970s coastal wetlands in Louisiana are being lost to subsidence and erosion at a rate of approximately 25,200 acres per year (Barras et al. 2003). Wetlands loss affects wildlife and fisheries as well as the ability of populated areas, such as Lake Charles and Calcasieu Parish, to withstand hurricane and tropical storm surges. The Calcasieu River and Pass, Louisiana project is an important economic link for the Port of Lake Charles and regional industries to the Gulf of Mexico. Port facilities are located along the Calcasieu River and Pass, Louisiana navigation channel, and Lake Charles docks are located approximately 32 miles inland from the Gulf of Mexico. Commercial navigation in the navigational channel, especially deep draft navigation, relies on the consistent depth authorized for the project. The lack of approved disposal sites and other factors contribute to stretches of the navigation channel being less than the desired project depth and width. A depth-deficient navigation channel forces river pilots to place safety restrictions on large vessels, such as one-way traffic, which causes delays and increases costs at the Port of Lake Charles.

2.0 ALTERNATIVES TO THE PROPOSED ACTION

One alternative to the proposed action was considered. This alternative was No-action.

2.1 No Action – Future without Project Condition

In the future without project condition (no action), the proposed action would not be constructed. Future MVN dredging operations in the inland reach of the Calcasieu River and Pass, Louisiana project would continue to utilize CDF-7, 10, and 11; however, without armoring the CDF's existing earthen retention dikes, they would be subject to severe wave-induced erosion and ship-wake effects from the Calcasieu River. In the absence of the shoreline protection afforded by the proposed rock dike and/or bank paving, erosion would continue, future unplanned releases of the dredged material from the CDFs would occur, and the useful life of these disposal facilities would be shortened. Water quality and other resources of the Calcasieu River would potentially be impacted by increased turbidity due to releases of the dredged material.

3.0 AFFECTED ENVIRONMENT

3.1 General Description

3.1.1 Environmental Setting

The proposed project area is in southwestern Louisiana within the Calcasieu River Basin in Calcasieu Parish, specifically by the Calcasieu River and Pass, Louisiana project navigation channel and Calcasieu Lake - both of which occupy portions of Calcasieu and Cameron parishes. The Calcasieu River and Pass, Louisiana project provides deep draft navigation for ships to enter the Port of Lake Charles. The proposed dike armoring project areas are located along the Calcasieu River near Calcasieu Ship Channel miles 26 and 30 of the navigation channel. The project area is located in the 7th Congressional District.

3.1.2 Description of the Watershed

The Calcasieu River Basin is a shallow wetland/aquatic system. The Calcasieu River provides freshwater input at the north end in a generally north to south circulation pattern through Calcasieu Lake. Calcasieu Lake is considered a partially mixed estuary in which tidal inundation creates a salt wedge in the upper estuary, forcing a mixing zone with the upper freshwater discharge into the system. Calcasieu Pass permits tidal exchange with the Gulf of Mexico. Water level fluctuations are the result of Calcasieu River discharge, tides, and winds. Tides are a major factor affecting the water movement in the basin with mean ranges of 1.7 feet at Calcasieu Pass and 0.7 feet at Lake Charles.

The Calcasieu River drains approximately 3,775 square miles and has an overall mainstream length of 191 miles. The character of the river changes from a small, fast

stream at its headwaters near Slagle, Louisiana to a broad sluggish estuary extending from the Lake Charles area to the Gulf of Mexico. Historically, the natural channel of the Calcasieu River ran through the central part of Calcasieu Lake and exited through the naturally twisting lower Calcasieu River. These flows deposited material into the adjacent wetlands and created a bar at the mouth of Calcasieu Pass which controlled intrusion of saltwater into the basin. This natural process provided a naturally degrading, yet sustainable marsh habitat that thrived despite natural subsidence and sea level rise common in Louisiana coastal marshes.

Beginning in the late 1800's and continuing into the mid-1900's, navigational improvements in the ship channel resulted in significant modifications to natural hydrologic patterns in the basin. These alterations have resulted in the disruption of the natural hydrologic and sedimentation processes which contributed to wetland building and maintenance. At the same time, subsidence and sea level rise have resulted in an average water level rise of 0.25 inches per year (USGS 2007). The present river circulation largely bypasses Calcasieu Lake and causes the river to drop much of its sediment load in the ship channel rather than in the lake and adjacent wetlands. Sedimentation of the ship channel is primarily the result of bank erosion and sloughing of bank sediments into the channel.

The deeper and wider channel in the Calcasieu River permits saltwater to travel farther north in the ship channel and affects a larger wetland area. As a result, a saltwater barrier was constructed north of the Calcasieu River, above Lake Charles, to prevent further movement of the saltwater wedge upstream. The barrier divides the river into an upstream freshwater system and a downstream estuarine system. The natural river channel, below the barrier and above the Gulf Intracoastal Waterway (GIWW), has been widened, deepened, and in some locations, replaced by a new channel (the Calcasieu River and Pass, Louisiana project navigation channel). The new channel was dredged for navigational purposes. The extensive modifications have resulted in a complex system of interlaced natural and artificial channels, loops and lakes.

An estimated total of 116,791 acres of wetlands in the Calcasieu-Sabine River Basin have been converted to open water since 1932 (USGS 2007). Marshes adjacent to the Calcasieu River and Pass, Louisiana project and Calcasieu Lake are experiencing severe erosion caused by the combination of several factors including recent hurricanes, geological subsidence, sea level rise, wave action, and a combination of man-made changes. Hydrological modifications caused by navigation improvements—most notably the Calcasieu Ship Channel and the GIWW—coupled with an average rate of subsidence of 0.69 inches per year (1-2 feet per century), have had significant impacts on wetland and aquatic habitats in the basin. There has been an inland migration of marsh zones in the basin which is causing increasing acreages of salt and brackish marshes and is accompanied by the loss of intermediate and freshwater marshes. Areas in coastal southwest Louisiana have experienced changes in vegetation and an overall shift to species adapted to saline conditions. This shift in biota is due to the increased salinity

that is caused by the creation and maintenance of navigation channels, canals, and associated spoil banks which impeded the north-south flow of freshwater over the marsh (USFWS 2007).

Habitats present in the vicinity of the proposed project include shallow open water and scrub-shrub vegetation (associated with upland CDFs) (Figure 6).

Figure 6. Typical scrub-shrub habitat associated with upland CDFs

3.1.3 Climate

The area climate is humid, subtropical with a strong maritime character. Warm, moist southeasterly winds from the Gulf of Mexico prevail throughout most of the year. Periodically, cool, dry fronts dominated by northeast high-pressure systems will move through the region. The influx of cold air occurs less frequently in autumn and only rarely in summer. Tropical storms and hurricanes are likely to affect the area 3 out of every 10 years, causing severe storm damage approximately once every 2 or 3 decades. The majority of these occur between early June and late November. The largest recent hurricanes were Katrina and Rita in 2005 which caused significant damage in the project area. Hurricanes Gustav and Ike in 2008, Isaac in 2012, Harvey in 2016, and Laura and Delta in 2020 caused additional damage in the area. Summer thunderstorms are common, and tornadoes strike the area occasionally. Average annual temperature in the area is 67 °F, with mean monthly temperatures ranging from 82 °F in August to 52 °F in

January. Average annual precipitation is 57.0 inches and varies from a monthly average of 7.5 inches in July to 3.5 inches in October.

3.1.4 Geology

Surface sediments within the project site and the surrounding area are largely comprised of river alluvium deposited by the Calcasieu River and Lake. Artificial levees composed of dredged material and riprap are the main significant topographic features within the project area. The surface, riverine, and lacustrine deposits are underlain by approximately 34,000 feet of sediment and sedimentary rock that consist almost entirely of sandstone, siltstone, and claystone. As a result of natural erosion and sedimentation processes, these sediments record the outward progression of the Gulf Coastal Plain over time.

The project area is a deltaic-marine environment. The current morphology of the basin is primarily the result of deterioration of abandoned delta complexes through wave erosion and subsidence. Abandoned deltaic environments have generally received little attention in the past. However, recent concern for coastal land loss in Louisiana has generated considerable interest in these environments and has resulted in the formulation of a model (the Penland and Boyd model) that provides an interpretation for some of the more distinctive features observed in these areas.

In the Penland and Boyd model, deltaic-marine environments form repeatedly over time in cyclic patterns. The model begins with the formation of delta lobes by sediment deposition from a river and its distributaries. Over time the course of the river changes, resulting in abandonment of the delta lobe. The abandoned lobe is rapidly destroyed by erosion and/or subsidence; scattered sediments from the lobe accumulate offshore to form barrier islands. Wave erosion gradually destroys the barrier islands, leaving shallow shoals in their place. Eventually the river resumes its previous course, resulting in the rebuilding of the delta lobe and the beginning of a new cycle.

Deltaic-marine environments are transitional environments, combining the morphologic features of fluvial and deltaic environments with those of coastal settings. A wide variety of features may be found in deltaic-marine environments, depending in part upon the local climate and geologic setting. These include distributaries; interdistributary marshes; cheniers; bays, lakes, and sounds; beaches and barrier islands; and reefs.

3.2 Relevant Resources

This section contains a description of relevant resources that could be impacted by the project. The important resources described in this section 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 general public. Table 1 provides summary information of the institutional, technical, and public importance of these resources.

A wide selection of resources was initially considered and determined not to be affected by the proposed project. Socioeconomic resources, including land use, aesthetics, population, transportation, oil and gas, environmental justice, environmental health and safety, community cohesion, desirable community growth, tax revenues, property values, public facilities and services, business activity and employment, and displacement of people, would not be affected by the proposed project. Furthermore, no prime or unique farmlands, as defined and protected by the Farmland Protection Policy Act, would be affected by the proposed project. Additionally, the objectives of Executive Order (EO) 11988 (Floodplain Management) were considered; however, CEMVN has determined that floodplain impacts, if any from the proposed action, would not affect the project area. Therefore, these resources will not be discussed further.

Table 1: Relevant Resources

Resource	Institutionally Important	Technically Important	Publicly Important
Wetlands	Clean Water Act of 1977, as amended; Executive Order 11990 of 1977, Protection of Wetlands; Coastal Zone Management Act of 1972, as amended; and the Estuary Protection Act of 1968., EO 11988, and Fish and Wildlife Coordination Act.	They provide necessary habitat for various species of plants, fish, and wildlife; they serve as ground water recharge areas; they provide storage areas for storm and flood waters; they serve as natural water filtration areas; they provide protection from wave action, erosion, and storm damage; and they provide various consumptive and non-consumptive recreational opportunities.	The high value the public places on the functions and values that wetlands provide. Environmental organizations and the public support the preservation of marshes.
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.
Essential Fish Habitat (EFH)	Magnuson-Stevens Fishery Conservation and Management Act of 1996, Public Law 104-297.	Federal and state agencies recognize the value of EFH. The Act states, EFH is “those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity."	Public places a high value on seafood and the recreational and commercial opportunities EFH provides.
Scrub-shrub Uplands	Food Security Act of 1985, as amended; the Farmland Protection Policy Act of 1981; the Fish and Wildlife Coordination act of 1958, as amended.	The habitat provided for both open and forest-dwelling wildlife, and the provision or potential provision of forest products and human and livestock food products.	The high value the public places on their present value or potential for future economic value.

Resource	Institutionally Important	Technically Important	Publicly Important
Wildlife	Fish and Wildlife Coordination Act of 1958, as amended and the Migratory Bird Treaty Act of 1918.	They are a critical element of many valuable aquatic and terrestrial habitats; they are an indicator of the health of various aquatic and terrestrial habitats; and many species are important commercial resources.	The high priority that the public places on their esthetic, recreational, and commercial value.
Threatened and Endangered Species	The Endangered Species Act of 1973, as amended; the Marine Mammal Protection Act of 1972; and the Bald Eagle Protection Act of 1940.	USACE, USFWS, NMFS, NRCS, USEPA, LDWF, and LADNR cooperate to protect these species. The status of such species provides an indication of the overall health of an ecosystem.	The public supports the preservation of rare or declining species and their habitats.
Cultural Resources	National Historic Preservation Act of 1966, as amended; the Native American Graves Protection and Repatriation Act of 1990; and the Archeological Resources Protection Act of 1979.	State and Federal agencies document and protect sites. Their association or linkage to past events, to historically important persons, and to design and construction values; and for their ability to yield important information about prehistory and history.	Preservation groups and private individuals support protection and enhancement of historical resources.
Recreation Resources	Federal Water Project Recreation Act of 1965, as amended and Land and Water Conservation Fund Act of 1965, as amended.	Provide high economic value to local, state, and national economies.	The 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.
Air Quality	Clean Air Act of 1963 and 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.
Hydrology and Water Quality	Clean Water Act of 1977, Fish and Wildlife Coordination Act, Coastal Zone Mgt Act of 1972, and La State & Local Coastal Resources Act of 1978.	USACE, USFWS, NMFS, NRCS, USEPA, and LADNR and wildlife/fishery 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.
Navigation	Rivers and Harbors Act of 1899 and River and Harbor Flood Control Act of 1970 (PL 91-611).	The Corps provides safe, reliable, efficient, and environmentally sustainable waterborne transportation systems (channels, harbors, and waterways) for movement of commerce, national security needs and recreation.	Navigation concerns affect area economy and are of significant interest to community.

3.2.1 Wetlands

Existing Conditions

The Calcasieu-Sabine River Basin contains approximately 312,500 acres of wetlands, consisting of 32,800 acres of fresh marsh, 112,000 acres of intermediate marsh, 158,200

acres of brackish marsh, and 9,500 acres of saline marsh. An estimated total of 116,791 acres of wetlands in the Calcasieu-Sabine River Basin have been converted to open water since 1932 (USGS 2007). The basin is projected to lose an additional 50,000 acres by 2050 without restoration (LDNR 1998). Subsidence and sea level rise are natural processes that contribute to wetland deterioration and loss. Under pristine conditions, natural marsh building and maintenance processes are effective in maintaining coastal marshes, despite subsidence and sea level rise. However, human alterations have disrupted the hydrologic processes which contributed to wetland building and maintenance. These issues, combined with subsidence and sea level rise, may result in a water level rise of 1.4 feet to 2.7 feet over the next 50 years (Coastal Protection and Restoration Authority 2017).

An emergent estuarine marsh is composed primarily of vegetation that is rooted in seasonally or permanently flooded soils and retains most of its vegetative portion of the plant above water. These marshes are the primary form of wetland within the project vicinity. Minimal amounts of wetland exist in the Calcasieu River within the project area (Figure 7). Descriptively, the marshes within tidally influenced portions of the Calcasieu River and Calcasieu Lake are dominated by smooth cordgrass (*Spartina alterniflora*), due to frequent flooding and high salinity. Within the interior marshes, saltmeadow cordgrass (*Spartina patens*) and saltgrass (*Distichlis spicata*) are the dominant species. Additional plant species include hogcane (*Spartina cynosuroides*), Roseau cane (*Phragmites australis*), black rush (*Juncus roemarianus*), and leafy three-square (*Scirpus robustus*). The marshes provide nursery habitat for estuarine larval and juvenile fish, crab, and shrimp species. Additionally, numerous estuarine-dependent fish and shellfish, migratory waterfowl, wildlife, and several species of wading, diving, and shore birds are commonly found in the project setting.

A report by the USACE Engineering Research and Development Center Water Station (Phase 2 Study) compiled historical survey data from 1972-1998 to determine erosion rates along the banks of the Calcasieu Ship Channel (USACE 2005). The study found that little erosion occurred above mile 23 on the west bank and mile 24 on the east bank.

3.2.2 Aquatic Resources /Fisheries

Existing Conditions

The project area contains some shallow open water bottoms with water depths less than 2 feet (Figure 7). The river bottom in this area is composed of firm silty, sandy clay. Common commercial/recreational fish species found in or near the project area include red drum (*Sciaenops ocellatus*), spotted sea trout (*Cynoscion nebulosus*), sand seatrout (*Cynoscion arenarius*), striped mullet (*Mugil cephalus*), Gulf menhaden (*Brevoortia patronus*), Atlantic croaker (*Micropogonias undulatus*), southern flounder (*Paralichthys lethostigma*), and spot (*Leiostomus xanthurus*).

Commercially important shellfish found in the area are also mainly estuarine and marine, and include blue crab (*Callinectes sapidus*), brown shrimp (*Farfantepenaeus aztecus*), pink shrimp (*Farfantepenaeus duorarum*), white shrimp (*Litopenaeus setiferus*), Gulf stone crab (*Menippe adina*), and oysters (*Crassostrea virginica*). Other commercially less important species include grass shrimp (*Palaemonetes pugio*), mysid shrimp (*Mysidopsis bahia*), roughneck shrimp (*Trachypenaeus constrictis*), and mud crab (*Eurypanopeus depressus*).

Figure 7. Typical area along CDF with shallow open-water bottom

The proposed project areas may also support populations of phytoplankton and zooplankton (e.g., copepods, rotifers, fish larvae, and molluscan and crustacean larvae). Benthic invertebrate populations are comprised of both epifaunal and infaunal species (e.g., polychaete and oligochaete worms, crustaceans, bivalves and gastropod mollusks). These organisms constitute vital components of the aquatic food chain and may comprise the diets of numerous finfish and shellfish species in the area.

3.2.3 Essential Fish Habitat

Existing Conditions

Specific categories of essential fish habitat (EFH) include all estuarine waters and substrates (mud, sand, shell, rock, and associated biological communities), including

subtidal vegetation (sea grasses and algae) and adjacent intertidal wetland vegetation (marshes and mangroves). Submerged aquatic vegetation (SAV) occurs along the coastal areas of Louisiana; however, SAVs were not observed in the project area. In addition, estuarine aquatic habitats provide nursery and foraging areas that support economically important marine fishery species such as spotted seatrout, southern flounder, Atlantic croaker, Gulf menhaden, striped mullet, spot, and blue crab. These species may serve as prey for Federally managed fish species such as mackerels, snappers, groupers, billfishes, and sharks.

The estuarine waters in the proposed project area include EFH for several Federally managed species (Table 2). These species use the proposed project area for foraging and nursery habitats, as well as migration routes to other areas considered to be EFH. Specific categories of EFH in the project area include estuarine emergent wetlands, mud/sand substrates, and estuarine water column. A brief description of the EFH species found in the proposed project area follows:

Table 2: EFH species in the project area

Common Name	Life Stage	EFH
red drum	adult	Gulf of Mexico & estuarine mud bottoms, oyster reef
red drum	juvenile	SAV, estuarine mud bottoms, marsh/water interface
red drum	larvae/post larvae	all estuaries planktonic, SAV, sand/shell/soft bottom, emergent marsh
brown shrimp	adult	Gulf of Mexico <110 m, silt sand, muddy sand
brown shrimp	juvenile	marsh edge, SAV, tidal creeks, inner marsh
brown shrimp	larvae/post larvae	planktonic, sand/shell/soft bottom, SAV, emergent marsh
white shrimp	adult	Gulf of Mexico <33 m, silt, soft mud
white shrimp	juvenile	marsh edge, SAV, marsh ponds, inner marsh, oyster reef
white shrimp	larvae/post larvae	planktonic, soft bottom, emergent marsh
Gulf stone crab	juvenile	sand/shell/soft bottom, oyster reef
Gulf stone crab	larvae/post larvae	pelagic, oyster reef, soft bottom

Red drum (*Sciaenops ocellatus*) is an important recreational gamefish found in coastal waters throughout the Gulf of Mexico. Adults inhabit nearshore waters, particularly areas within the surf zone or in the vicinity of inlets. Spawning occurs in nearshore areas, and eggs and larvae are transported by tides and wind currents into estuaries. Larvae and juveniles occupy estuarine environments until maturation. Red drum are predatory in all stages of life; however, the type of prey consumed varies with life stage. Subadult red drum primarily consume small marine invertebrates including mysids and copepods, while adults feed on large marine invertebrates, including shrimp and crabs, and small fishes.

Shrimp species include the brown shrimp (*Farfantepenaeus aztecus*) and the white shrimp (*Litopenaeus setiferus*). Adult penaeids generally occupy offshore areas of higher salinity, where spawning occurs. After hatching, larvae enter estuaries and remain there throughout the juvenile stage. Estuarine habitat serves as a nursery area offering a suitable substrate, an abundant food supply, and protection from predators. Subadult shrimp consume organic matter, including marsh grasses and microorganisms found in estuarine sediments.

Gulf stone crabs (*Menippe adina*) occur throughout the Gulf of Mexico, although the majority of them occurs along the Gulf Coast of Florida. Stone crabs are benthic and can be found from the shoreline out to depths of 200 feet. Juveniles can be found on shell bottom, sponges, and *Sargassum* mats, as well as in channels and deep grass flats. Stone crab larvae are planktonic and require warm water (30°C) and high salinity (30-35 ppt) for most rapid growth. The stone crab is a high trophic predator and is primarily carnivorous at all life stages. Juveniles feed on small molluscs, polychaetes, and crustaceans. EFH for the Gulf stone crab includes inshore waters of less than 59 feet, estuarine hard bottoms, estuarine sand/shell, estuarine SAV, near-shore hard bottoms, and near-shore sand/shell.

3.2.4 Scrub-Shrub Uplands

Existing Conditions

Scrub-shrub habitat in the proposed project vicinity occurs in portions of CDFs 7, 10, and 11 (Figures 6 and 7).

Early successional species, such as Chinese tallow (*Triadica sebifera*) and black willow (*Salix nigra*), as well as marsh elder (*Iva frutescens*), eastern baccharis (*Baccharis halimifolia*), and Roseau cane are dominant plants comprising these scrub-shrub areas. In addition, a sparse ground cover of mainly grasses, sedges, and herbaceous vegetation occurs among the scrub-shrub understory. The soils in this habitat are composed of compacted silt, clay, sand, and organic materials. This area remains dry most of the year except during conditions of extremely high water from periodic high tides and high river stages.

In general, the scrub-shrub uplands and limited grasslands in the project area provide only marginal habitat—in part due to the dominance of the highly invasive Chinese tallow and other non-native and/or noxious species-as well as vegetative disturbances associated with previous dredged material disposal events in these CDFs. Scrub-shrub habitat is utilized by several species of marsh and terrestrial mammals including nutria (*Myocaster coypus*), raccoon (*Procyon lotor*), muskrat (*Ondatra zibethicus*), swamp rabbit (*Sylviagus aquaticus*), and white-tailed deer (*Odocoileus virginianus*). Birds such as egrets (*Ardea alba; Egretta thula*), herons (*Ardea herodias; Egretta spp.; Nycticorax spp.*), rails, and gallinules, as well as mottled ducks (*Anas fulvigula*), use scrub-shrub vegetation

for nesting because nests would not be affected by occasional high water. Scrub-shrub habitat provides essential refuge for marsh animals during high water events. During hurricanes and tropical storms animals seek the highest land masses in the area and are often forced to climb into branches of scrub-shrub vegetation to escape rising waters. Scrub-shrub vegetation may provide a limited source of hard and soft mast for wildlife species utilizing the area. Grassland among the scrub-shrub upland habitat of the CDFs is occasionally used for cattle grazing.

In the proposed project vicinity, continued wave-induced shoreline erosion along the channel-side of existing CDFs and associated upland habitat has resulted in the loss of sediments such that the current channel-side boundaries of these CDFs have migrated east of their historical western boundaries in the Calcasieu River. The eastward migration of CDF boundaries has reduced the available area for the growth of scrub-shrub.

3.2.5 Wildlife

Existing Conditions

Several species of wading birds and seabirds, including black skimmers (*Rynchops niger*), gulled-billed terns (*Sterna nilotica*), royal terns (*Sterna maxima*), sandwich terns (*Sterna sandvicensis*), Caspian terns (*Sterna caspia*), black-necked stilts (*Himantopus mexicanus*), laughing gulls (*Larus atricilla*), ring-billed gulls (*Larus delawarensis*), herring gulls (*Larus argentatus*), ibis (*Plegadis spp.*, *Eudocimus albus*), egrets, cormorants (*Phalacrocorax spp.*), and mottled ducks are ordinarily found in the area.

Terrestrial fauna occurring near the project area include nutria, muskrat, swamp rabbit, mink (*Mustela vison*), white-tailed deer, river otter (*Lontra canadensis*), raccoons, and coyote (*Canis latrans*).

Numerous terrestrial invertebrates are found throughout the project area. The most notable are insects, which often serve as vectors, transmitting disease organisms to higher animals, including man. Mosquitoes are the most important of the vectors in the area, although other groups, such as deer flies, horseflies, and biting midges are also considered vectors. The area provides suitable breeding habitat for such species as the salt-marsh mosquitoes (*Aedes sollicitans* and *Culex salinarius*), and other species of mosquitoes. Mosquitoes carry the West Nile virus, which has recently caused illness and death of both animals and humans in Louisiana.

3.2.6 Threatened and Endangered Species

Existing Conditions

Federally-listed threatened or endangered species under the purview of the U.S. Fish and Wildlife Service (USFWS) and/or the National Marine Fisheries Service (NMFS)

potentially occurring in the proposed project area include the West Indian manatee (*Trichechus manatus*), and sea turtles (Table 3). Brown pelicans and other colonial nesting wading birds and seabirds protected under the Migratory Bird Treaty Act (MBTA) may be encountered in the project area as well. Although the species below may occur in the project area, no critical habitat for any threatened or endangered species has been designated within the proposed project area, and none of these species are known to breed within the project vicinity.

West Indian manatees, also known as sea cows, are large aquatic mammals found in shallow, slow-moving rivers, estuaries, saltwater bays, canals, and coastal areas. Their range is generally restricted to the southeastern United States, although individuals may occasionally venture as far north as Massachusetts and as far west as Texas (USFWS 2011). They are rare visitors to coastal Louisiana, occasionally entering Lakes Pontchartrain and Maurepas, and associated coastal waters and streams during the summer months. They have also been reported in the Amite, Blind, Tchefuncte, and Tickfaw rivers, and in canals within the adjacent coastal marshes of Louisiana. It is extremely unlikely that manatees would be found in the project area or elsewhere in the Calcasieu River and Pass, Louisiana project area and surrounding shallow open waters.

Loggerhead sea turtles (*Caretta caretta*) nest within the coastal United States from Louisiana to Virginia, with major nesting concentrations occurring on the coastal islands of North Carolina, South Carolina, and Georgia, and on the Atlantic and Gulf coasts of Florida (NMFS/USFWS 2009). In Louisiana, loggerhead sea turtles are known to nest on the Chandeleur Island (LDWF 2011). Nesting and hatching for loggerheads in the Gulf of Mexico occur from May through November.

Green sea turtles (*Chelonia mydas*) are more tropical in their distribution and are rarely seen in Louisiana coastal waters (LDWF 2011). Nesting in the Southeastern U.S. occurs approximately from June through September (NMFS/USFWS 1991). Nesting within the project area is highly unlikely, as green sea turtles prefer to nest on high-energy beaches with deep sand and little organic content. Furthermore, the Minerals Management Service (1997) indicated that reports of green sea turtle nesting in the northern Gulf are "isolated and infrequent."

The most seriously endangered of the sea turtles, Kemp's Ridley turtles (*Lepidochelys kempii*), occur mainly in bays and coastal waters of the Atlantic Ocean and Gulf of Mexico (NMFS/USFWS 1992a). Nesting occurs on the northeastern coast of Mexico and occasionally on Texas Gulf Coast beaches from April to July. No Kemp's Ridley sea turtle nesting habitat occurs near the project site, and nesting has not been known to occur in the area. Along the Louisiana coast, turtles are generally found in shallow nearshore and inshore areas, especially in salt marsh habitats, from May through October.

The hawksbill (*Eretmochelys imbricate*) is a small sea turtle that generally spends most of its life in tropical waters such as the warmer portions of the Atlantic Ocean, Gulf of

Mexico, and Caribbean Sea (NMFS/USFWS 1993). Hawksbills frequent rocky areas, coral reefs, shallow coastal areas, lagoons, narrow creeks, and passes. Nesting may occur on almost any undisturbed deep-sand beach in the tropics - in North America, the Caribbean coast of Mexico is a major nesting area. In the continental United States, nesting sites are restricted to Florida where nesting is sporadic at best (NMFS/USFWS, 1993). Due to the lack of suitable foraging and nesting habitats, there is a low probability of this species occurring within the project area.

The leatherback sea turtle (*Dermochelys coriacea*) is the largest, deepest diving, and most migratory and wide ranging of all the sea turtles (NMFS/USFWS 1992). Leatherbacks are mainly pelagic, inhabiting the open ocean and seldom entering coastal waters except for nesting purposes. Nesting in the United States is mainly confined to the Florida coast, and no nesting has been reported from Louisiana (Gunter 1981).

The NMFS, Protected Resources Division is responsible for aquatic marine endangered and threatened sea turtles. High levels of sediment in the water column and low prey availability probably preclude any high use by sea turtles in the area.

The brown pelican (*Pelecanus occidentalis*), a year-round resident of coastal Louisiana that may occur in the project area, was removed from the Federal List of Endangered and Threatened Wildlife (i.e., "delisted") by USFWS on November 17, 2009. Despite its recent delisting, brown pelicans—and other colonial nesting wading birds and seabirds—remain protected under the MBTA. Portions of the proposed project area may contain habitats commonly inhabited by colonial nesting wading birds and seabirds.

Table 3: Threatened (T) or Endangered (E) Species Potentially in Project Area

Common Name	Scientific Name	Federal Status	State Status
West Indian manatee	*Trichechus manatus*	T	T
loggerhead sea turtle	*Caretta*	T	T
green sea turtle	*Chelonia mydas*	T	T
Kemp's Ridley sea turtle	*Lepidochelys kempii*	E	E
leatherback sea turtle	*Dermochelys coriacea*	E	E
hawksbill sea turtle	*Eretmochelys imbricate*	E	E

3.2.7 Cultural Resources

Existing Conditions

Background research and literature review was conducted by CEMVN staff in May and September of 2020. Historic properties within the area of potential effects (APE) 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 map research, and a review of cultural resources survey reports. The information regarding historic properties identified within the APE was evaluated by CEMVN staff using the NRHP Criteria for evaluation as defined at 36 CFR § 60.4.

CDFs 7, 10, and 11 were previously surveyed as part of the Calcasieu River and Pass, Louisiana, Dredged Material Management Plan Supplemental Environmental Impact Statement (DMMP/SEIS) study. In 2007, Coastal Environments, Inc. (CEI) conducted a cultural resources literature search and records review for the Calcasieu River and Pass, Louisiana, DMMP on behalf of the USACE, CEMVN (Ryan and Pearson 2008; Report No. 22-2957). A total of 49 previously recorded archaeological sites, 235 built resources 50 years of age and older, and 40 sunk or salvaged vessels were documented within the DMMP/SEIS study area. Additionally, at least 18 unrecorded shipwrecks are known to have occurred within the project boundaries. Of the 49 known sites, a total of seven are historic, 33 prehistoric and nine have both historic and prehistoric components. The seven historic sites consists of three artifact scatters, two historic houses and their associated archaeological deposits, a World War II gun emplacement, and the site of a Civil War residence and battlefield. Of the 33 prehistoric sites within the project boundaries, five are artifact scatters, one fragments of an aboriginal pirogue, two are sites with earth and shell middens, and the remaining 25 are shell midden sites. Of the nine aboriginal and historic sites, six are prehistoric shell middens and three consist of historic and prehistoric scatters.

A total of 63 high probability areas for archaeological sites were identified in the Calcasieu River and Pass, Louisiana, DMMP study. None of the identified high probability areas for cultural resources or shipwrecks are near or within CDFs 7, 10, and 11 (Ryan and Pearson 2008; Report No. 22-2957). One previously recorded site, Braille's Camp (Site 16CU5), is located along the southeastern Calcasieu Ship Channel side of CDF 11. In 1999, USACE recorded Site 16CU5, which consisted of light scattering of water worn undecorated prehistoric pottery sherds mixed with rangia shells, as completely disturbed and eroded. Additionally, the Calcasieu River and Pass, Louisiana, DMMP study recommended 16CU5 as not eligible for the NRHP due to the site being destroyed by erosion and/or dredging.

3.2.8 Recreational Resources

Existing Conditions

The project area is located northeast of the Sabine National Wildlife Refuge (SNWR). According to the Fish and Wildlife Service, the SNWR occupies the marshes between Calcasieu and Sabine lakes in southwest Louisiana and encompasses 125,790 acres. The refuge contains 40,403 acres of open water and 85,387 acres of marsh grassland. This area contains a diversity of habitat including freshwater impoundments, wooded

ridges and levees, canals, ponds, lakes, and bayous. Some of the largest wetland management efforts in Louisiana occur at the SNWR. The refuge is managed to provide habitat for migratory waterfowl and other birds and to preserve and enhance coastal marshes for wildlife and fish.

Recreational activities that historically and currently are popular in the vicinity of Calcasieu River, Calcasieu Lake, and Sabine marshes include motor boating for pleasure, ingress and egress to numerous private camps accessible only by water, fishing, crabbing, shrimping, hunting, and passive recreational activities such as observation of wildlife and nature study. Hunting and fishing are the primary recreational activities of the region due to the varied and unique fish and wildlife and natural resources. Along the Calcasieu River and Pass, numerous intersecting channels exist and provide sportspeople water access into the adjacent marshes and lakes.

3.2.9 Air Quality

Existing Conditions

The U.S. Environmental Protection Agency (EPA), 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, sulfur dioxide, and particulates of 10 microns or less in size (PM-10 and PM-2.5).

Ozone is the only parameter not directly emitted into the air but forms in the atmosphere when three atoms of oxygen (0_3) are combined by a chemical reaction between oxides of nitrogen and volatile organic compounds in the presence of sunlight. Motor vehicle exhaust and industrial emissions, gasoline vapors, and chemical solvents are some of the major sources of nitrogen and volatile organic compounds, also known as ozone precursors. 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 National Ambient Air Quality Standards. 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.

For Calcasieu Parish, all six parameters are currently in attainment of all NAAQS in accordance with 40 CFR 81.320 (1999 edition). No conformity review (under the Clean Air Act General Conformity Rule) is required for the proposed action because the project area is designated as an attainment area.

3.2.10 Water Quality

Existing Conditions

In the Calcasieu River, water quality parameters of concern include pathogens, copper, and mercury. The potential sources of impairment include municipal point sources, inflow and infiltration urban runoff/storm sewers, package plants (small flows) collection system failure, and atmospheric deposition (EPA 2011). Calcasieu River and Calcasieu Lake are a part of the Lower Calcasieu Watershed, along with other water bodies including Bayou Bois Connine, Bayou Chopique, Black Bayou, Black Lake, Grand Bayou, Gulf of Mexico, Mud Lake, and Old East Bayou. The EPA characterizes a watershed by a score that is given when aquatic conditions fall well below state or tribal water quality goals and have serious problems exposed by other indicators. The Lower Calcasieu Watershed has serious water quality problems and currently maintains a score of 5 out of 6 (EPA 2011).

As part of its surface water quality monitoring program, the Louisiana Department of Environmental Quality (LDEQ) routinely monitors 25 parameters on a monthly or bimonthly basis using a fixed station, long-term network (Monitored Assessments) (LDEQ 1996). Based upon those data and the use of less-continuous information (Evaluated Assessments), such as fish tissue contaminants data, complaint investigations, and spill reports, the LDEQ has assessed water quality fitness for the following uses: primary contact recreation (swimming), secondary contact recreation (boating, fishing), fish and wildlife propagation, drinking water supply, and shellfish propagation (LDEQ 1996). Based upon existing data and more subjective information, water quality can be determined to be either fully, partially, or not in support of those uses. A designation of "threatened" is used for waters that fully support their designated uses but may not fully support certain uses in the future, because of anticipated sources or adverse trends in pollution. According to the LDEQ 2012 Louisiana Water Quality Inventory: Integrated Report, the 2014 Louisiana Water Quality Inventory: Integrated Report, and the 2016 Louisiana Water Quality Inventory: Integrated Report, Calcasieu Lake (segment LA030402_00) and the Calcasieu River, from below Moss Lake to the Gulf of Mexico (segment LA030401_00), fully support the designated use for oyster propagation (LDEQ 2007 and 2011).

Since 1999, the EPA has been conducting the Calcasieu Estuary Project in cooperation with the LDEQ, National Oceanic and Atmospheric Administration (NOAA), and the U.S. Department of the Interior (DOI). The project is focused on the evaluation of sediments in the estuary. This is the most extensive sediment research in the project vicinity and includes Bayou d'Inde, Bayou Verdine, Upper Calcasieu River, and the lower Calcasieu River ending at Moss Lake. The principal pollutants in the estuary are listed as PCBs, hexachlorobenzene, hexachlorobutadine, mercury, zinc, ethylene dichloride, lead, and copper. The EPA also maintains a database containing data from sediment research projects that have been completed in the Calcasieu estuary since 1983. The following research projects have reported locations in the vicinity of the proposed project: 1983-

1985 LDWF CALECO study conducted by McNeese State University, Louisiana; 1988-1989 EPA Toxics Lower Calcasieu River study conducted by Research Triangle Institute, North Carolina; and 1997 EPA Toxics Calcasieu Estuary study conducted by Toxicon Environmental Sciences, Florida. The sediment data originating from those studies did not show any pollutant exceedance when compared to EPA Freshwater Sediment Quality Criteria.

As part of the Calcasieu River and Pass, Louisiana DMMP/SEIS study, water and sediment samples were collected from multiple stations within designated Dredged Material Management Units (DMMUs) in the Calcasieu Ship Channel and from two reference areas, including the Calcasieu Lake Wetland Creation Reference Area which is located adjacent to CDFs D and E. Samples were analyzed in accordance with the protocols described in Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. - Testing Manual (ITM) (USEPA/USACE 1998) and Evaluation of Dredged Material Proposed for Disposal at Island, Nearshore, or Upland Confined Disposal Facilities - Testing Manual (UTM) (USACE 2003), as specified in MVN's Sampling and Analysis Plan for the DMMP/SEIS study. Physical and chemical analyses were performed on sediments from each in-channel station and the two reference areas. The reference areas were selected to represent potential wetland development disposal areas, in shallow open water within broken marsh or in shallow open water, in Calcasieu Lake. Chemical analyses also were conducted on ambient water from six in-channel stations, a reference area, the Calcasieu Lake Wetland Creation Disposal Area, and on an elutriate at each in-channel station. Water at the Calcasieu Lake disposal area and in the Calcasieu River represent receiving waters for wetland development areas within Calcasieu Lake and for effluent discharged from CDFs, respectively. Water column toxicity tests/suspended particulate phase bioassays used an elutriate dilution series from six DMMUs. Benthic toxicity tests/solid phase bioassays and bioaccumulation tests (metals and polycyclic aromatic hydrocarbons [PAHs]) used composited sediment from each DMMU and both reference areas. The MVN sampling and analysis plan, the scope of work, and the results of the physical and chemical analyses of water and sediment samples can be found in the report "Final Calcasieu River and Pass, Louisiana, Dredged Material Management Plan, Phase 2, Sampling and Analysis." The water and sediment quality data and analyses are presented and discussed in the 2010 DMMP/SEIS, as well. Evaluation of the results from the benthic toxicity-tests/solid-phase bioassays and bioaccumulation tests indicated that the discharge of dredged material from the Calcasieu River navigation channel into shallow open water disposal areas was not likely to have an unacceptable adverse effect on survival, growth, or reproduction of aquatic organisms, or pose a human health risk due to toxicity of bioaccumulation of contaminants.

3.2.11 Navigation

Existing Conditions

The Calcasieu River and Pass, Louisiana project is an important economic link for the Port of Lake Charles and its regional industries to the Gulf of Mexico and its global shipping opportunities. Port facilities are located along the Calcasieu River and Pass, Louisiana navigation channel, and there are City Docks and other terminals located approximately 32 miles inland from the Gulf of Mexico. The Industrial Canal Terminal is located approximately 20 miles inland from the Gulf of Mexico at the confluence of the GIWW and the Calcasieu Ship Channel. The Calcasieu River and Pass, Louisiana project provides port facilities with a channel approximately 400 feet wide and 40 feet deep. Berth depths range from 36 to 40 feet.

The Calcasieu Ship Channel serves the public facilities at the Port of Lake Charles and several private industries in the Lake Charles-Sulphur area. Major commodities handled by port public facilities through the navigation channel include barite, crude oil, rice, petroleum coke, rutile, caustic soda, flour, wood chips, and forest products. Major commodities handled by private industries through the navigation channel include crude oil, petroleum products and petrochemicals, and petroleum industry equipment and supplies, among others.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Wetlands

Future Conditions with No Action

Without implementation of the proposed action, wave-induced erosion and ship-wake erosion of the existing earthen containment dikes, channel bank lines, and fringe marsh along the channel margins would continue.

Future Conditions with the Proposed Action

With implementation of the proposed action, it is anticipated that minimal impacts to wetlands would occur in the project area. A maximum of approximately 3.0 acres of fringe marsh habitat may be adversely affected by bank armor construction. Adverse effects on fringe marsh habitat displaced by bank armoring materials may be offset somewhat by the potential establishment of wetland fringe vegetation behind newly constructed dikes in the project areas, i.e., between the dikes and existing upland CDFs.

Construction of foreshore rock dikes and bank armoring will reduce active fringe marsh erosion and shoreline erosion that currently occurs within the project area. Flotation channels will likely have no effect on wetlands.

4.2 Aquatic Resources /Fisheries

Future Conditions with No Action

Without implementation of the proposed action, aquatic resources/fisheries may be directly or indirectly impacted by continued channel side erosion of adjacent CDFs and associated earthen retention dikes, and the subsequent spilling of dredged material into the river channel. These effects could incidentally diminish the amount of foraging habitat available to finfish and shellfish. Mobile fishery species would most likely relocate to other areas, while some existing benthic invertebrates would be eliminated or replaced by more tolerant forms.

Future Conditions with the Proposed Action

With implementation of the proposed action, there would be some minimal direct and indirect effects to aquatic resources/fisheries in the form of altered open water bottom habitat. Approximately 12 acres of shallow open water bottoms would be impacted by the placement of rock material into the proposed disposal area. Approximately 13 acres of shallow open water bottoms would be temporarily impacted by the dredging of flotation channels.

It is anticipated that mobile fishery species would avoid the proposed project area during construction, thereby minimizing direct and indirect impacts to those species. Sessile or slow-moving benthic organisms may be smothered in the reclaimed CDFs where dredged material would be deposited. Some benthic organisms may also be temporarily smothered in areas dredged for flotation channels, although, these species would likely recolonize the area rapidly.

However, positive indirect impacts to fisheries in the project area are expected with implementation of this proposed action. The placement of rock to construct the dike would provide hard surfaces on which benthic species may attach, as well as providing valuable foraging, breeding, and nursery habitat for finfish and other shellfish. Benefits to both commercial and recreational finfish and shellfish fisheries may be expected.

4.3 Essential Fish Habitat

Future Conditions with No Action

Without implementation of the proposed action, erosion will likely continue along existing earthen dikes and bank lines in the project areas. The resulting sedimentation will likely continue to cause direct and indirect impacts from deposition on the mud substrate due to tides, currents, wave actions, and ship wakes continuously moving sediments throughout portions of the project areas. EFH species in the proposed project area may migrate from the area if the situation slowly deteriorates.

Future Conditions with the Proposed Action

With implementation of the proposed action, approximately 12 acres of shallow open water bottoms would be permanently impacted by the placement of rock material into the proposed disposal area and the subsequent filling of this open water area with dredged material. The rock dike would reclaim the original disposal area footprint. Some EFH for brown shrimp, white shrimp, red drum, and Gulf stone crab would be impacted in the project area through the filling of shallow open water bottom and mud habitat with bank stabilization dike material or dredged material for the flotation channels; however, the EFH species impacted would likely temporarily forage elsewhere

Additional negative short term EFH impacts would include a temporary and localized increase in estuarine water column turbidity during the placement of rock material in shallow open water areas. However, the project area is a naturally turbid environment and increased turbidity is not expected to significantly affect EFH needs within the project area.

4.4 Scrub-Shrub Uplands

Future Conditions with No Action

Without implementation of the proposed action the wave-induced erosion and ship-wake erosion of the CDFs would likely continue at the current rate and result in further degradation and/or loss of scrub-shrub habitat in the area. The loss of habitat and habitat diversity would have an indirect negative impact on wildlife species dependent on scrub-shrub habitat along upland elevations in the area.

Future Conditions with the Proposed Action

With implementation of the proposed action, there would be beneficial direct and indirect effects to scrub-shrub uplands. The rock dikes would protect the earthen retention dikes along the CDFs from wave-induced erosion, thereby, allowing the scrub-shrub to remain in place. The scrub-shrub would continue to provide habitat for wildlife species in the area. Flotation channels will likely have no effect on scrub-shrub uplands.

4.5 Wildlife

Future Conditions with No Action

Without implementation of the proposed action, wildlife in the project area may be indirectly impacted. Wave-induced and ship-wake erosion of the existing CDF's bank lines, earthen retention dikes, and associated habitat would continue to occur. Erosion would result in a reduction of habitat diversity and availability for resident terrestrial wildlife, migratory waterfowl, and other avian species.

In addition, the continued erosion of the CDFs and earthen retention dikes along the Calcasieu River shoreline would likely result in adverse impacts, such as sediment deposition due to dike/bank line failure and the spilling of dredged material into the river. These effects could directly and indirectly impact wildlife by incidentally diminishing, at least temporarily, the availability of foraging habitat along the river.

Future Conditions with the Proposed Action

With implementation of the proposed action, minimal adverse direct and indirect impacts to wildlife are anticipated. Terrestrial wildlife may be temporarily affected by noise from the construction of the proposed project and during construction of the flotation access channels that would allow the material barges into the project area.

4.6 Threatened or Endangered Species

Future Conditions with No Action

Without implementation of the proposed action, no direct or indirect impacts to threatened or endangered species or their critical habitat would likely occur.

Future Conditions with the Proposed Action

With implementation of the proposed action, there would be minimal effects to threatened or endangered species.

It is extremely unlikely that manatees would be found in the project area or elsewhere in the Calcasieu River and Pass, Louisiana project area and surrounding shallow open waters. If manatees are observed within 100 yards of the "active work zone" during proposed construction activities, MVN would implement the appropriate special operating conditions (e.g., no operation of moving equipment within 50 feet of a manatee; all vessels should operate at no wake/idle speeds within 100 yards of work area; siltation barriers, if used, would be made of material in which manatees could not become entangled and would be secured and monitored; report manatee sightings or collisions), as provided by the USFWS, Lafayette, Louisiana Field Office. Special operating conditions for manatees, would be included in any MVN plans and specifications developed prior to dredging and disposal activities.

To minimize disturbance to pelicans and other colonial nesting birds and seabirds potentially occurring in the proposed project area, MVN would observe restrictions on activity provided by the USFWS, Lafayette, Louisiana Field Office. Special operating conditions addressing pelicans and other colonial nesting wading birds and seabirds (reporting presence of birds and/or nests; no-work distance restrictions—2,000 feet for brown pelicans; bird nesting prevention and avoidance measures; marking discovered nests) would be included in any MVN plans and specifications developed prior to dredging

and disposal activities. In addition, dredging and disposal activities would be restricted to non-nesting periods for colonial nesting wading birds and seabirds when practicable.

Although threatened or endangered species may occur within the general project vicinity, their presence within the proposed project area is highly unlikely. Furthermore, the proposed project area does not contain critical habitat for Federally listed species and the open water areas surrounding the project area would allow them to easily avoid the project activities. Flotation channels will likely have no effect on threatened or endangered species. Therefore, the proposed project is not likely to adversely affect Federally-listed threatened or endangered species, or their critical habitat, under the jurisdiction of USFWS. The USFWS concurred with this determination in a letter dated August 3, 2020. Additionally, MVN has concluded that no critical habitat for any threatened, endangered, or candidate species under the purview of NMFS has been designated within the project area and that there would be no effect to any of the NMFS Federally listed species.

4.7 Cultural Resources

Future Conditions with No Action

Without implementation of the proposed action, there would be no direct or indirect impacts to cultural resources. The conditions within the existing environment would continue as they have in the past and would be dictated by the natural land use patterns and processes that have historically dominated the area.

Future Conditions with the Proposed Action

No direct or indirect impacts to known historic properties, cultural resources, or tribal resources would occur as a result of implementing the proposed action. CDFs 7, 10, and 11 have previously received dredged material and have not been identified as high probability areas for cultural resources. CEMVN consulted with the LA SHPO, the Alabama-Coushatta Tribe of Texas (ACTT), the Choctaw Nation of Oklahoma (CNO), the Coushatta Tribe of Louisiana (CT), the Jena Band of Choctaw Indians (JBCI), the Mississippi Band of Choctaw Indians (MBCI), and the Tunica-Biloxi Tribe of Louisiana (TBTL) via letter on October 1, 2020, with a determination of "No Historic Properties Affected" for the proposed undertaking. SHPO concurred with this determination on October 29, 2020. In accordance with 36 CFR 800.4 (d)(1)(i), CEMVN has fulfilled its consultation responsibilities.

4.8 Recreational Resources

Future Conditions with No Action

Without implementation of the proposed action, the conditions within the recreational environment would continue as they have in the past and would be dictated by the natural

land use patterns and material placement processes that have dominated the area. The no-action condition is likely to continue a path of general habitat and resource degradation.

The no-action alternative would have no direct impacts to recreational resources in the project area, except in areas where dredge material placement occurs from routine maintenance of the Calcasieu River.

Future Conditions with the Proposed Action

With implementation of the proposed action, there will be short-term, negative direct impacts to recreational resources in the area. The recreational environment in and around the construction of rock dikes and/or bank stone paving within the Calcasieu River and Pass would experience limited short-term disruption imposed by the physical size and working activities of the floating dredge facility and equipment. Fishing and recreational boating would be eliminated within the rock dike containment; however, the rock material on the open water side of Calcasieu River and Ship Channel would provide foraging areas for fish and shellfish that may create more opportunities for recreational fishing.

With implementation of the proposed action, positive, indirect impacts to recreational fishing in the project area are expected. Rock dikes and bank stone paving would help protect existing earthen berms which provide protection to containment areas. The containment sites, over the long-term, would provide valuable habitat for wildlife. Flotation channels will likely have no effect on wetlands.

4.9 Air Quality

Future Conditions with No Action

Without implementation of the proposed action, it is likely no direct or indirect adverse impacts to ambient air quality in Calcasieu Parish would occur.

Future Conditions with the Proposed Action

With implementation of the proposed action, including flotation channel construction, direct and indirect adverse impacts to ambient air quality within the project area—and possibly farther afield—are expected to be temporary and primarily due to the emissions of construction equipment. Due to the limited duration of the proposed project, any adverse impacts to ambient air quality are expected to be short-term and minor and are not expected to cause or contribute to a violation of Federal or State ambient air quality standards. Once all temporary construction activities associated with the selected alternative cease, air quality within the vicinity is expected to return to pre-construction conditions.

4.10 Water Quality

Future Conditions with No Action

Without implementation of the proposed action, it is unlikely that adverse direct impacts to water quality or sediment quality would occur in the short term. Indirect impacts to water quality could occur over time, as channel-side CDFs and retention dikes continue to erode, spilling and re-depositing material previously dredged from the Calcasieu River Ship Channel and causing sedimentation and creating localized areas with elevated levels of suspended solids, increased turbidity, and reduced light penetration.

Future Conditions with the Proposed Action

With implementation of the proposed action, there would be some disturbances to ambient water quality in the project area; however, direct and indirect impacts would be temporary. The construction activities would include flotation channel construction and the deposition of rock dike material. These activities could possibly cause temporary increases in turbidity and suspended solids concentrations, which leads to a reduction in light penetration in the immediate area of the rock dike placement. Localized temporary pH changes as well as dissolved oxygen deficits may also occur during the construction phase. Minimal impacts to the area water quality would occur during construction and these impacts would be eliminated after construction is completed.

The proposed open water placement of rock for erosion protection, which is not expected to have any adverse effect on sediment and water quality of the receiving site, was evaluated under the guidelines of Section 404(b)(1) of the Clean Water Act and was found to be in compliance with the guidelines on ** *** 2021. To comply with Section 401 of the Clean Water Act, a Louisiana Water Quality Certificate (WQC) was received from LDEQ on ** *** 2021.

4.11 Navigation

Future Conditions with No Action

Without implementation of the proposed action, channel-side erosion of the adjacent CDFs and their earthen retention dikes, and the subsequent spilling of dredged material into the Calcasieu River Ship Channel would continue. Spillage of CDF material into the Calcasieu River Ship Channel could result in shoaling of the channel bottom, potentially affecting vessel navigation near the shoreline. Additionally, this could result in the need for emergency channel dredging.

Future Conditions with the Proposed Action

With implementation of the proposed action, no significant adverse direct or indirect

impacts to navigation in the project area would occur. The construction activities will include a minor amount of Calcasieu River nearshore bottom excavation during foundation preparations for the dike, flotation channel construction, and resultant fill deposition. These activities could potentially temporarily affect navigation but will be outside the marked traffic lanes for water vessels utilizing the channel. Construction of rock dikes and/or bank stone paving along the channel side of the existing upland confined disposal areas would reduce the wave erosion effects on the channel side earthen dikes. This protection from wave erosion could reduce the amount of shoal material that might be entering the navigational channel from the earthen dikes and result in a reduced frequency of maintenance dredging. Thus, navigation activities will likely benefit from construction of bank stabilization features in the project area.

4.12 Hazardous, Toxic, and Radioactive Waste

The USACE is obligated under Engineer Regulation 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 the proposed action. ER 1165-2132 identifies our HTRW policy to avoid the use of project funds for HTRW removal and remediation activities. Costs for necessary special handling or remediation of wastes (e.g., Resource Conservation and Recovery Act, 42 U.S.C. 6901 et seq. (RCRA) regulated), pollutants, and other contaminants, which are not regulated under the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. 9601 et seq. (CERCLA), will be treated as project costs if the requirement is the result of a validly promulgated Federal, state or local regulation.

An ASTM E 1527-05 Phase I Hazardous, Toxic, or Radioactive Waste Environmental Site Assessment (ESA), entitled "Calcasieu River and Pass, Louisiana Dredged Material Management Plan," was completed in July 2009. An update to the Phase I ESA was completed in October 19, 2020. A copy of the updated Phase I ESA will be maintained on file at MVN. The updated Phase I ESA identified two petroleum pipelines in the southern portion of CDF-11. The pipelines may be considered potential Recognized Environmental Conditions (RECs); therefore, USACE would use necessary measures to avoid the pipelines so the probability of encountering or disturbing them would be low. Several petro-chemical and industrial sites were identified within one mile of the CDFs; however, due to the distance of these facilities from the project sites they are not likely to have any impacts on the project. There is a low probability that HTRW would affect the proposed project, personnel working on the project, members of the public, or the environment in the project area.

4.13 Cumulative Impacts

The Council on Environmental Quality's (CEQ) regulations (40 CFR 1500-1508) implementing the procedural provisions of the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. 4321 et seq.) define cumulative effects as "the impact

on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR 1508.7)." Cumulative Effects can result from individually minor but collectively significant actions taking place over time.

With the implementation of the proposed action, approximately 12 acres of shallow open water bottom would be directly impacted. The completed project would result in a reduction in the likelihood of future unplanned releases of dredged material into Calcasieu River Ship Channel. Fishing and recreational boating would be eliminated within the rock dike containment; however, the rock material on the open water side of Calcasieu River and Ship Channel would provide foraging areas for fish and shellfish that may create more opportunities for recreational fishing.

Cumulative impacts associated with past actions in the Calcasieu River estuary have produced a natural environment that is markedly different than 140 years ago. A total of 116,791 acres of wetlands in the Calcasieu-Sabine River Basin have converted to open water since 1932 (USGS 2007). Scientists attribute these habitat changes to a combination of human-induced hydrologic changes, accompanied by the occasional severe storm event. The hydrological alterations that have had the most significant impact in the basin area are navigation corridors. Construction of the Calcasieu Ship Channel caused increased saltwater and tidal intrusion into the estuary, leading to marsh loss and a shift to more saline habitats in the Calcasieu River Basin (USDA 1994). These changes have affected hydrology by channeling saltwater into the historically low-salinity estuary. Future activities in the Calcasieu River Basin are expected to further contribute to cumulative degradation of wetlands and other important resources in the vicinity of the project area. MVN anticipates continued maintenance dredging of the Calcasieu River and Pass, Louisiana project indefinitely, depending on resources available. The cumulative impacts of the proposed action would have only minor adverse impacts on the overall Calcasieu River Basin, including temporary changes in water quality and water bottoms. The significant beneficial cumulative impacts from the proposed action would be the reduction of severe wave-induced erosion of the CDF's earthen retention dikes, thereby preventing unplanned releases of dredged material into Calcasieu River and thus lessening the impact on navigation depths. There are no significant negative effects.

The EIS prepared by MVN for the Continued Operation and Maintenance of Calcasieu River and Pass (Including Salt-Water Barrier); Coon Island; Devil's Elbow; Calcasieu River, Louisiana, was signed in March 1977. Maintenance dredging of the project still occurs, and MVN anticipates continuing maintenance dredging indefinitely.

A supplemental EIS was prepared for the Dredged Material Management Plan for the Calcasieu River and Pass (River Miles 36.0 to 5.0), Louisiana project. The DMMP/SEIS study investigated alternatives for managing dredged material for the next 20 years,

including confined aquatic disposal (open water or ocean), within banks, beach nourishment, and other beneficial use-placement areas.

EA #343 discussed the construction of 27,650 linear feet of rock dikes between Miles 16.0 and 11.0 of the Calcasieu River and Pass, Louisiana project. Approximately 56 acres of shallow open water bottom were impacted by the dike placement.

EA #485 addressed the potential impacts associated with the construction of foreshore rock dikes and bank armoring along the channel side boundaries of existing upland CDFs located on the left-descending bank, and bank armoring along a portion of the right-descending bank of the Calcasieu River and Pass, Louisiana project.

EA #560 addressed the potential impacts associated with the construction of dike armoring features along the west Calcasieu Lake boundaries of the Calcasieu River CDFs 23, D, and E to prevent wave erosion impacts to the disposal sites. The proposed action would consist of the construction of rock/concrete dike armoring structures in Calcasieu Lake and would be located approximately between Calcasieu River mile 17 and mile 11.

Numerous land stewardship projects have been implemented in the Calcasieu-Sabine River Basin to help restore its estuaries and protect its shoreline. Table 4 lists completed and ongoing restoration and management projects in the basin that are funded by the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA). These projects have or are expected to have beneficial impacts on natural resources in the study area. CWPPRA was the first Federal statutory mandate for restoration of Louisiana's coastal wetlands. As of July 2008, 145 active CWPPRA projects have been approved, 74 have been constructed, 17 are under construction, and 26 have been de-authorized or transferred to other programs. Many of these projects have occurred in the Calcasieu River and Pass, Louisiana project vicinity.

Table 4: CWPPRA restoration projects for the Calcasieu-Sabine River Basin

Agency	Project Name	Type	Net Benefit After 20 Years (acres)
NRCS	Black Bayou Culverts Hydrologic Restoration	Hydrologic Restoration	540
NMFS	Black Bayou Hydrologic Restoration	Hydrologic Restoration	3,594
NRCS	Brown Lake Hydrologic Restoration	Hydrologic Restoration	282
USFWS	Cameron Creole Plugs	Hydrologic Restoration	865
NRCS	Cameron-Creole Maintenance	Hydrologic Restoration	2,602

USACE	Clear Marais Bank Protection	Shoreline Protection	1,067
NRCS	East Mud Lake Marsh Management	Marsh Management	1,520
USFWS	East Sabine Lake Hydrologic Restoration	Hydrologic Restoration	225
NRCS	GIWW - Perry Ridge West Bank Stabilization	Shoreline Protection	83
NRCS	Holly Beach Sand Management	Shoreline Protection	330
NRCS	Highway 384 Hydrologic Restoration	Hydrologic Restoration	150
NRCS	Perry Ridge Shore Protection	Shoreline Protection	1,203
NRCS	Plowed Terraces Demonstration	Sediment and Nutrient Trapping, Demonstration	N/A
USFWS	Replace Sabine Refuge Water Control Structures at Headquarters Canal, West Cove Canal, and Hog Island Gully	Marsh Management	953
USFWS	Sabine National Wildlife Refuge Erosion Protection	Shoreline Protection	5,542
USACE	Sabine Refuge Marsh Creation, Cycle 1	Marsh Creation	214
USACE	Sabine Refuge Marsh Creation, Cycle 2	Marsh Creation	261
USACE	Sabine Refuge Marsh Creation, Cycle 3	Marsh Creation	187
USACE	Sabine Refuge Marsh Creation, Cycle 4	Marsh Creation	163
USACE	Sabine Refuge Marsh Creation, Cycle 5	Marsh Creation	168
NRCS	Sweet Lake/Willow Lake Hydrologic Restoration	Shoreline Protection	5,796
NRCS	West Hackberry Vegetative Planting Demonstration	Vegetative Planting Demo	N/A

Source: USGS, 2007

Some other reasonably foreseeable future actions, which may contribute to cumulative impacts, include:

- Construction of a general anchorage in the Calcasieu Ship Channel. Deep-draft vessel traffic on the Calcasieu Ship Channel suffers costly delays due to the width of the inland reach of the ship channel, which prohibits most deep-draft vessels from passing head-on in the channel. These delays are exacerbated by liquefied natural

gas (LNG) vessel traffic, which cannot meet and pass in the ship channel along the 32-mile long Gulf reach.

- Construction of new LNG terminals. Onshore regasification facilities that use imported LNG have been in existence in the U.S. since 1969. However, only four were constructed, the largest of which is the Trunkline facility. Two new LNG facilities have been approved by FERC to be constructed in the project area: the Cameron LNG, owned by Sempra Energy and the Creole Trail LNG, owned by Cheniere LNG. Future installation of LNG terminals should be evaluated for environmental impacts and required mitigation.

- Southwest Coastal Louisiana Feasibility Study. The Water Resources Development Act (WRDA) of 2007 authorized funding for several coastal restoration and hurricane protection projects in the Louisiana Coastal Area. Section 7010 included the Southwest Coastal Louisiana Hurricane and Storm Damage Reduction Study. A 2007 reconnaissance study which recommended levee alternatives was broadened in focus by the State of Louisiana and MVN to include both levee and restoration alternatives. MVN and the State of Louisiana completed a feasibility report and environmental impact statement on April 21, 2016. The report has a dual purpose of hurricane and storm damage risk reduction, through the National Economic Development plan, and coastal ecosystem restoration, through the Nation Ecosystem Restoration plan, for the southwest coastal portion of the State of Louisiana. This represents the first time an integrated coastal protection and hurricane protection study has been undertaken for Southwest Louisiana.

5.0 COORDINATION

Preparation of this draft EA and associated draft FONSI have been coordinated with appropriate Congressional, Federal, Tribal, state, and local interests, as well as environmental groups and other interested parties. The following agencies, as well as other interested parties, are receiving copies of this draft EA and draft FONSI:

U.S. Department of the Interior, Fish and Wildlife Service
U.S. Environmental Protection Agency, Region VI
U.S. Department of Commerce, National Marine Fisheries Service
U.S. Natural Resources Conservation Service, State Conservationist
Advisory Council on Historic Preservation
Governor's Executive Assistant for Coastal Activities
Louisiana Department of Wildlife and Fisheries
Louisiana Department of Natural Resources, Coastal Management Division
Louisiana Department of Natural Resources, Coastal Restoration Division
Louisiana Department of Environmental Quality
Louisiana State Historic Preservation Officer
Calcasieu Parish Government

Alabama-Coushatta Tribe of Texas
Choctaw Nation of Oklahoma
Mississippi Band of Choctaw Indians
Coushatta Tribe of Louisiana
Jena Band of Choctaw Indians
Tunica-Biloxi Tribe of Louisiana

6.0 MITIGATION

An assessment of the potential environmental impacts to important resources found that the proposed project would have only minimal and insignificant impacts to resources in the project area. There would be a loss of shallow open water bottom habitat and associated fisheries resources due to construction activities as part of the proposed action, and a temporary loss of shallow open water bottom due to dredging of flotation channels. The presence of comparable habitat within the project vicinity minimizes the loss of shallow open water bottom habitats due to the proposed action. Additionally, construction of foreshore rock dikes and/or bank armoring would reduce active shoreline erosion that currently occurs within the project area of the Calcasieu River and Pass. The rock dikes and armoring should prevent erosion of upland CDF containment walls that could cause spill of the dredged material back into the channel. The small acreage of scrub/shrub habitat impacted by the placement of rock along CDF areas would be offset by the future benefits of reduced erosion at these locations and the eventual creation of new upland scrub/shrub habitat for wildlife as CDFs are further expanded. The rock dikes and armoring will also prevent ongoing erosion of wetlands at these locations. The approximately 3.0 acres of marsh wetlands directly adversely affected by bank armoring construction would, in time (<20 years), offset the projected wetlands acreage lost in lieu of the proposed project based on current USACE erosion estimates within the project area. In addition, some potential establishment of wetland fringe vegetation may develop behind newly constructed foreshore dikes in the project area (i.e., between the dikes and existing upland CDFs). Aquatic habitat for fish and invertebrates will be enhanced by the approximately 9 acres of submerged introduced rock and hard substrate used for dike and armoring construction if rock dikes are used for CDF 10 and CDF 11. Therefore, no wetlands mitigation is required.

7.0 COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

Environmental compliance for either alternative would be achieved upon: coordination of this draft EA and associated draft FONSI with appropriate agencies, organizations, and individuals for their review and comments; USFWS confirmation that the proposed action would not be likely to adversely affect any endangered or threatened species; receipt of a Water Quality Certificate from the State of Louisiana; public review of the Section 404(b)(1) Public Notice; signature of the Section 404(b)(1) Evaluation; receipt of the Louisiana SHPO Determination of “no historic properties affected” on cultural resources; offering federally-recognized Tribes the opportunity to review and comment on a “no

historic properties affected" finding that included the APE for the proposed action; receipt and acceptance or resolution of all USFWS Fish and Wildlife Coordination Act recommendations; completion of a Phase 1 HTRW survey; and receipt and acceptance or resolution of all NMFS EFH recommendations. The FONSI would not be signed until the proposed action achieves environmental compliance with applicable laws and regulations, as described above.

- In an e-mail dated August 3, 2020, USFWS stated that, in accordance with Section 7 of the Endangered Species Act, the proposed action is not likely to adversely affect any federally-listed threatened or endangered species or their critical habitat within the proposed project area.

- In a letter dated October 29, 2020, SHPO concurred with CEMVN's determination of "No Historic Properties Affected" for the proposed undertaking.

- A Phase I ESA update was completed in October 19, 2020. A determination was made that there is a low probability of HTRW affecting the proposed project.

- CEMVN is still consulting with LDEQ for a WQC.

- CEMVN is preparing the Section 404(b)(1) evaluation.

- CEMVN is still working with the USFWS for a Coordination Act Report.

8.0 CONCLUSION

MVN proposes to construct stone features along the channel-side of confined disposal facilities (CDF) 7, 10, and 11. The features would consist of a rock dike at CDF-10 and either rock dike or bank stone paving at CDF-7 and CDF-11. These stone features would protect the CDFs from bank line erosion, and thus navigation depth, due to ship wakes and wave energy.

MVN proposes to construct an approximately 2,900-foot long foreshore dike on the channel-side of CDF-10 near mile 26 of the Calcasieu Ship Channel. The dike would be tied into the existing bank line on the upper and lower limits of the CDF. About 12 acres of shallow open-water between the dike and existing boundary of the facility would be converted to uplands during subsequent channel or facility maintenance events.

If a rock dike is constructed on the channel-side of CDF-7 and/or CDF-11, the placement of the structure would be dependent on the distance between the existing bank line and navigation thoroughfare, water depths within these boundaries, and the water bottom's existing slope extending out from the bank line. Approximately 5,900 feet of rock dike armoring would be constructed at CDF-7, near channel mile 30 and 4,200 feet of rock dike armoring would be constructed at CDF-11, near channel mile 26.

If bank stone paving is constructed on the channel-side of CDF-7 and/or CDF-11, approximately 5,900 feet of bank stone paving would be constructed on the channel-side of CDF-7 and approximately 4,200 feet of bank stone paving would be constructed on the channel-side of CDF-11.

This office has assessed the environmental impacts of the proposed action and has determined that it would have no significant adverse impact upon navigation, scrub-shrub uplands, wetlands, fisheries, wildlife, EFH, threatened and endangered species, water quality, air quality, cultural resources, and recreational resources.

9.0 PREPARED BY

EA #580 and the associated FONSI were prepared by Joseph Musso, Environmental Resource Specialist, and Hannah Plaisance, Biologist, with relevant sections prepared by: Jill Enersen - Cultural Resources; and Andrew Perez - Recreational Resources. The address of the preparers is: U.S. Army Corps of Engineers, New Orleans District, Regional Planning and Environmental Division South, 7400 Leake Avenue, New Orleans, Louisiana 70118.

10.0 REFERENCES

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