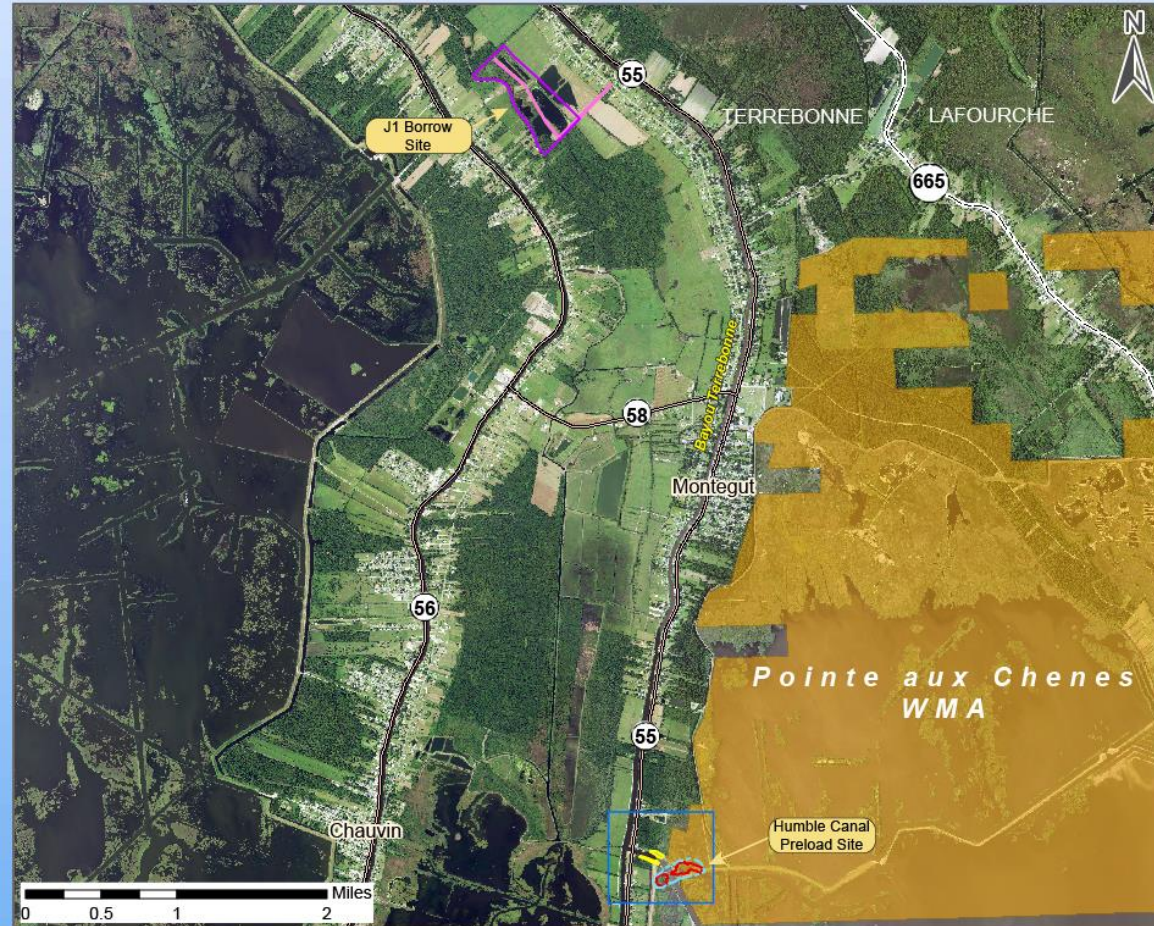



DRAFT ENVIRONMENTAL ASSESSMENT #583
Mississippi River and Tributaries
Morganza to the Gulf of Mexico, Louisiana (MRT-MTG)
Humble Canal Gate Site Preparation and Initial Levee Preload
Terrebonne Parish, Louisiana





US Army Corps of Engineers
New Orleans District

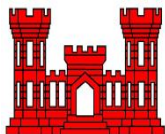
Legend

- Preload Limits
- Preload ROW
- Preload Staging
- J1 Borrow Pit
- Borrow Pit Access
- Pointe aux Chenes WMA
- Parishes

Area of Detail



Date: 8/4/2021



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

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APPENDICES

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Appendix G: Best Management Practices for Marine Mammal Protection

1 Introduction

The U.S. Army Corps of Engineers (USACE), Mississippi River Valley Division, Regional Planning and Environmental Division South, has prepared this Environmental Assessment (EA) #583 for New Orleans District (CEMVN) to evaluate the impacts of constructing an initial, or preload levee, to prepare the Humble Canal Floodgate site. This preload levee would tie-in to existing levees on the Morganza to the Gulf levee system, between Reaches I-3 and J-2 (See Appendix A, Figure A-1 for levee section status map). Section 2.2 has further details of the proposed action.

This EA has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) and the Council on Environmental Quality's Regulations (40 Code of Federal Regulations [CFR] 1500-1508), as reflected in the USACE Engineering Regulation (ER) 200-2-2. This EA provides sufficient information on the potential adverse and beneficial environmental effects to allow the District Commander to make an informed decision on the appropriateness of an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).

This Humble Canal preload levee project is in preparation for the proposed future construction of the Humble Canal sector gate, associated floodwalls, and earthen levees. A future supplemental environmental impact statement will address the proposed plans for constructible features for the Mississippi River and Tributaries Morganza to the Gulf of Mexico ("MRT-MTG") project and address changes to the project since the Revised Programmatic Environmental Impact Statement (PEIS) (2013).

Please see Appendix F for a list of acronyms included in this document.

1.1 Authority

The MRT-MTG project was originally authorized for Federal construction by Section 1001(24) of the Water Resources Development Act (WRDA) of 2007, Public Law 110-114, in accordance with the Reports of the Chief of Engineers dated August 23, 2002 and July 22, 2003.

In accordance with the Post Authorization Change Report of the Chief of Engineers dated July 8, 2013, MRT-MTG was then re-authorized by Section 7002(3)5 of the Water Resources Reform and Development Act (WRRDA) 2014, Public Law (P.L.) 113-121, as follows:

“SEC. 7002(3)5. AUTHORIZATION OF FINAL FEASIBILITY STUDIES. The following final feasibility studies for water resources development and conservation and other purposes are authorized to be carried out by the Secretary substantially in accordance with the plan, and subject to the conditions, described in the respective reports designated in this section: (3) HURRICANE AND STORM DAMAGE RISK REDUCTION.— “

| A. State | B. Name | C. Date of Report of Chief of Engineers | D. Estimated Initial Costs and Estimated Renourishment Costs |
|---------------------|-----------------------------|--|--|
| 5. LA | <i>Morganza to the Gulf</i> | July 8, 2013 | Federal: \$6,695,400,000 Non-Federal: \$3,604,600,000 Total: \$10,300,000,000 |

A MRT-MTG project history timeline of authorizations, studies, and tropical storm events from 1985 through 2012 is provided in the Table B-1 of Appendix B. Figure 1 below provides an abbreviated timeline of actions and NEPA documentation associated with MRT-MTG.



Figure 1 Morganza to the Gulf Timeline

1.2 Purpose and Need for the Proposed Action

The purpose of the proposed action is to prepare the site for a floodgate at Humble Canal as a feature of the MRT-MTG project that will provide hurricane and storm damage risk reduction for the communities located within the MRT-MTG levee system in accordance with the project described in the re-authorization of the MRT-MTG project in Section 7002(3)5 of WRRDA 2014, as updated by the MRT-MTG Engineering Documentation Report (EDR) which is being concurrently prepared. The overarching goal is to reduce the risk to people and property in the vicinity of Houma, Louisiana. All project benefits are related to hurricane and storm damage risk reduction. No flood damage risk reduction, navigation, or ecosystem restoration benefits are quantified for this project. The project is needed because of the increasing susceptibility of coastal communities to storm surge due to wetland loss, sea level rise, subsidence, and climate change.

1.3 Data Gaps and Uncertainties

Because natural systems are complex and consist of an intricate web of variables that influence the existence and condition of other variables within the system, all hurricane and storm damage risk reduction projects contain certain inherent uncertainties. The effects of tropical storms, increased sea level rise, and climate change on each project's performance are uncertain and are addressed through future projections based on existing information. All models used for this study rely on mathematical representations of current and future conditions to quantify and predict the future success and benefits of these mitigation projects. No model can account for all relevant variables in an evolving coastal system. Additionally, there is inherent risk in reducing complex natural systems to mathematic expressions driven by simplified interactions of key variables. As such, how the proposed projects will actually perform and the benefits that will result from their creation are a 'best guess' based on what we presently know about existing ecosystems and the results of already constructed restoration projects.

1.4 Prior NEPA Documents

Two previous NEPA documents are associated with the proposed project.

- (1) 2002, Final PEIS titled "Mississippi River & Tributaries – Morganza to the Gulf of Mexico Hurricane Protection." This document evaluated the impacts associated with the proposed Highway 57 Alternative that covers upgrading multiple existing forced drainage system levees in southern Terrebonne and Lafourche Parishes, constructing new levees and water control structures, and operating the water control structures and floodgates during tropical storm or hurricane tidal surges.
- (2) 2013, Final Revised Programmatic Environmental Impact Statement (RPEIS) titled "Mississippi River & Tributaries - Morganza to the Gulf of Mexico, Louisiana." This document evaluated changes in existing conditions and evaluates all direct, indirect, and cumulative environmental impacts of increased levee footprints and new levee alignments resulting from the incorporation of post-Katrina design criteria. Four constructible features received sufficient analysis of impacts in this RPEIS and these are as follows: 1) Levee Reach F1 and F2, 2) Levee Reach G1, 3) Houma Navigation Canal Lock Complex (HNC), and 4) Bayou Grand Caillou Floodgate. The Record of Decision was signed on December 9, 2013.

Project Information regarding the MRT-MTG project may be found at <https://www.mvn.usace.army.mil/About/Projects/Morganza-to-the-Gulf/>.

1.5 Public Concerns

Prior to the original FPEIS for the MRT-MTG levee system, CEMVN held a scoping meeting for a proposed hurricane and storm damage risk reduction system on May 12, 1993, in Houma, Louisiana. Written comments were accepted from April 7 to May 24, 1993. On the draft PEIS, public meetings also occurred between November 13, 2001 to February 21, 2002. The meeting was attended by more than 100 participants (Standing Room Only). Attendees included Chief Albert White Buffalo Naquin, Isle de Jean Charles Band of Biloxi-Chitimacha-Choctaw tribe. An article on the meeting appeared in the Houma Courier on September 10, 2009 (See References). For the draft RPEIS a public meeting in Houma, LA was held on January 31, 2013. Verbal comments received at the Public Hearings were made part of the Public Meeting transcript and were included within the comment database. During the comment period, approximately 473 comments were received via email, letter, and/or fax.

The public expressed concern related to the importance of providing hurricane and storm damage risk reduction for businesses and residences. Other concerns included potential adverse impacts to existing marshes, improvement of marsh habitat both inside and outside the proposed levee system, maintaining or improving ingress and egress of marine organisms for the benefit of commercial fisheries, and avoiding adverse water quality impacts.

1.6 Prior Studies and Reports

A number of studies, reports, and environmental documents on water resources development in the project area have been prepared by the USACE, other Federal, state, and local agencies, research institutes, and individuals. Prior studies, reports, and projects are described below

Additional information on other activities in the vicinity of this project is available online: <http://www.mvn.usace.army.mil/About/Offices/Operations/BeneficialUseofDredgedMaterial.aspx>

The Larose to Golden Meadow project (LGM) is a ring levee system that provides hurricane and storm damage risk reduction to roughly 25,000 people living on both sides of Bayou Lafourche, about 50 miles southwest of New Orleans in Lafourche Parish. The 43-mile levee system extends from Larose to a point two miles south of Golden Meadow, Louisiana. The proposed Morganza to the Gulf levee would be built on the north east and northern sections of the existing LGM levee system (C-North).

The Gulf Intracoastal Waterway (GIWW) is the portion of the Intracoastal Waterway located along the Gulf Coast of the United States. It is a navigable inland waterway extending approximately 1,050 miles from Carrabelle, Florida to Brownsville, Texas. The waterway provides a channel with a controlling depth of 12 feet, designed primarily for barge transportation. The GIWW was authorized by the River and Harbor Act of July 24, 1946, and prior River and Harbor Acts. Construction was completed in 1949. The GIWW extends across the Morganza to the Gulf project area from Bayou Lafourche at Larose, through Houma, and to the Atchafalaya River.

The Houma Navigation Canal (HNC) is a navigable waterway connecting the city of Houma and the GIWW directly to the Gulf of Mexico. The HNC was completed by local interests in 1962, but it is currently maintained by the Federal Government. The authorized channel is 15 feet deep and

150 feet wide from its intersection with the GIWW to Mile 0.0, and 18 feet deep by 300 feet wide to the Gulf of Mexico. The oil and gas industries in Houma rely heavily upon the 40-mile channel as a critical path to the Gulf of Mexico. A WRDA 1986, Section 203 study to deepen the HNC has been authorized by Congress; however, initiation of construction as a Federal project requires Congressional appropriation, programming authority and execution of a cost-sharing agreement between the Government and a non-Federal sponsor.

Terrebonne Parish Non-Federal Levees. Terrebonne Parish, Louisiana contains approximately 100 miles of NFL which are associated with the parish forced drainage system. In late September of 2005, Hurricane Rita brought catastrophic tidal inundation from its storm surge to the communities of Terrebonne Parish. The storm surge and the resultant flooding overtopped and in some instances severely damaged existing NFL systems, causing millions of dollars in property damage. Hurricanes Gustav and Ike in 2008 also caused damage to the Terrebonne NFL system. Pursuant to a limited authorization in Public Law 109-234, EA #450 (FONSI signed 14 January 2009) evaluated impacts associated with the repair, replacement, modification, and improvement of 6.1 miles of the NFL that were damaged by the storm surge. Supplemental EA #555 (FONSI signed 24 May 2019) later evaluated the impacts of completing mitigation to offset brackish marsh impacts from mitigation measured associated with EA #450.

TLCD Risk Reduction Projects

The Terrebonne Levee Conservation District (TLCD) and/or other non-Federal entities, started work on reaches that were initially proposed to be a part of the MRT-MTG project, at their own expense, acknowledging that there was no signed Project Partnership Agreement (PPA) or In Kind Memorandum of Understanding (In Kind MOU) in place at the time that construction was initiated. This work happened independently and is not a component of the Federal project. See Figure A-1 (Appendix A) for details. Note, however, that in 2019, an In-Kind MOU was executed by USACE and the proposed non-Federal sponsors. That In-Kind MOU identified work that the proposed non-Federal sponsors proposed to undertake in advance of the execution of the project PPA and any such work for which construction was initiated prior to signing of the In Kind MOU would be eligible to be determined by USACE to be a part of the Federal MRT-MTG project.

2 Alternatives Including the Proposed Action

2.1 Planning Goals, Objectives and Constraints

The intent of the proposed action is to construct the preload foundation for the Humble Canal feature of the MRT-MTG project and its system of levees and floodwalls. The planning horizon, or period of analysis, for this project is 50 years.

Proposed Alternatives

The alternatives are technically feasible and meet the project purpose and need. These alternatives are:

1. No Action Alternative
2. Action Alternative (i.e. the proposed action)

Wetland Value Assessment

Evaluations of the effects of the alternatives to fish and wildlife resources were conducted using the Wetland Value Assessment (WVA) methodology. Implementation of the WVA requires that habitat quality and quantity (acreage) are measured for baseline conditions and predicted for future without-project and future with-project conditions. Each WVA model utilizes an assemblage of variables considered important to the suitability of that habitat type to support a diversity of fish and wildlife species.

The WVA provides a quantitative estimate of project-related impacts to fish and wildlife resources; however, the WVA is based on separate models for bottomland hardwoods (BLH), chenier/coastal ridge, fresh/intermediate marsh, brackish marsh, and saline marsh. Although, the WVA may not include every environmental or behavioral variable that could limit populations below their habitat potential, it is widely acknowledged to provide a cost-effective means of assessing restoration measures in coastal wetland communities.

The WVA models operate under the assumption that optimal conditions for fish and wildlife habitat within a given coastal wetland type can be characterized, and that existing or predicted conditions can be compared to that optimum to provide an index of habitat quality. Habitat quality is estimated and expressed through the use of a mathematical model developed specifically for each wetland type. Each model consists of: (1) a list of variables that are considered important in characterizing community-level fish and wildlife habitat values; (2) a Suitability Index (SI) graph for each variable, which defines the assumed relationship between habitat quality (SI) and different variable values; and, (3) a mathematical formula that combines the SI for each variable into a single value for wetland habitat quality, termed the Habitat Suitability Index (HSI).

The product of an HSI value and the acreage of available habitat for a given target year is known as the Habitat Unit (HU) and is the basic unit for measuring project effects on fish and wildlife habitat. HUs are annualized over the project life to determine the Average Annual Habitat Units (AAHUs) available for each habitat type. The change (increase or decrease) in AAHUs for each future with-project scenario, compared to future without-project conditions, provides a measure of anticipated impacts. A net gain in AAHUs indicates that the project is beneficial to the fish and wildlife community within that habitat type; a net loss of AAHUs indicates that the project would adversely impact fish and wildlife resources.

All alternative WVAs were calculated using the intermediate relative sea level rise (RSLR) scenario and a 50-year project life. See Appendix C for the WVA model results and summary of assumptions. The draft U.S. Fish and Wildlife Coordination Act Report (FWCAR) dated May 24, 2021 (Appendix D) also offers information about the WVA process.

2.2 Proposed Action

The proposed action consists of constructing an initial, or preload levee, to prepare the Humble Canal Floodgate site (“the site,” see Figure 2) for the future construction of a floodgate, associated floodwalls, and earthen levees across Humble Canal. The preload levee would provide a good base and working surface for future construction by promoting settlement and strengthening the foundations of the future levee and floodwalls. The preload levee would tie-in to Reach I-3 and J2 (See Figure A-1 in Appendix A) which were previously constructed by TLCD and/or other non-Federal entities.

The main project site is approximately 3 miles south of the town of Montegut, LA and 2 miles east of Chauvin, LA in Terrebonne Parish. It is located on Humble Canal approximately 1/3 mile east

of the Bayou Terrebonne/Humble Canal intersection (Lat 29 26 08.5, Lon -90 33 44.0). A portion of the project site extends into the Pointe-aux-Chenes State Wildlife Management Area.

The preload levee will consist of north and south alignments on each side of the Humble Canal channel. The south alignment will extend from the channel approximately 500 linear feet and tie-in to levees that have been independently constructed by TLCD and others prior to this EA. It will have a maximum elevation of approximately +22 ft NAVD88. The north alignment will extend from the channel approximately 1150 linear feet and tie-in to existing Reach "J-2" Levee. It will have a maximum elevation of approximately +24 ft NAVD88.

Approximately 150,000 cubic yards (cyd) of fill and borrow material comprised of mostly of clay and some sand and rock will be used to construct the preload levee. The preload will be constructed over a wick drain foundation that will extend within and drain the upper 45 feet of clay foundation. The borrow material shall be of naturally occurring earth materials. Materials that are classified in accordance with American Society for Testing and Materials, Unified Soil Classification System (ASTM D 2487) as CL (silty clay or sandy clay) or CH (fat clay) with less than 35% naturally occurring sand content are suitable for use as levee construction material. Materials classified as ML (silt) are suitable if blended to produce a material that classifies as CL or CH according to ASTM D 2487. Allowable borrow material cannot have organic content greater than 12 percent by weight, as determined by ASTM D 2974, Method C.

The borrow material proposed to construct the preload levee would be hauled from the Terrebonne Levee and Conservation District's 100-acre J-1 borrow site which is adjacent to Bayou la Cache, off Aragon Road near Montegut, LA. It is about 5 miles north of the project site and has been pumped and drained since the 1950s and utilized for farming sugar cane and cattle grazing. The J-1 borrow site has been cleared of vegetation and subdivided into three categories for use. Figure 2 depicts the site location and the three subdivided areas of the J-1 borrow site. Acreage and specific planned use for each subdivided site is listed below (see Appendix A, Figure A-2b map):

1. Area A (29 acres) – primary borrow source
2. Area B space between the ponds (17 acres) – additional borrow
3. Access Road between Area B and C (additional borrow if needed)

It should be noted that the Sponsor has stated Area C is currently being used for another contract and will not be available for use in the Humble Canal preload levee project. The borrow site contains a makeup of 40% silty clay loam and 60% schriever clay. There is no evidence of potential contaminants in the soil.

The estimated construction duration would be 430 Days (5 day/week; 10 hr/days), the equipment that may be used in the various stages of construction of the preload levee includes, but is not limited to the following:

- Excavators, bulldozers, marsh excavators and buggies, barges, and pontoons will be used in clearing and grubbing, excavation, placement of levee and roadway fill, rock, and gravel.
- Dump trucks will be used to haul fill between the borrow pit and construction site and to haul other construction materials. See Section 4.15.2 for roadways utilized.
- Water or spray trucks will be used to process borrow material.
- Rollers will be used to compact levee and roadway fill.

- Excavator with mounted hollow mandrel will be used to install the vertical wick drains.
- A work boat will be used to install navigation aids in Humble Canal and oversee construction operations from the water when necessary.
- 1/2-ton and 1-ton work trucks will also be used on-site for hauling equipment.

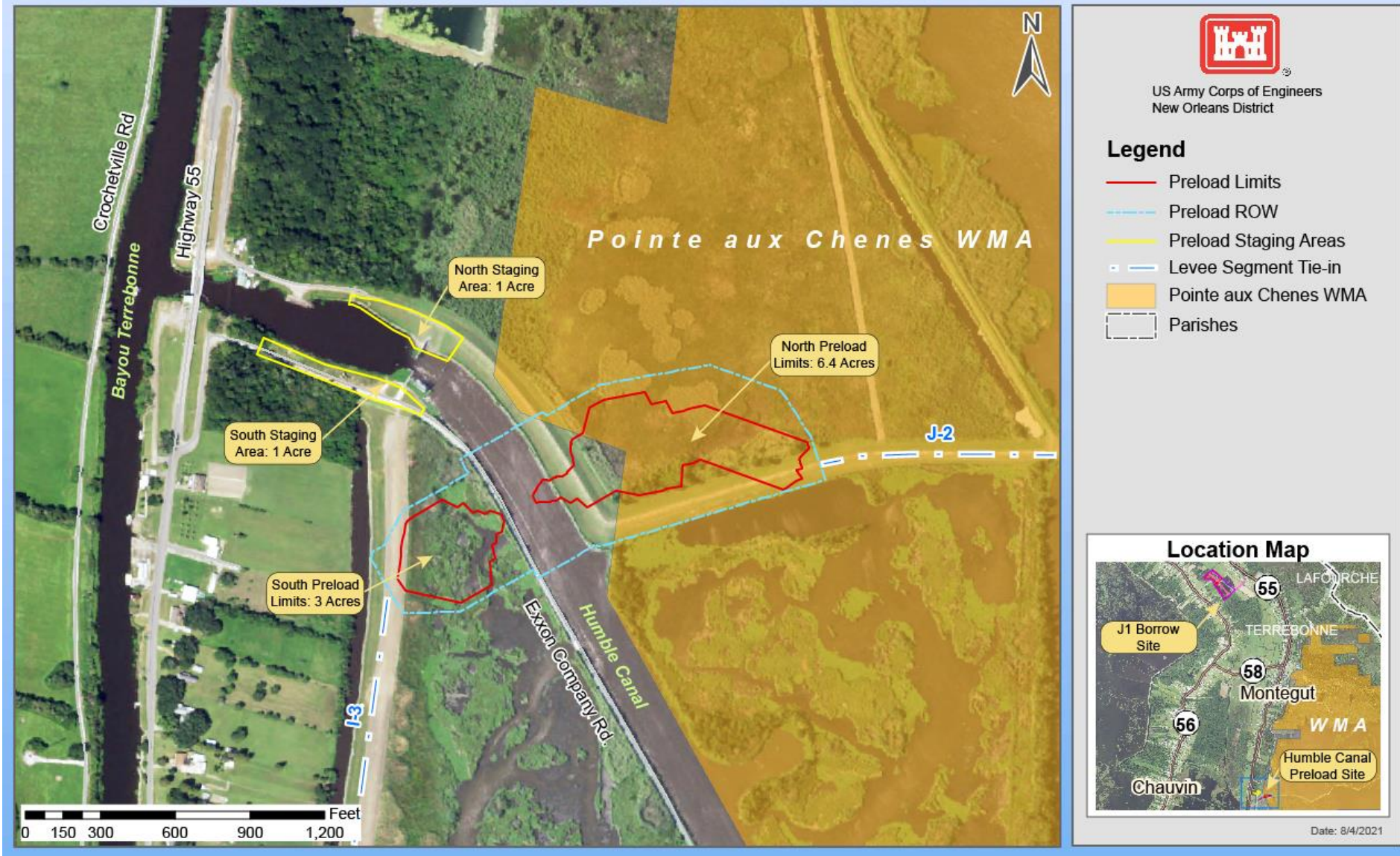


Figure 2: MRT-MTG Humble Canal Preload Project Location

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

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

Without implementation of the proposed action, other federal, state, local, and private projects have occurred and may still occur within or near the proposed project area, the Louisiana state coastal area, and the nation’s coastal areas. Some of these other efforts include the following:

- LGM and HNC, which are projects falling within alignment with the MRT-MTG alignment (See Section 1.6 for details).
- TLCD and/or other non-federal entities have also constructed storm damage risk reduction structures along the MRT-MTG alignment at their own expense. (See Figure A-1 in Appendix A for the non-Federal levee alignment completed to date).

Levee reaches constructed by TLCD and/or non-federal entities to elevation +12 feet NAVD88:

- Levee Reach J-1
- Levee Reach G-1
- Levee Reach H-3
- Levee Reach H-2
- Levee Reach I
- Levee Reach J-2
- Levee Reach F

Additional structures completed by TLCD and/or other non-federal entities to elevation +18 feet NAVD 88:

- On Reach B: Upper Bayou du Large Pump Station, Falgout Canal Floodgate
- On Reach E: two environmental control structures (ECS)
- On Reach F: Bayou Grand Caillou Barge Floodgate, HNC, Bubba Dove Barge Floodgate
- On Reach G: Four Point Bayou Floodgate and Roadway Gate, three ECS.
- On Reach H: Bayou Petit Interim Barge Gate, Highway 56 Roadway Gate, Placid Canal Barge Gate
- On Reach I (i.e. within the project area): Bush Canal Barge Gate, Bayou Terrebonne Sector Floodgate, Hwy 55 Roadway Gate, Humble Canal Barge Gate
- On Reach J: three ECS, Pointe aux Chenes Pump Station FP, Point aux Chenes Floodgate, Highway 665 Roadway Gate
- On Reach K: two ECS

-Other past and proposed actions are addressed in the 2017 Louisiana’s Comprehensive Master Plan for a Sustainable Coast (State Master Plan or “SMP”) (Source: <http://coastal.la.gov/our-plan/2017-coastal-master-plan/>). See Figure A-4a in Appendix A for a map of current SMP projects. The 2017 SMP indicates that the Coastal Protection and Restoration Authority Board of Louisiana (CPRAB) has, since 2007:

- Benefited 36,000 acres of coastal habitat

- Identified and used dozens of different Federal, state, local and private funding sources of projects
- Completed or funded construction of 135 projects
- Constructed or is currently constructing 60 miles of barrier islands/berms

- By September 2016, 108 Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) projects were completed in partnership with various Louisiana non-Federal sponsors and five statutorily designated Federal agencies, benefiting over approximately 100,000 acres (source: <https://lacoast.gov/new/About/FAQs.aspx>). As of March 2021, there are currently 127 active CWPPRA projects throughout coastal Louisiana, 15 of which are currently under active construction with 30 additional projects approved and in the engineering and design phase of development.

See Figures A-3a to A-3d (Appendix A) for all FWOP features. This includes maintenance dredging (e.g. Houma Navigation Canal) and beneficial use of dredged material projects alongside the abovementioned projects.

3 Affected Environment

3.1 Description of the Study and Project area

The Terrebonne Basin watershed (“the watershed”) is the study area (Appendix A, Figure A-2a) within the Deltaic Plain. The watershed covers approximately 1,712,500 acres in south-central Louisiana (LCWRCTF 1993), bordered by Bayou Lafourche to the east, the Atchafalaya Basin floodway to the west, the Mississippi River to the north, and the Gulf of Mexico to the south. It includes all of Terrebonne Parish and parts of Lafourche, Assumption, St. Martin, St. Mary, Iberville, and Ascension Parishes. The watershed is part of an abandoned delta complex, characterized by a thick section of unconsolidated sediments that are undergoing dewatering and compaction, contributing to high subsidence, and a network of old distributary ridges extending southward from Houma (CWPPRA 2021). The southern end of the watershed is defined by a series of narrow, low-lying barrier islands (Isles Dernieres and Timbalier chains), separated from the mainland marshes by a series of wide, shallow lakes and bays (e.g., Lake Pelto, Terrebonne Bay, Timbalier Bay).

The proposed MTG project feature (Figure 2) is located on Humble Canal (Lat 29 26 08.5, Long -90 33 44.0) approximately 3 miles south of the town of Montegut, LA and 2 miles east of Chauvin, LA in Terrebonne Parish. It is bounded on the north by the 100-acre J-1 borrow site off Aragorn Road. The east and west boundary follows Louisiana Highway 55 through Montegut, running south to the intersection with the Exxon Company Road, crossing the Hilcorps facility, and terminating at the southern bend in Point Barre Road. A portion of the proposed project site extends into the Pointe-aux-Chenes State WMA.

3.1.1 Sea Level Change

Global, or eustatic, sea level rise and regional subsidence have affected and are projected to continue affecting the watershed. ER 1100-2-8162 states potential relative sea level change must be considered in every USACE coastal activity as far inland as the extent of estimated tidal influence. The WVA incorporated the “intermediate” sea-level change scenario to determine benefit outcomes over the 50-year period of analysis. As documented in the WVA project

information sheets from US Fish and Wildlife (See Appendix C), the “low” and “high” sea level change rates were run on all impacted wetlands.

Because any alternative involves a one-time preload disposal event, using only the “intermediate” sea-level change scenario presents the most reasonable expectation for calculating benefits from the preload levee over the 50-year period of analysis. Under the “high” sea-level change scenario, any alternative would likely underperform very soon after construction the project would be inundated beyond tolerances as sea-level changes. This would be a result of not enough material being placed initially to compensate for sea-level change over time. However, under the “low” sea-level change scenario alternatives would likely not perform, or the benefits would be minimal, for an extended period post-construction until sea-level change reaches a point that is conducive for levee project function and sustainability. This would be a result of placing so much material initially, the levee project could rapidly subside.

3.1.2 Climate and Climate Change

The climate in the project area is humid, subtropical with a strong maritime character. Warm, moist southeasterly winds from the Gulf of Mexico prevail throughout most of the year, with occasional cool, dry fronts dominated by northeast high-pressure systems. The influx of cold air occurs less frequently in autumn and only rarely in summer. Tropical storms and hurricanes are likely to affect the area 3 out of every 10 years, with severe storm damage approximately once every 2 or 3 decades. The majority of these occur between early June and November. Earlier storms in the project area include Hurricane Juan (1985), Hurricane Andrew (1992), TS Isidore and Hurricane Lili (2002) (See Figure 1). The largest recent hurricanes were Katrina and Rita in 2005 which caused damage in the project area. Hurricanes Gustav and Ike in 2008, and more recently, Isaac in 2012, caused additional damage in the project area. Summer thunderstorms are common, and tornadoes strike 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, varying from a monthly average of 7.5 inches in July, to an average of 3.5 inches in October. (<http://www.srcc.lsu.edu/>).

The 2014 USACE Climate and Resiliency Policy Statement states the “USACE shall continue to consider potential climate change impacts when undertaking long-term planning, setting priorities, and making decisions affecting its resources, programs, policies, and operations.” A healthy and resilient coastal complex is dynamic, not static, and is subject to the ebb and flow of the various effects, adverse or beneficial, that impact conditions at any given point in time. The most significant adverse potential impact on coastal wetlands and levee and floodwall systems as a product of climate change is sea-level change (rise). The impact of sea-level change is addressed in section 3.1.2 Sea Level Rise.

3.1.3 Geology

The geology of the watershed within the Deltaic Plain is heavily influenced by the Mississippi River and the complex of abandoned and active deltas it created. Three of four abandoned delta complexes shaped Terrebonne and Lafourche Parishes as sediments were deposited on the Pleistocene Prairie. The Mississippi River laid down sediments from 100 meters to 200 meters thick at each delta (Penland et al. 1988). The abandoned deltas were formed generally from the west to the east in chronological sequence starting about 9,000 years before present and ending less than 100 years ago (Sevier 1990).

After delta abandonment occurs, sediments slowly deteriorate as they subside under their own weight. In addition, sea level has been rising throughout this time by about 5 meters to 8 meters (Mossa et al. 1990). Historically, the cycle of delta growth and destruction took about 5,000 years (Gosselink and Sasser 1991). However, because of a variety of factors (most notably human), delta destruction is taking place in a few human generations rather than thousands of years.

Soils

The soils of the natural levees in Terrebonne Parish formed in sediments deposited by former channels of the Mississippi River and its distributaries on the Atchafalaya and Lafourche Delta Complex (McDaniel & Trahan 2007). Loamy soils are dominant on the high and intermediate parts of the natural levees, and clayey soils are dominant on the lower parts of the natural levees and in back swamps. The loamy soils, and the clayey soils that rarely flood, make up about 9 percent of the total land area of the parish. They are used mainly for cropland, urban, and industrial purposes. A few areas are in pasture and woodland. The clayey soils on the lowest parts of the landscape are subject to occasional or frequent flooding and make up about 6 percent of the total land area of the parish. They are used mainly for timber production, pasture, recreation, and wildlife. Some narrow, loamy, natural levee ridges in the southeastern and east central parts of the parish extend south into the Gulf Coast Marsh. These areas are subject to occasional flooding during tropical storms and are used mainly for camps, home sites, and activities associated with the seafood industry.

3.2 Relevant Resources

This section contains a description of relevant resources that could be impacted by the proposed project. The important resources described are those recognized by laws, executive orders (EO's), regulations, and other standards of National, state, or regional agencies and organizations; technical or scientific agencies, groups, or individuals; and the public. Table 3-2a 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 project—mainly due to the remote and uninhabited nature of the project area and general lack of significant populated areas in the vicinity. The objectives of EO 11988 (Floodplain Management) were considered; however, CEMVN has determined that floodplain impacts, if any, from the proposed action would be mainly positive (i.e., improving the adjacent flood plain and associated habitats, and thus, maintaining their natural and beneficial values). Additionally, there is no practicable alternative for project construction outside the 100-year floodplain. No prime or unique farmlands, as defined and protected by the Farmland Protection Policy Act, would be affected by the proposed project (See Appendix D for coordination letter received from Natural Resource Conservation Service). No portion of the project area has been designated a Louisiana Natural and Scenic River; therefore, a Scenic Rivers permit is not warranted.

The following relevant resources are discussed in this report: navigation, wetlands, wildlife, aquatic resources/fisheries, essential fish habitat (EFH), threatened, endangered, and protected species, water and sediment quality, air quality, cultural resources, tribal resources, recreational resources, Aesthetics (visual resources), environmental justice, noise and vibration, and socioeconomics.

Table 3-2a: Relevant Resources and Their Institutional, Technical, and Public Importance

| Resource | Institutionally Important | Technically Important | Publicly Important |
|--|---|--|---|
| Aesthetics (Visual Resources) | USACE ER 1105-2-100, and National Environmental Policy Act of 1969, the Coastal Barrier Resources Act of 1990, Louisiana's National and Scenic Rivers Act of 1988, and the National and Local Scenic Byway Program. | Visual accessibility to unique combinations of geological, botanical, and cultural features that may be an asset to a watershed. State and Federal agencies recognize the value of beaches and shore dunes. | Environmental organizations and the public support the preservation of natural pleasing vistas. |
| Air Quality | Clean Air Act of 1963, Louisiana Environmental Quality Act of 1983. | State and Federal agencies recognize the status of ambient air quality in relation to the NAAQS. | Virtually all citizens express a desire for clean air. |
| 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. |
| Cultural and Historic Resources | National Historic Preservation Act (NHPA), as amended, and Section 106 and 110 of the NHPA; the Native American Graves Protection and Repatriation Act of 1990; the Archeological Resources Protection Act of 1979; and USACE's Tribal Consultation Policy (2012). 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 | Federal, State, and Tribal stakeholders document and protect cultural resources including archaeological sites, districts, buildings, structures, and objects that are significant in American history, architecture, archaeology, engineering, and/or sites of religious and cultural significance based on their association or linkage to past events, to historically important persons, to design and construction values, and for their ability to yield important information about prehistory and history.. 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 their ability to yield important information about prehistory and history. | Preservation groups and private individuals support protection and enhancement of historical resources. |

| Resource | Institutionally Important | Technically Important | Publicly Important |
|-------------------------------------|---|---|---|
| Environmental Justice | Executive Order 12898 of 1994 (E.O. 12898) and the Department of Defense's Strategy on Environmental Justice of 1995 | State and Federal agencies recognize social and economic welfare of minority and low-income populations | Public concerns about the fair and equitable treatment (fair treatment and meaningful involvement) of all people with respect to environmental and human health consequences of Federal laws, regulations, policies, and actions. |
| 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. |
| 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. |
| Noise and Vibration | USACE ER 1105-2-100, and National Environmental Policy Act of 1969, Noise Control Act of 1972, Quiet Communities Act of 1978USACE ER 1105-2-100 and National Environmental Policy Act of 1969 | Unwanted noise has an adverse effect on human beings and their environment, including land, structures, and domestic animals and can also disturb natural wildlife and ecological systems. | The EPA must promote an environment for all Americans free from noise that jeopardizes their health and welfare. |
| Recreation Resources | Federal Water Project Recreation Act of 1965 as amended, and Land and Water Conservation Fund Act of 1965 as amended | Provide high economic value of the local, state, and national economies. | Public makes high demands on recreational areas. There is a high value that the public places on fishing, hunting, and boating, as measured by the large number of fishing and hunting licenses sold in Louisiana; and the large per-capita number of recreational boat registrations in Louisiana. |
| Socio-Economic Resources | USACE ER 1105-2-100, and National Environmental Policy Act of 1969River and Harbor Flood Control Act of 1970 (PL 91-611). | When an environmental document is prepared and economic or social and natural or physical environmental effects are interrelated, then the environmental document will discuss all of these effects on the human environment. | Social concerns and items affecting area economy are of significant interest to community. |

| Resource | Institutionally Important | Technically Important | Publicly Important |
|--|--|---|---|
| Threatened, and Endangered, and Protected Species | The Endangered Species Act of 1973, as amended; the Marine Mammal Protection Act of 1972; and the Bald Eagle Protection Act of 1940. | USACE, USFWS, NMFS, NRCS, EPA, LDWF, and LDNR cooperate to protect these species. The status of such species provides an indication of the overall health of an ecosystem. | The public supports the preservation of rare or declining species and their habitats. |
| Water Quality | Clean Water Act of 1977, Fish and Wildlife Coordination Act, Coastal Zone Mgt Act of 1972, and Louisiana State & Local Coastal Resources Act of 1978. | USACE, USFWS, NMFS, NRCS, EPA, and State DNR and wildlife/fishery offices recognize value of fisheries and good water quality and the national and state standards established to assess water quality. | Environmental organizations and the public support the preservation of water quality and fishery resources and the desire for clean drinking water. |
| Wetlands | Clean Water Act of 1977, as amended; EO 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. |
| 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. |

3.2.1 Navigation

Existing Conditions

Humble Canal provides southerly access for fishing and recreational vessels from Bayou Terrebonne, which parallels LA Hwy 55, to the Gulf of Mexico via Madison Bay and Lake Barre. The area has historically provided support for offshore petrochemical production/exploration efforts.

An existing barge gate (See Figure 2) admits boat traffic that pass under the Humble Canal Bridge.

3.2.2 Wetlands

Existing Conditions

Wetlands in the vicinity are tidally influenced and classified as mainly brackish marsh, with areas of saline marsh between Madison Bay and Lake Barre. The wetlands are strongly influenced by freshwater discharges from the Bayou Terrebonne and adjacent distributary outlets. Mean

growing season salinity within the project ranges from 2.25 ppt at CRMS0385 south of Chauvin and 7.55 ppt at CRMS0315 south of Montegut (CPRA 2019).

Marsh in the watershed is being lost around Wonder Lake at the rate of 1.67 percent per year (Couvillion et al. 2017). This loss is due to subsidence, sea level rise, saltwater intrusion caused by navigation channels and oilfield canals, shoreline erosion, and ponding of water, etc. These losses are expected to continue with or without the proposed project.

A combination of fresh and brackish marsh species occurs within the project area. Fresh marsh northeast of the proposed preload levee had been previously been classified as low-salinity marsh prior to constructed levees in the Montegut forced drainage area. Brackish marsh located in the northwest corner is not impounded by existing levees. Wetland species in the project area include leafy three square (*Schoenoplectus robustus*), California bullwhip (*Scirpus californicus*), cattail (*Typha latifolia*), Roseau cane (*Phragmites australis*), water hyssop (*Bacopa monnieri*), rushes (*Juncus sp.*), iris (*Iris sp.*), seashore paspalum (*Paspalum vaginatum*), saltmeadow cordgrass (*Spartina patens*), and smooth cordgrass (*Spartina alterniflora*).

No marsh or other wetland habitats are found at the J-1 borrow site.

BLH is located northeast of Humble Canal in the Montegut forced drainage system. Historically, this area was tidal marsh, but after being leveed and pumped, trees have colonized a portion of the area adjacent to Humble Canal. Trees include black willow (*Salix nigra*), Chinese tallow (*Triadica sebifera*), sugarberry (*Celtis laevigata*), water oak (*Quercus nigra*), and live oak (*Quercus virginiana*).

Invasive Species

Invasive plant species are found in the project area. The most visible is the Chinese tallow tree, a successful invader of chenier habitats. It has affected plant community structure by becoming the most abundant woody species at many locations. It has the potential to invade surrounding marshes and convert them from herbaceous to woody plant communities (Neyland and Meyer 1997). Other important invasives include water hyacinth (*Eichhornia crassipes*) and giant salvinia (*Salvinia molesta*), both of which are present in the marshes and canals of South Louisiana. Both can form dense mats that cover entire bodies of water with a thick layer that blocks sunlight, thereby reducing photosynthesis, reducing dissolved oxygen, and contributing to fish kills.

3.2.3 Aquatic Resources/Fisheries

Existing Conditions

The project area consists of primarily shallow open water and fresh to brackish marsh. The water bottom is composed of firm silty, sandy clay mainly deposited by the river. These submerged lands are typically soft and almost fluid, but some areas are firm where heavier silts and sands have deposited. Water depths measure approximately 1 to 5 feet with submerged aquatic vegetation (SAV) occurring in some portions of the shallow open-water areas, with the most common species including pondweed (*Potamogeton sp.*), coontail (*Ceratophyllum demersum*), and water millfoil (*Myriophyllum spp.*). These submerged plants provide a source of food for the large numbers of waterfowl frequently during winter. None of these SAV's were observed during the site visit in May 2021 with US Fish and Wildlife. Shellfish species including oysters (*Crassostrea virginica*), shrimp (*Penaeus sp.*), and crabs (*Callinectes sapidus*) are found in the brackish marshes near the project area. Many juveniles of these species use fringe marsh,

interspersed shallow ponds, and SAV for grazing. See Figure 3-2a for private oyster lease location in relation to the pre-load levee footprint.

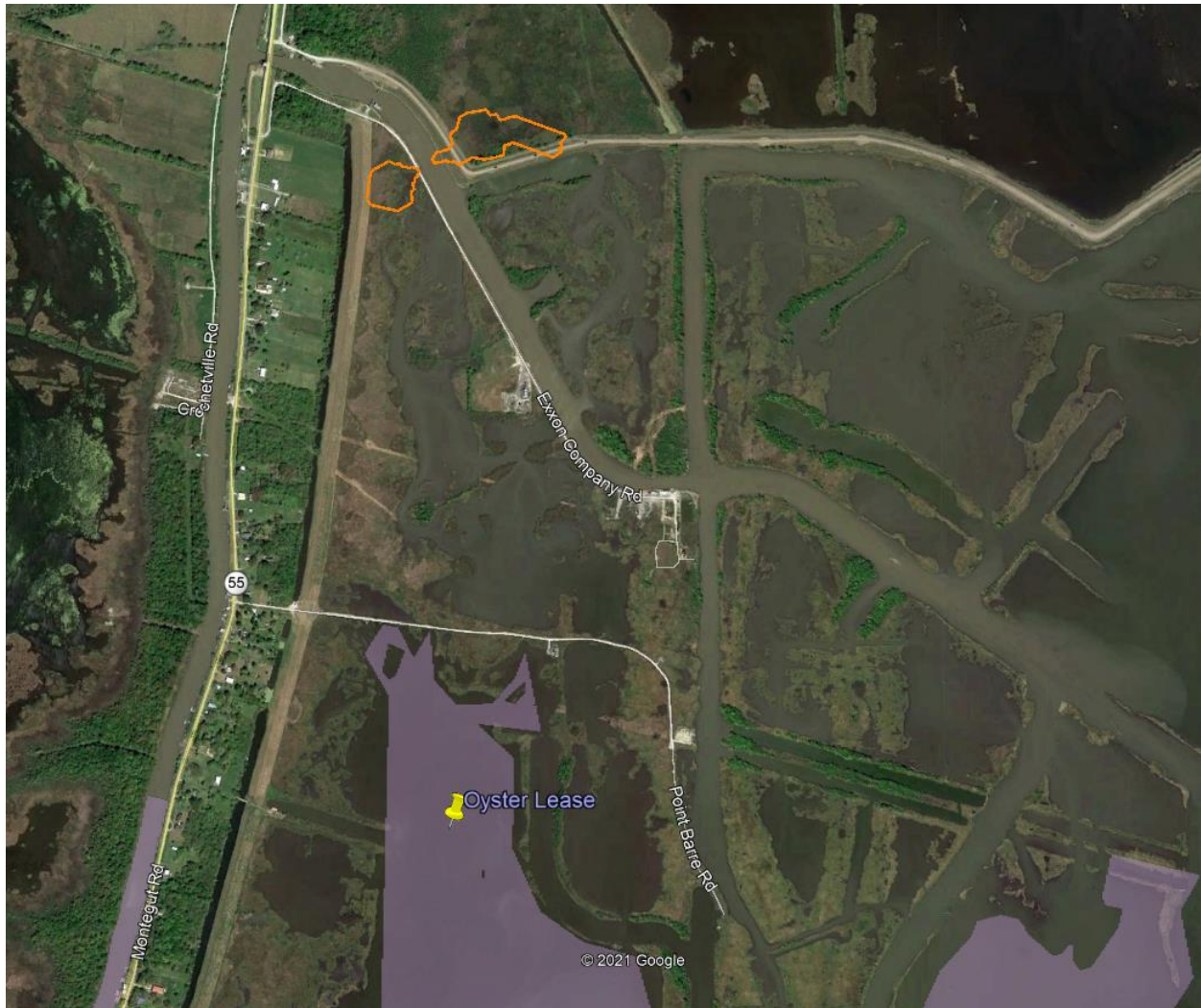


Figure 3-2a. Preload footprint (orange polygon) location relative to private oyster leases.

Fishing is a major recreational and commercial activity. The estuarine nature of the area provides a dynamic aquatic environment where freshwater and saltwater meet, providing a transitional zone between the two aquatic ecosystems. The marshes and waterways provide important spawning and nursery habitat and a food source for a wide variety of fresh and saltwater fish species. Vegetation and marsh loss degrades the utility of the area as a nursery habitat and food source.

Potential species that could occur during high water/low salinity periods include channel catfish (*Ictalurus punctatus*), blue catfish (*Ictalurus furcatus*), flathead catfish (*Pylodictis olivaris*), smallmouth bass (*Micropterus dolomieu*), largemouth bass (*Micropterus salmoides*), black

crappie (*Pomoxis nigromaculatus*), white crappie (*Pomoxis annularis*), sunfish (*Lepomis spp.*), gizzard shad (*Dorosoma cepedianum*), and buffalo (*Ictiobus bubalus*), among others.

During low water periods, storm surges, and seasonally strong tidal influences, the increased saltwater intrusion from the Gulf restricts the abundance and diversity of freshwater fisheries, and provides opportunities for estuarine (brackish) species. Many of these species are economically and recreationally important, including red drum (*Sciaenops ocellatus*), black drum (*Pogonias cromis*), spotted sea trout (*Cynoscion nebulosus*), sand seatrout (*Cynoscion arenarius*), striped mullet (*Mugil cephalus*), Gulf menhaden (*Brevoortia patronus*), Atlantic croaker (*Micropogonias undulatus*), sheepshead (*Archosargus probatocephalus*), southern flounder (*Paralichthys lethostigma*), Spanish mackerel (*Scomberomorus maculatus*), southern kingfish (*Menticirrhus americanus*), and spot (*Leiostomus xanthurus*).

Commercially important shellfish found 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*). No oyster leases or public seeding grounds are located within the project area. However, privately-owned oyster leases are located immediately south of Point Barre Road.

The watershed also supports 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.

Louisiana's coastal estuaries are among the most productive in the Nation (Chew D.L.). Louisiana has historically been an important contributor to the Nation's domestic fish and shellfish production, and one of the primary contributors to the Nation's food supply for protein. Landings in 2007 for commercial fisheries in coastal Louisiana, estimated at 951 million pounds, were the largest for any state in the contiguous U.S. and second only to Alaska (National Marine Fisheries Service, 2008). These landings represent over 10% of the total landings in the U.S., with a value of approximately \$259.6 million.

The saltmarsh topminnow (*Fundulus jenkinsi*) may occur within the watershed. This species is at-risk for federal listing and has a S3 state rank and is considered rare in Louisiana. The saltmarsh topminnow is a species of concern that could use the watershed's tidal marshes. Pollution and habitat destruction are major threats with habitat alteration being the most serious threat to this species.

No aquatic species have been documented within the J-1 borrow site.

3.2.4 Wildlife

Existing Conditions

The watershed provides habitat for numerous species of wildlife, including waterfowl, wading birds, shorebirds, mammals, reptiles and amphibians. The coastal marshes provide wintering habitat for migratory ducks and geese. The resident Mottled Duck (*Anas fulvigula*), which nests in fresh to brackish marshes along the coast, is found throughout the year within watershed marshes. Besides migratory waterfowl, other game birds which occur within the area include rails

(*Rallus sp.*), coots (*Fulica sp.*), and snipe (*Gallinago sp.*). Several species of wading birds including of herons and egrets (*Ardea sp.*), and ibis (*Eudocimus sp.*) utilize the marsh, mud flats, and shallow water habitats within the watershed. The mudflats and shallow-water areas also attract a wide variety of shorebirds (killdeer, avocet, stilt, dowitchers, snipe, and sandpipers), while seabirds such as pelicans (*Pelecanus sp.*), gulls (*Larus sp.*), and terns (*Sternula sp.*) are found more often in deeper water areas.

Other common bird species that can be found within the watersheds include songbirds, raptors, kingfishers, and numerous seasonal neo-tropical migrants. Ibis, egrets, cormorants (*Phalacrocorax spp.*), terns, gulls, skimmers (*Rynchops niger*), sandpipers (*Calidris spp.*), pelicans, osprey (*Pandion haliaetus*), herons (*Ardea herodias*; *Egretta sp.*; *Nycticorax sp.*), hawks (*Accipiter sp.*; *Buteo sp.*), kestrels (*Falco sparverius*), vultures (*Coragyps atratus*; *Cathartes aura*), grackles (*Quiscalus spp.*), blackbirds (*Agelaius phoeniceus*), and several species of swallows, flycatchers, wrens, warblers, and sparrows also reside within the watershed.

Commercially and economically important wildlife species include mammals using the marsh habitat, such as nutria (*Myocastor coypus*), muskrat (*Ondatra zibethicus*), mink (*Neovison vison*), raccoon (*Procyon lotor*), as well as the American alligator (*Alligator mississippiensis*). Other wildlife species known to have occurred within the watershed include white-tailed deer (*Odocoileus virginianus*), feral hogs (*Sus scrofa*), and swamp rabbits (*Sylvilagus aquaticus*).

See Table B-3 in Appendix B for a listing of common wildlife species in Terrebonne Basin that could reside around the proposed project features and J-1 borrow pit.

3.2.5 Essential Fish Habitat

Existing Conditions

All of the marine and estuarine waters of the northern Gulf of Mexico have been designated as Essential Fish Habitat (EFH) through regulations promulgated by the National Marine Fisheries Service (NMFS) and the Gulf of Mexico Fishery Management Council as required by the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA). EFH is described as waters and substrates necessary for Federally-managed species to spawn, breed, feed, and grow to maturity. In the northern Gulf of Mexico, EFH has generally been defined as areas where individual life-stages of specific Federally-managed species are common, abundant or highly abundant. In estuarine areas, EFH is defined as all estuarine waters and substrates (mud, sand, shell, rock and associated biological communities, including the sub-tidal vegetation (seagrasses and algae) and adjacent inter-tidal vegetation (marshes and mangroves). The open waters, waterbottom substrates, and inter-tidal marshes are considered EFH under the estuarine component.

In addition, estuarine aquatic habitats provide nursery and foraging areas that support economically important marine fishery species that 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 (See Table 3-2b below). These species use the area for foraging and nursery habitat, as well as a migration route 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.

Table 3-2b: EFH Species in the Watershed

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

EFH for highly migratory species include blacktip, bull, spinner, and finetooth sharks within the watershed in the estuarine waters of Terrebonne Bay. See Table 3-2c.

Table 3-2c. Highly Migratory Species EFH in the Watershed

| Common Name | Life Stage | EFH State Waters Eco-Region 4 |
|----------------|--------------------|--|
| Blacktip Shark | Neonate & Juvenile | Estuarine waters of Galveston, Terrebonne and Timbalier Bays; all nearshore and offshore waters |
| | Adult | Estuarine waters of Vermilion, Atchafalaya, Terrebonne and Timbalier Bays; all nearshore and offshore waters |
| Bull Shark | Neonate | All estuarine waters; nearshore waters Freeport to mouth of Sabine Lake; nearshore waters off west Cameron Parish |
| | Juvenile | All estuarine waters; nearshore waters Freeport to mouth of Sabine Lake; nearshore waters off west Cameron Parish; Terrebonne Bay to Mississippi River delta |
| Spinner Shark | Neonate | Galveston Bay (including East, West and Trinity Bays) and nearshore waters off Brazoria, Galveston, and Chambers Counties; Terrebonne Bay and estuarine and nearshore waters to Grand Isle |

| | | |
|-----------------|------------------|---|
| | Juvenile | Galveston Bay (including East, West and Trinity Bays) all nearshore waters (ex. off mouth of Mermentau River and between Vermillion and Atchafalya Bays); Terrebone and Barataria Bays and the Mississippi birdfoot delta |
| Finetooth Shark | Juvenile & Adult | Estuarine and nearshore waters east of Terrebonne Bay |

3.2.6 Threatened, Endangered and Protected Species

Existing Conditions

According to a USFWS letter dated May 24, 2021, which provided comments in accordance with the Fish and Wildlife Coordination Act (FWCA), Endangered Species Act (ESA), Bald and Golden Eagle Protection Act (BGEPA), and the Migratory Bird Treaty Act (MBTA), protected species that may occur in the project vicinity include the formerly listed brown pelican (*Pelecanus occidentalis*), and various raptors including the formerly listed bald eagle (*Haliaeetus leucocephalus*) and peregrine falcon (*Falco peregrines*).

The federally-listed threatened West Indian manatee (*Trichechus manatus*) could be encountered in the project area. 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. Manatees forage on submerged, floating, and shoreline vegetation including seagrasses, algae, and invasive water hyacinth. There is a low chance that manatees would be found in the project area and surrounding shallow open waters; however, if manatees are observed within 100 yards of the “active work zone” during proposed construction and dredging activities, the appropriate special operating conditions would be implemented as provided by the USFWS, Lafayette, Louisiana Field Office. Special operating conditions for manatees would be included in any plans and specifications developed prior to dredging and disposal activities (See Appendix G).

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 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.

Of the Federally listed and protected species within the project vicinity only the protected species are known to inhabit the immediate project area. Ibis, herons, egrets, hawks, owls, anhinga, and bald eagles may reside in the vicinity of the project area. No known colonial nesting water/wading bird rookeries exist within the project area. If any such nests are discovered during construction the appropriate no work zones would be observed.

3.2.7 Water and Sediment Quality

Regulatory Overview

The Clean Water Act (CWA) established a process for states to assess surface water quality. Section 305(b) requires states to develop a surface water quality monitoring program, and a report describing the water quality status of state waterbodies with respect to support of designated uses. Section 303(d) requires states to develop and list Total Maximum Daily Loads (TMDLs) for

impaired waterbodies (waterbodies with water quality unsupportive of one or more designated uses). A TMDL is the maximum amount of the pollutant(s) contributing to impairment that can enter a waterbody from all sources (including nonpoint sources) and still meet water quality criteria. The Louisiana Department of Environmental Quality (LDEQ) implements a watershed-based approach to reduce pollutant loads in the waterbodies where TMDLs have been established, through the Louisiana Pollutant Discharge Elimination System (LPDES) and Louisiana Nonpoint Source (NPS) programs. For the purpose of state water quality assessment, Louisiana is divided into twelve major watersheds, which are further divided into areas known as waterbody subsegments. The Louisiana Water Quality Inventory: Integrated Report is the biennial publication prepared by the Louisiana Department of Environmental Quality (LDEQ) on the status of Louisiana waters in accordance with Sections 305(b) and 303(d) (LDEQ 2021).

Historic and Existing Conditions

Figure A-4 (See Appendix A) depicts project area LDEQ subsegments and ambient water quality monitoring sites. The project area is within subsegment 120704 (Bayou Terrebonne-From Humble Canal to Lake Barre [Estuarine]). The four designated uses for this subsegment (Table B-4a, Appendix B) include primary contact recreation (PCR), secondary contact recreation (SCR), fish and wildlife propagation (FWP), and oyster propagation (OYS). In the 2012-2020 reporting periods, the subsegment has only supported half of its designated uses (Table B-4b, Appendix B). In the 2014-2020 reporting periods, SCR and FWP have been fully supported, but PCR and OYS have not been supported, while during the 2012 reporting period PCR and SCR were fully supported but FWP and OYS were not supported.

Table B-4c (Appendix B) includes suspected causes and sources of designated use impairment. For the 2012 reporting period, the BP/Gulf of Mexico oil spill was likely responsible for impairment of FWP and OYS. For the 2014-2020 reporting periods, pathogens originating from sewerage discharges were responsible for impairment of PCR and OYS.

Table B-4d (Appendix B) is a 2010-2020 statistical water quality summary for LDEQ water quality monitoring network stations 0349 and 3001, which are located approximately 3 ½ miles inland and gulfward of the project area. Site 0349, located further inland, is generally freshwater, while site 3001 is intermediate or brackish. Site 3001 has slightly higher pH and slightly lower water temperatures. The 5th and 25th percentile dissolved oxygen statistics and median, 75th, and 95th percentile turbidity statistics for site 0349 suggest the site more commonly experiences low dissolved oxygen conditions, often in violation of Louisiana water quality criteria, which may be related to elevated turbidities. For both sites, total nitrogen concentrations (nitrate + nitrite and Kjeldahl nitrogen) often exceed the EPA regional water quality criteria for rivers and streams. For both sites, enterococci concentrations were generally above both Louisiana criteria values. Overall, the water quality data provides additional context for designated use support and sources of impairments.

Water quality impairments in the watershed include fecal coliform bacteria resulting from on-vessel discharge and sewage discharges and enterococcus bacteria resulting from on-vessel discharge. See Table B-4a (Appendix B) for details.

The J-1 borrow area is a dry site located within a fallow agricultural field, and contains no water bodies within the area proposed for excavation. Bayou LaCache is located just to the west of the borrow site, but is not expected to be impacted by the project. An approximately 27-acre borrow pond is located nearby, but is also not expected to be impacted by the project action.

3.2.8 Air Quality

Existing Conditions

The USEPA, under the requirements of the Clean Air Act (CAA), has established National Ambient Air Quality Standards (NAAQS) for six contaminants, referred to as “criteria” pollutants (40 CFR 50). These are 1) carbon monoxide (CO), 2) nitrogen dioxide (NO₂), 3) ozone (O₃), 4a) particulate matter less than 10 microns in diameter (PM₁₀), 4b) particulate matter less than 2.5 microns in diameter (PM_{2.5}), 5) lead (Pb), and 6) sulfur dioxide (SO₂).

Ozone is the only parameter not directly emitted into the air, forming in the atmosphere when three atoms of oxygen (O₃) are combined by a chemical reaction between oxides of nitrogen (NO_x) and volatile organic compounds (VOC) in the presence of sunlight. Motor vehicle exhaust and industrial emissions, gasoline vapors, and chemical solvents are some of the major sources of NO_x and VOC, also known as ozone precursors. Strong sunlight and hot weather can cause ground-level ozone to form in harmful concentrations in the air.

The USEPA Green Book Nonattainment Areas for Criteria Pollutants (Green Book) maintains a list of all areas within the United States that are currently designated “nonattainment” areas with respect to one or more criteria air pollutants. Nonattainment areas are discussed by county or metropolitan statistical area (MSA). MSAs are geographic locations, characterized by a large population nucleus, that are comprised of adjacent communities with a high degree of social and economic integration. MSAs are generally composed of multiple counties. Review of the Green Book indicates that Terrebonne Parish is currently in attainment for all Federal NAAQS pollutants, including the 8-hour ozone standard (USEPA 2011). This classification is the result of area-wide air quality modeling studies. Therefore, further analysis required by the CAA general conformity rule (Section 176(c)) would not apply for the proposed Federal action.

Table 3-2d: National Ambient Air Quality Standards

| Pollutant | Primary/ Secondary | Averaging Time | Level | Form |
|-------------------------------------|-----------------------|-------------------------|-----------------------------|---|
| Carbon Monoxide (CO) | primary | 8 hours | 9 parts per million (ppm) | Not to be exceeded more than once per year |
| | | 1 hour | 35 ppm | |
| Lead (Pb) | primary and secondary | Rolling 3 month average | 0.15 µg/m ³ (1) | Not to be exceeded |
| Nitrogen Dioxide (NO ₂) | primary | 1 hour | 100 parts per billion (ppb) | 98th percentile of 1-hour daily maximum concentrations, averaged over 3 years |
| | primary and secondary | 1 year | 53 ppb (2) | Annual Mean |
| Ozone (O ₃) | primary and secondary | 8 hours | 0.070 ppm (3) | Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years |

| | | | | | |
|-----------------------------------|-------------------|-----------------------|----------|------------------------|---|
| Particle Pollution (PM) | PM _{2.5} | primary | 1 year | 12.0 µg/m ³ | Annual mean, averaged over 3 years |
| | | secondary | 1 year | 15.0 µg/m ³ | Annual mean, averaged over 3 years |
| | | primary and secondary | 24 hours | 35 µg/m ³ | 98th percentile, averaged over 3 years |
| | PM ₁₀ | primary and secondary | 24 hours | 150 µg/m ³ | Not to be exceeded more than once per year on average over 3 years |
| Sulfur Dioxide (SO ₂) | | primary | 1 hour | 75 ppb (4) | 99th percentile of 1-hour daily maximum concentrations, averaged over 3 years |
| | | secondary | 3 hours | 0.5 ppm | Not to be exceeded more than once per year |

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

(2) The level of the annual NO₂ standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.

(3) Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O₃ standards additionally remain in effect in some areas. Revocation of the previous (2008) O₃ standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.

(4) The previous SO₂ standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous SO₂ standards or is not meeting the requirements of a SIP call under the previous SO₂ standards (40 CFR 50.4(3)). A SIP call is an EPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the required NAAQS.

3.2.9 Cultural Resources

Existing Conditions

Cultural Resources surveys have been conducted in lower Terrebonne Parish since 1926. The most recent and synthesized of these are Weinstein and Kelley (1992) and Robblee et al. (2000). Numerous earthen mounds and shell middens have been located and recorded.

Prehistoric settlement in lower Terrebonne parish dates as early as the Marksville Period (A.D. 1– 400) and includes mound sites, hamlets, and shell middens. Societies in the project area subsisted on marsh resources such as clams, fish, mammals, birds, and reptiles, while shellfish were also utilized as a food source and to provide a base on which to settle. By the Coles Creek Period (A.D. 700 – 1200), settlements in the region may have been organized as major mound sites surrounded by satellite villages and seasonal camps. Villages were concentrated on stable levee surfaces or at the confluence of distributaries. Both year-round occupation and seasonal

movement have been suggested for the inhabitants of the area. During Plaquemine times (A.D. 1200 – 1700) the settlement pattern suggests a complex social hierarchy, with large ceremonial sites composed of multiple mounds surrounding a central plaza, and smaller villages and hamlets scattered throughout the area. Non-mound sites that have been located are on elevated natural levees and seem to have focused on the cultivation of crops. The majority of known prehistoric sites located in the vicinity of the project area date to this late prehistoric period and suggest a significant occupation of the region.

The early historic period in southeast Louisiana is marked by increasing settlement and European dealings with Native American tribes. Early French writings describe a native cultural landscape of small tribal groups and shifting alliances. The most is known about the Chitimacha Indians, a federally recognized Native American tribe that claims ties to much of south Louisiana as its ancestral homeland, and is currently clustered around Charenton in St. Mary Parish. In addition to the many ancient Chitimacha village locations recorded on State Records, the Chitimacha Indians remember, respect, and maintain numerous traditional cultural properties within south Louisiana.

Although it is generally accepted that the Houma Indians were located near the confluence of the Red and Mississippi rivers during the early historic period, some historic accounts suggest that they were virtually wiped out by fighting and other causes of death during the years at the end of the 17th century and the beginning of the 18th century. By the middle of the 20th century the Houma had grown and were settled in Terrebonne and Lafourche parishes. Descendents of these people are organized today as the United Houma Nation, but are not federally recognized as a Native American tribe.

After early European exploration of the area, the French began colonization efforts in the early 18th century. Settlement was sparse until the Acadians began arriving ca. 1765, and their influence persisted throughout the Antebellum Era. The Civil War left the project vicinity relatively unaffected, but after the Civil War all of south Louisiana had a hard task of recovery following the abolition of slave labor and war-related destruction of levees and other aspects of infrastructure. New plantations and new economies began to develop. By the late nineteenth century, small communities were emerging along the bayous. Population fluctuations took place as blacks, the predominant population before the Civil War, migrated outward to seek more opportunities.

The growth of the sugar industry was a boom to the area, and in 1917 the first commercial gas well struck near Montegut. Numerous oil and gas fields dot the region today. The shrimping industry grew as innovations occurred that allowed greater catches to be more easily retrieved and distributed. Canal systems and the Intracoastal Waterway have made a large portion of the project vicinity navigable by water, which has aided in the distribution of all resources. Today, the project vicinity is a vital economic area with diverse productive strategies and diverse peoples.

3.2.1 Tribal Resources

Existing Conditions

In addition to cultural resources or historic properties considered eligible for the National Register of Historic Places, USACE's 2012 Tribal Consultation Policy asks the agency to determine if any of three categories of resources will be significantly adversely affected by the proposed action. The three categories are: Tribal Rights, Tribal lands, and protected tribal resources (see Section 7. E.O. 13175 for more information on Government-to-Government Consultation between

Federally-recognized Tribes and USACE). Tribal interest varies by geographic limits and USACE uses the most inclusive approach to consultation and coordination. Six (6) Federally-recognized Tribes have an aboriginal/historic interest in the watershed. The tribes are: 1) the Chitimacha Tribe of Louisiana, 2) the Choctaw Nation of Oklahoma, 3) the Coushatta Tribe of Louisiana, 4) the Jena Band of Choctaw Indians, 5) the Mississippi Band of Choctaw Indians, and, 6) the Tunica-Biloxi Tribe of Louisiana.

According to available government records, there are no tribal lands, nor are there specific tribal treaty rights related to access or traditional use of the natural resources in the watershed. There are, however, many protected tribal resources within the Parish representing pre-contact utilization of the landscape, burial practices, and continued historic period occupation. In a series of maps dating from the 1730s through the 1780s, the project area is not accurately represented (d'Anville, 1752; Demaringy, 1743 and Gauld, 1778). The Chetemaches (Chitimacha Tribe of Louisiana) is noted as having "old villages" along Bayou LaFourche and near present day Plaquemine Louisiana, but no detail is provided for along Bayou Terrebonne. Native American occupation of the area clusters along the Bayou Grande and Petit Calliou and other older landforms in the area. There are resident State-recognized Tribes in the watershed such as the Houma and the Grand Caillou/Dulac Band of Biloxi-Chitimacha-Choctaw.

To augment CEMVN's background research into the interested Federally-recognized Tribes and the types of tribal resources that have the potential to be within the watershed, CEMVN, consulted with Federally-recognized Indian tribes on actions having the potential to significantly affect protected tribal resources, tribal rights, or Indian lands via our National Historic Preservation Act (NHPA) Section 106 consultation letter (see Appendix D for responses)

3.2.2 Recreational Resources

Existing Conditions

This resource is institutionally important because of the Federal Water Project Recreation Act of 1965, as amended and the Land and Water Conservation Fund Act of 1965, as amended. Recreational resources are technically important because of the high economic value of these recreational activities and their contribution to local, state, and national economies. Recreational resources are publicly important because of the high value that the public places on fishing, hunting, and boating, as measured by the large number of fishing and hunting licenses sold in Louisiana, and the large per-capita number of recreational boat registrations in Louisiana.

The watershed is bordered by Bayou Lafourche on the east, the Atchafalaya Basin floodway on the west, and the Gulf of Mexico on the south. The Basin includes all of Terrebonne Parish, and parts of Lafourche, Assumption, St. Martin, St. Mary, Iberville, and Ascension parishes. Major bodies of water located in the Basin include Lake Boudreaux, Lake Felicity, Bayou Terrebonne, Bayou Pointe au Chenes, Bayou du Large and many others including numerous oil field canals. The Pointe-aux-Chenes Wildlife Management Area (WMA), the Mandalay National Wildlife Refuge (NWR), the Isles Dernieres Barrier Islands Refuge, and the Elm Hall WMA are located within the Basin. The Atchafalaya Delta WMA is also located in the vicinity. See Table 3-2e for a listing of the refuges and wildlife management areas in the Basin. Most of the watershed is brackish and saline marshes with some forested wetlands and uplands. Recreational facilities include camps, marinas, boat launch ramps and small neighborhood parks.

These extensive wetland resources, comprised of swamp and marsh habitat, have traditionally supported substantial consumptive and non-consumptive recreational use. Primary consumptive recreational uses have included both freshwater and saltwater based activities. Freshwater based consumptive uses include freshwater fishing, crawfishing, hunting for waterfowl, as well as hunting for deer or small game along natural ridges and in wooded swamp lands. Primary saltwater based activities have included saltwater fishing, recreational shrimping, and crabbing. Non-consumptive activities have included recreational boating, water skiing, wildlife observation, birdwatching, hiking, camping, and photography.

Like much of coastal southeast Louisiana, much of the Basin has experienced substantial coastal erosion, loss of wetlands, and increasing salinity levels. These conditions are due to numerous factors, such as extensive oil and gas exploration via a maze of canals and pipelines, subsidence, and coastal storm surges. Although the Basin has traditionally provided excellent saltwater fishing, in recent years, because of the increased salinity levels, anglers have been able to catch saltwater species much farther inland than in the past. As fresh and intermediate marshes, cypress trees, and submerged aquatic vegetation in the area have disappeared, waterfowl habitat has become less abundant, and, consequently, duck hunting opportunities have decreased.

Unlike most of coastal Louisiana, the far western portion of the Basin, due to the influence of the Atchafalaya River, has been relatively stable or experiencing some limited accretion of deltaic lands. Salinity levels are relatively stable in this area and freshwater fishing opportunities in the area are excellent. The floating marshes traditionally have provided quality habitat for waterfowl and waterfowl hunting.

Table 3-2e. Recreation Resources within Terrebonne Basin

| Managing Agency | Name | Public Recreation Resources |
|--|--|--|
| US Fish and Wildlife Service | Mandalay National Wildlife Refuge | 4,416 acres with estimated annual visitation of 18,000. Refuge offers public use opportunities for fishing, wildlife observation, photography, environmental education, and boating. |
| Louisiana Department of Wildlife and Fisheries | Pointe-aux-Chenes Wildlife Management Area | 33,488 acres, offers fishing, hunting, boating, wildlife viewing and tent-only camping. |
| Louisiana Department of Wildlife and Fisheries | Atchafalaya Delta Wildlife Management Area | 137,695 acres, offers fishing, hunting, boating, and 2 campgrounds. |
| Louisiana Department of Wildlife and Fisheries | Isle Dernieres Barrier Islands Refuge | Consists of four barrier islands in the Isles Dernieres Chain. Wine, Trinity/East, Whiskey, and Raccoon Islands comprising a total of approximately 1,900 acres. Raccoon Island is one of the most important waterbird nesting areas on the coast. |
| Louisiana Department of Wildlife and Fisheries | Elm Hall Wildlife Management Area | 2,839 acres located in Assumption Parish. Access is via water from Lake Verret. The entire acreage consists of cypress-tupelo swamp. Pipe canals and natural drainages bisect the area. Deer, squirrels, and waterfowl hunting are allowed as is trapping for furbearers. The area is known for good fishing, particularly chinquapin and white perch. Numerous bald eagles have been spotted in the vicinity and nests have been located nearby. The area offers opportunities for bird watchers, as well as aesthetic values with respect to unique cypress and tupelo stands. |

Sources: <https://www.fws.gov>, <https://www.wlf.louisiana.gov>
 Accessed April 2021

3.2.3 Aesthetics (Visual Resources)

Existing Conditions

Environmental assessments and impact statements for Corps planning studies are supposed to focus on significant environmental considerations as recognized by technical, institutional and public sources. The Visual Resources Assessment Procedure for U.S. Army Corps of Engineers (Visual Resource Assessment Procedure [VRAP] (Smardon, et al., 1988)) provides a method to evaluate visual resources affected by Corps water resources projects. The following VRAP criteria determines if any significant visual resources are in the watershed:

- Important urban landscapes including visual corridors, monuments, sculptures, landscape plantings, and greenspace.
- Areas that are easily accessible by a major population center.

- Projects that are highly visible and/or require major changes in the existing landscape.
- Areas that have low scenic quality and limited visibility.
- Historic or archeological sites designated as such by the National Register or State Register of Historic places.
- Parkways, highways, or scenic overlooks and vistas designated as such by a Federal, State, or municipal government agency.
- Visual resources that are institutionally recognized by Federal, State or local policies.
- Tourism is important in the area's economy.
- Area contains parks, forest preserves, or municipal parks.
- Wild, scenic, or recreational water bodies designated by government agencies.
- Public or privately operated recreation areas.

Significant visual resources are primarily described in the Cultural/Historic and Recreation Resources sections of this document; one example is the Louisiana State Pointe-aux-Chenes Wildlife Management Area (WMA). A description of the Pointe-aux-Chenes WMA including ways to access can be located at <https://www.wlf.louisiana.gov/page/pointeauxchenes>.

3.2.4 Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice for Minority and Low-Income Populations, directs all federal agencies to determine whether a proposed action would have a disproportionately high and adverse impact on minority and low-income populations. Disproportionate effects refer to circumstances where there exists significantly higher and more adverse health and environmental effects on minority populations and low-income populations. The objective of the environmental justice policy is to ensure that minority and low-income populations are fully and equitably considered during the project development process.

3.2.4.1 *Minority Status*

According to the United States Census Bureau (USCB), minority populations are those persons who identify as Black, Hispanic, Asian American, American Indian/Alaskan Native, and Pacific Islander. A minority population is present where the percentage of minorities within the affected area exceeds 50 percent or is significantly greater than in the general population. Tables 3-2f and 3-2g show the minority populations of areas within the larger watershed including Terrebonne Parish and the towns of Montegut and Chauvin, LA. Approximately 30% of Terrebonne residents identify as a minority, according to USCB data for 2019, below the State of Louisiana minority rate of 38 percent. The majority of residents in the towns of Montegut and Chauvin are white, with approximately 18% and 10% of residents identifying as a minority, respectively which is well below the parish minority percentage.

Table 3-2f. Minority Populations in Terrebonne Parish

| RACE | MINORITY POPULATION |
|---|----------------------------|
| Black | 21,311 |
| White | 78,715 |
| Asian | 1,111 |
| Two or More Races | 2,991 |
| Other | 1,525 |
| Native American | 6,337 |
| Pacific Islander | 64 |
| TOTAL POPULATION | 112,054 |
| PERCENTAGE Minority | 29.7% |
| Percent Hispanic | 5.2% |
| State of Louisiana Percentage Minority | 38.0% |

Source: U.S. Census Bureau, American Community Survey 2015-2019

Minority populations according to USCB data for 2019 for each race in Montegut and Chauvin, LA are shown in **Table 3-2g..**

Table 3-2g. Minority Populations in Montegut CDP* and Chauvin CDP, LA

| RACE | Montegut Minority | Chauvin Minority |
|----------------------------|--------------------------|-------------------------|
| Black | 0 | 35 |
| White | 1,747 | 2,154 |
| Asian | 0 | 0 |
| Two or More Races | 124 | 86 |
| Other | 0 | 86 |
| Native American | 216 | 47 |
| Pacific Islander | 46 | 0 |
| TOTAL POPULATION | 2,133 | 2,408 |
| PERCENTAGE MINORITY | 18.1% | 10.5 |
| Hispanic Percentage | 0.0% | 3.6% |

*A Census Designated Place located in Terrebonne Parish

Source: U.S. Census Bureau, American Community Survey 2015-2019

3.2.4.2 Low-Income Status

Low-income populations are those that fall below the poverty threshold determined by the USCB. According to EPA’s EJ Promising Practices document, a population living below poverty is meaningful and an EJ focus is necessary when the percentage of people living below poverty within the affected area exceeds 20 percent or is significantly greater than in the general population.

Poverty rates in Chauvin CDP is comparable to poverty rates in Terrebonne Parish and the State of Louisiana, with approximately 18%, 21% and 19% of residents living below the poverty level,

respectively. On the other hand, Montegut CDP percent of residents living below poverty is about twice the parish level as shown in **Table 3-2h.** The percent of residents living below poverty in Terrebonne is comparable to the rate in the State of Louisiana, approximately 21% and 19%, respectively.

Table 3-2h. Poverty populations in Terrebonne Parish compared to the region, the state, and US.

| LOCATION | PERCENT LIVING IN POVERTY |
|---------------------------|---------------------------|
| Montegut CDP* | 39.7% |
| Chauvin CDP* | 18.2% |
| Terrebonne Parish | 20.6% |
| Lafourche Parish | 15.6% |
| State of Louisiana | 19.2% |
| United States | 13.4% |

*A Census Designated Place located in Terrebonne Parish

Source: U.S. Census Bureau, American Community Survey 2015-2019

3.2.5 Noise and Vibration

This chapter presents an overview of the existing noise and vibration conditions in the project area and the environmental consequences and mitigation, as they pertain to the implementation of the project alternatives.

3.2.14.1 *Environmental Setting/Affected Environment*

This section begins with background information to support the noise and vibration analysis and then presents the existing noise and vibration conditions and sensitive receptors in the project area with the potential to be affected by project implementation.

Noise Terminology

Noise can be defined as unwanted sound. Sound, traveling in the form of waves from a source, is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). The sound pressure level (referred to as sound level) is the most common descriptor used to characterize the loudness of an ambient sound level. It is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing and 120 to 140 dB corresponding to the threshold of pain.

Pressure oscillation rates can be measured in units of hertz, which correspond to the frequency of a sound. Typically, sound does not consist of a single frequency but a broad band of frequencies varying in levels of magnitude (sound power). The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the frequency/sound power level spectrum. The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum; humans cannot hear low and high-end frequencies well. Therefore, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 and above 5,000 hertz in a manner corresponding to the human ear's decreased sensitivity to low and extremely high frequencies and greater

sensitivity to mid-range frequencies. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted dB (dBA). Frequency A-weighting follows an international standard methodology of frequency de-emphasis and is typically applied to community noise measurements. Some representative noise sources and their corresponding A-weighted noise levels are shown in Table B-5, Appendix B.

A key concept in evaluating potential noise impacts is the perceived effect of incremental increase in existing noise levels. Table 3-2i presents the effect of increasing noise levels. For example, the table shows that an increase of three dBA is barely perceptible, an increase of five dBA is noticeable, and a 10-dBA increase would be perceived by someone to be a doubling of noise (CalTrans 2013).

Table 3-2i. Perceived Effect of Incremental Increases in Existing Noise Levels

| Sound Level Change (dBA) | Relative Loudness/ Impact | Acoustical Energy Gain (%) |
|--------------------------|---------------------------|----------------------------|
| 0 | Reference | 0 |
| +3 | Barely Perceptible Change | 50 |
| +5 | Noticeable Change | 67 |
| +10 | Twice as Loud | 90 |
| +20 | Four Times as Loud | 99 |

Source: CalTrans 2013. Pg 2-45.

Noise analyses and regulations use the following terms:

- **Leq: Equivalent energy level** – A-weighted sound level corresponding to a steady-state sound level that contains the same total energy as a varying signal over a given sample period. This is typically computed over 1-, 8-, and 24-hour sample periods. An hourly sample period is denoted as Leq(h).
- **Ldn: Day-night average level** – The energy average sound level for a 24-hour day determined after the addition of a 10-dBA penalty to all noise events occurring at night between 10 p.m. and 7 a.m. This is a useful measure for community noise impact because people in their homes are much more sensitive to noise at night when they are relaxing or sleeping than they are in the daytime.
- **Lmax: Maximum noise level** – Representing the highest sound level measured for a given period.
- **Lmin: Minimum noise level** – Representing the lowest sound level measured for a given period.
- **Lx: Statistical noise descriptor** – The noise level exceeded X percent of a specified time period. For example, L10 indicates the noise level that is exceeded 10 percent of the time during a given period.

Noise effects on humans can range from annoyance to physical discomfort and harm. Sleeping patterns, speech communication, mental acuity, and heart and breathing rates can all be disturbed by noise. Perception of the noise is affected by its pitch, loudness, and character. Sound

levels from isolated point sources of noise typically decrease by about six dBA for every doubling of distance from the noise source. When the noise source is a continuous line, such as vehicle traffic on a highway, sound levels decrease by about three dBA for every doubling of distance. Noise levels can also be affected by several factors other than the distance from the noise source. Topographic features and structural barriers that absorb, reflect, or scatter sound waves can affect the reduction of noise levels. Atmospheric conditions (wind speed and direction, humidity levels, and temperatures) and the presence of dense vegetation can also affect the degree to which sound is attenuated over distance.

Vibration terminology

Vibration refers to ground-borne noise and perceptible motion. The most common impacts from ground-borne vibration include annoyance, movement of the building floors, rattling of windows, shaking of items on shelves or hanging on walls, disruption of vibration-sensitive operations or activities, and triggering of landslides. Vibrations caused by construction can be interpreted as energy transmitted in waves through the soil mass. These energy waves generally dissipate with distance from the vibration source due to spreading of the energy and frictional losses. Thus, ground-borne vibrations from most construction activities rarely reach the levels that can damage structures but can achieve the perceptible ranges in buildings very close to construction sites.

In extreme cases, the vibration can cause damage to buildings or equipment. In most circumstances, common ground-induced vibrations related to roadway traffic and construction activities pose no threat to buildings or structures, with the occasional exception of blasting and sheet pile-driving during construction. To assess the potential for structural damage associated with vibration, the vibratory ground motion near the affected structure is measured in terms of peak particle velocity (PPV) in the vertical and horizontal directions, typically in units of inches per second (in/sec). The PPV is defined as the maximum instantaneous peak of the vibration signal. According to FTA guidelines (2018), the construction vibration damage criterion for non-engineered timber and masonry buildings is 0.2 in/sec, and that of structures or buildings constructed of reinforced-concrete, steel, or timber is 0.5 in/sec.

Annoyance from vibration often occurs when the vibration exceeds the threshold of perception. A vibration level that causes annoyance would be well below the damage threshold for normal buildings. Generally, ground-borne vibration does not provoke adverse human reaction to those who are outdoors as the effects associated with the shaking of building are absent. The root mean square amplitude is most frequently used to describe the effect of vibration on the human body. The root mean square amplitude is defined as the average of the squared amplitude of the signal and is approximately 70 percent of the PPV for a single frequency vibration. Vibration velocity level (Lv) in dB notation (VdB) is commonly used to measure root mean square. The dB notation acts to compress the range of numbers required to describe vibration and is referenced to one in one million in/sec in the United States. The threshold of perception for vibration is typically around 64 VdB.

Construction activities can either result in continuous or single-impact (transient) vibration impacts. Typical equipment or activities that could result in continuous vibration impacts include excavation equipment, traffic, vibratory pile drivers, and vibratory compaction equipment; examples of transient vibration sources include blasting and drop balls. Some construction activities, like jackhammers or impact pile drivers, can continually generate single transient events at a high frequency. However, for evaluation purposes, this equipment would be regarded as

having frequent or continuous vibration impacts. Damage thresholds for continuous sources are approximately half of the thresholds for transient sources.

Existing Noise and Vibration Sources

The project involves construction approximately 3 miles south of the town of Montegut, LA and 2 miles east of Chauvin, LA in Terrebonne Parish. It is located on Humble Canal approximately 1/3 miles east of the Bayou Terrebonne/Humble Canal intersection. A portion of the project site extends into the Pointe-aux-Chenes State Wildlife Management Area.

Haul routes may include portions of Louisiana Highway 55 including the bridge across Bayou Terrebonne at Louisiana Highway 58 to the project site, and Aragon Road between the borrow site and the bridge at Bayou Terrebonne.

The area surrounding the Project area and haul routes is mainly agricultural and rural residential.

Noise sources in the project area are of four general types: agricultural, recreational, general stationary, and general mobile.

- **Agricultural Noise.** The predominant land use near the project area is related to agricultural activities. Farm operations produce noise from a variety of sources. These include heavy equipment for plowing and harvesting, crop-spraying aircraft, onsite processing equipment, and irrigation water pumps. Farm tractors typically produce an average of 84 dBA Lmax at 50 feet (FHWA 2021(uploaded)). Crop-spraying aircraft typically fly at low altitude and may cause loud temporary noise exceeding those of commercial aircraft. Crop-spraying is typically seasonal and short in duration at any given location. In addition to affecting the farmers and farm laborers, agricultural noise also affects those living in or near agricultural areas.
- **Recreational Noise.** Recreational noise can include hunting and boating noise. Pointe-aux-Chenes State Wildlife Management Area allows waterfowl, deer, pig and fur bearer hunting and trapping. Firearms typically generate instantaneous noise exceeding 140 dBA (American Speech-Language-Hearing Association 2017). There is regular boat traffic on Bayou Terrebonne and Humble Canal which could produce noise greater than 86 decibels at 50 feet. (https://www.cpperformance.com/t-state_noise_laws.aspx, updated 2005). The project is not expected to change the effect of these activities.
- **General Stationary Noises.** General stationary noises (i.e., those emanating from fixed locations) are associated with a variety of land uses. Stationary sources can include air conditioning units, power tools, motors, generators, appliances, and manufacturing and industrial facilities. There are several industrial facilities near the project area with an unknown decibel level, and frequency of noise and vibration emanation. The distance of the industrial facilities to residences is greater than 0.3 miles to the levee, attenuating most noise generated by the facilities. Therefore, contribution of general stationary noises to the ambient noise levels in the Project area is minimal.
- **General Mobile Noise.** General mobile noise sources can include vehicles, aircraft, boats, and trains. Mobile noise is usually temporary and variable but can be intense and annoying because of its abruptness and intensity. In urban areas, these mobile sources

contribute to the ambient noise. The closest mobile noise sources to the Project area are mobile noise sources on LA Highway 55, boat traffic on the Bayou Terrebonne, and agricultural equipment.

Existing Noise and Vibration Sensitive Receptors

Places where quiet is an essential element of a land use's intended purpose qualify as a noise-sensitive receptor, such as historical monuments with significant outdoor use. Places where people normally sleep, like residences, hotels, and hospitals, qualify as noise-sensitive receptors. For these types of receptors, nighttime sensitivity to noise must be considered. Various institutional land uses where excessive noise could interfere with speech, meditation, and concentration also qualify as noise sensitive receptors. These land uses include schools, libraries, theaters, churches, cemeteries, monuments, and museums. Parks may also be considered noise-sensitive receptors, but this classification is dependent on their use. For example, a park intended primarily for active recreation would not be considered a noise-sensitive receptor (FTA 2018). Noise-sensitive receptors may also have stationary noise sources at their locations.

Noise receptors located within the project area include residences further than 750 feet from the project footprint, with the levee as a sound barrier, recreational visitors to the Pointe-aux-Chenes State Wildlife Management Area (which would be open to the public during construction) and wildlife (See Section 3.2.4). Noise-sensitive receptors located near the project area include residential receptors and Montegut Elementary School along the haul route.

3.2.6 Socioeconomics

3.2.6.1 *Population and Housing*

Population

Population and household characteristics in the region of influence (ROI) determine consumption patterns, land use activities, and future development patterns. Figure A-5a (Appendix A) displays the historic and projected population in the ROI, extending from the years 1970 to 2046. Throughout 1970s, the Lafourche and Terrebonne Parishes experienced significant growth; from 1970 to 1980 their populations grew by 20.8% and 24.8% respectively. The population in Terrebonne Parish and Lafourche Parish declined slightly in the late 1980s but recovered by the late 1990s. Between 2005 and 2006 population increased as those fleeing Hurricane Katrina moved to the ROI. Post- Katrina population in the ROI continued to increase at steady incremental rate; these trends are expected to continue over the 25 years.

Households

Figure A-5b (Appendix A) shows the number of households in the ROI from the year 1970 to the year 2045. The number of households in the ROI increased by an average of 4% every year between 1970 and 1980. In the following decades, the two parishes experienced steady growth, closely mirroring trends in population. In most recent years, the number of households in Lafourche Parish increased from 35,650 in 2010 to 38,090 in 2020 (6.8% increase) and the number of households in Terrebonne Parish increased from 40,020 in 2010 to 43,050 in 2020 (7.6% increase). Projected data estimates that trends in the number of households in the watershed will continue. The number of households in Lafourche Parish is expected to reach

41,810 by the year 2035 and the number of households in Terrebonne Parish is expected to reach 46,320.

3.2.15.2 Labor and Employment

Labor Force

Labor and employment numbers illustrate the level the economic activity in the ROI an integral part of the social and economic environment. The labor force includes all citizens over the age of 16 employed or actively seeking employment in the ROI.

Figure A-5c (Appendix A) displays the total labor force in the ROI from 1990-2046. Employment trends in the ROI are strongly influenced by the oil and gas industry; meaning employment is highly sensitive to booms and busts in the oil and gas industry. For example, the price of oil declined sharply in the late 1990s and, in response, the labor force in Terrebonne Parish declined by 4% and the labor force in Lafourche Parish declined by 3%. Similar trends occurred in the years following a sharp decline in oil prices in 2008 and 2014.

Moody Analytics predicts that the labor force will flatten out of the next 25 years. As concerns over climate change increase there is pressure to move away from a dependence on fossil fuels. The year 2020 saw another collapse in the price of oil, but this time oil prices may not recover as consumers and producers alike look to other energy efficient solutions.

Unemployment Rate

The unemployment rate is the percentage of people that are unemployed out of the total labor force. The unemployment rate is another proxy for the overall health of the economy. Figure A-5d (Appendix A) shows the unemployment rate for the ROI as well as the total unemployment rate for state of Louisiana.

Overall, the unemployment rate in the ROI is relatively low. The unemployment rate of the state of Louisiana much higher than the unemployment rate in the ROI with only a few exceptions. As mentioned previously, historically, employment in the ROI is tied to the oil and gas industry though the unemployment rate is much more sensitive to changes to the market than the labor force because people only drop out of the labor force when economic conditions are so bad that they stop seeking employment altogether. The spikes in unemployment correspond with an overall decline in the price of oil. There are significant increases in the unemployment rate in 1992, 2000, 2005, post-2008, 2015. Moody's Analytics estimates that the unemployment will flatten out over the next 25 years.

Employment by Industry

The type of employment in the ROI gives us an idea of what industries area important to the ROI. Figure A-5e and A-5f (Appendix A) show the employment by industry for each parish in the ROI. The biggest industry in the ROI is the trade, transportation, and utilities industry. Historically, the Terrebonne Parish heavily relied on the natural resource and mining industry. After the collapse of oil in the 1980s Terrebonne Parish began to diversify and employment in industries like government, manufacturing and health/education services became more popular. Other popular industries in Lafourche Parish include government, manufacturing, and professional/business services. The natural resource and mining industry pays the highest wages in ROI. According to

the 2018 American Community Survey, retail trade is the most common industry in Terrebonne Parish followed by healthcare/social assistance, mining, quarrying, and oil and gas extraction and food services. The most common industries in Lafourche Parish include healthcare/social assistance, manufacturing, retail trade, and construction.

Moody Analytics predicts that trade, transportation, and utilities will remain the most popular industry in the ROI followed by healthcare/education services and government.

3.2.15.3 Transportation

Major Transportation Routes

There are two major transportation routes around the project area that may be impacted by the proposed project area construction. Louisiana state highway 55 and state highway 58 connect the borrow site and the proposed project area. According to Louisiana Department of Transportation the annual average daily traffic count on state highway 55 is 2441 and the annual average daily traffic count on state highway is 2636.

3.2.15.4 Regional and Community Growth

Income Per Capita

Income per capita serves as a proxy for regional and community economic growth. Table 1 shows the income per capita for the ROI for the years 1970, 1980, 1990, 2000, 2010, 2020, 2030 and 2040. Income per capita in the ROI increases throughout the past 50 years in response to economic growth and inflation.

4 ENVIRONMENTAL CONSEQUENCES

This section provides a scientific analysis/comparison of the alternatives that have been carried forward. Resources should be listed in the same manner in which they were listed in Section 3. The information provided should include the environmental impacts of the alternatives, including the No Action and the Proposed Action. For each alternative, the discussion should include direct, indirect and cumulative impacts and their significance. It should include any unavoidable adverse environmental impacts should the proposed action be implemented as well as beneficial impacts associated with all the actions.

Direct Impacts: Those caused as a direct result of the action. These impacts occur at the same time and in the same place as the proposed action. This includes both adverse and beneficial impacts as well as permanent and temporary impacts.

Indirect Impacts: Those caused by the proposed action and occurring later in time or further in distance from the proposed action. These impacts don't occur immediately, but they can be reasonably foreseen as a result of the action. (Example: If 500,000 cubic yards of material are deposited in Site A, Site B, which is downstream, may experience a decrease in water quality during construction of the proposed action due to suspended sediments in the water column. This action could occur weeks or months after the initial placement of material due to the time needed for the sediments to travel to Site B)

Cumulative Impacts: Those impacts which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. (Example: The proposed action may cause a minor disruption in the water column during construction activities, but when coupled with 15 other earth moving projects in the vicinity, the disruption to water quality and the aquatic resources in the area becomes more significant)

Table 4: Relevant Resource Impacts In and Near the Project Area for the Proposed Action

| Relevant Resource | Impacted | Not Impacted |
|---|----------|--------------|
| Navigation | X | |
| Wetlands | X | |
| Aquatic Resources/Fisheries | X | |
| Wildlife | X | |
| Essential Fish Habitat | X | |
| Threatened, Endangered, and Protected Species | | X |
| Water and Sediment Quality | X | |
| Air Quality | X | |
| Cultural Resources ¹ | | X |
| Tribal Resources | | X |
| Recreational Resources | X | |
| Aesthetics (Visual Resources) | | X |
| Environmental Justice | X | |
| Noise and Vibration | X | |
| Socioeconomics | X | |
| HTRW ² | | X |

¹Although not impacted, cultural resources are addressed to comply with the National Historic Preservation Act.

²Hazardous, Toxic, and Radioactive Waste. Although the area has been determined to have a low probability of containing HTRW, it is assessed in this document to comply with USACE policy.

4.1 Navigation

Future Conditions with No-Action

Direct, Indirect, and Cumulative Impacts

There would be no anticipated direct, indirect or cumulative impacts to navigation without implementation of the proposed project.

Future Conditions with the Proposed Action

Direct, Indirect, and Cumulative Impacts

The proposed action may cause minor and temporary interference with navigation by reducing the width of the Humble Canal from the east bank of the preload footprint but is not expected to

interfere significantly with shipping traffic. Preload construction would be closely coordinated with representatives of the navigation industry and a Notice to Mariners would be posted by the US Coast Guard. Construction of the preload levee in Humble Canal could cause minor disruptions to small vessels using these portions of the project area; however, the effects on navigation would be mainly temporary. Portions of the site may become inaccessible to some watercraft as wetland vegetation eventually colonizes the area; however, the shallow nature of the area currently limits most vessel access anyway. No impacts would result from staging or the boat launch access.

Cumulative impacts to this resource would be the additive combination of impacts by this and other Federal, state, local, and private flood risk reduction efforts, including, but not limited to the Terrebonne Non-Federal Levees and work by TLCD and/or other non-Federal entities within the Morganza to the Gulf levee system. Impacts from completed projects, including LGM, HNC, and the GIWW (See Section 1.6 for details) would also coincide with this resource.

4.2 Wetlands

Future Conditions with No-Action

Direct, Indirect, and Cumulative Impacts

Land loss in the proposed deposition area, due to subsidence, sea level rise (SLR) and saltwater intrusion would likely continue at their current rate.

Without implementation of the proposed action, wetlands in the project vicinity would continue to be directly and indirectly impacted by the present natural and anthropogenic factors. Salinity intrusion would continue to impact vulnerable marsh habitats, causing them to either convert type or convert to open water. Subsidence and erosional land loss would continue at the present rate. The overall habitat value and acreage of the remaining wetlands would decline with the No Action alternative.

Without implementation of the proposed action, other federal, state, local, and private projects may still occur within or near the proposed project area, providing hurricane and storm damage risk reduction for communities located within the watershed as well as additional wetland creation.

Future Conditions with the Proposed Action

Direct, Indirect, and Cumulative Impacts

The proposed action would directly impact approximately 9.6 acres of wetlands (approximately 2.5 AAHUs) consisting of roughly 9 acres of fresh and brackish marsh, and 0.5 acres of BLH. The constructible features would result in this area being converted into upland habitat for the preload levee. No wetlands would be impacted from the proposed staging areas, existing boat access or the J-1 borrow site.

The proposed action would offer minimal wave impact reduction for adjacent wetland habitat to the north. The action would result in approximately 150,000 cyd of fill material being placed into waters of the U.S. with a footprint of around 3 acres on the west bank and around 6.4 acres on the east bank of Humble Canal (See Figure 2). Therefore, under authority delegated from the Secretary of the Army and in accordance with Section 404 of the Clean Water Act of 1977, a 404(b)(1) evaluation has been prepared for the proposed project. (Appendix E)

Cumulative impacts to this resource would be the additive combination of impacts by this and other Federal, state, local, and private flood risk reduction efforts, including, but not limited to the Terrebonne Non-Federal Levees and construction by TLCD and/or other non-Federal entities within the MRT-MTG levee alignment. Impacts from completed projects, including LGM, HNC, and the GIWW (See Section 1.6 for details) would also coincide with this resource.

4.3 Aquatic Resources/Fisheries

Future Conditions with No-Action

Direct, Indirect, and Cumulative Impacts

Without implementation of the proposed action, aquatic habitat in the project footprint would not be directly impacted. Conversion of existing marsh to open water in the project area would continue because of continued subsidence and erosion, which could negatively affect fish and shellfish populations inhabiting the area. Wetland vegetation loss and the decrease in the amount of open water less than or equal to 1.5 feet deep would result in the loss of forage and nursery habitat for fisheries.

Without implementation of the proposed action, other federal, state, local, and private projects may still occur within or near the proposed project area, providing hurricane and storm damage risk reduction for communities located within the watershed as well as additional benefits to aquatic resources and fisheries.

Future Conditions with the Proposed Action

Direct, Indirect, and Cumulative Impacts

Short-term temporary impacts to aquatic/fishery resources would result from borrow material placement in approximately 0.1 acres of open water in Humble Canal. This impact would be classified as “de minimis” and not require compensatory mitigation. Increased turbidity and disturbance from construction activities and vibration from equipment could result in relocation and mortality of sessile or slow-moving species in the immediate vicinity.

Brown shrimp, white shrimp, and crabs may be directly impacted through the filling of shallow open water areas with borrow fill; however, these species would indirectly benefit from the abundance of introduced detritus, and subsequent food resources, from these materials. Since the project area is a naturally turbid environment and the majority of resident finfish and shellfish species are generally adapted to, and very tolerant of, high suspended sediment concentrations, the effects of turbidity and suspended solids on fisheries would likely be negligible.

For any standing water removed in the J-1 borrow site, there is a potential for temporary impacts to aquatic species. . The borrow site has not been used for fisheries or farming any aquatic species.

Cumulative impacts to this resource would be the additive combination of impacts by this and other Federal, state, local, and private flood risk reduction efforts, including, but not limited to the Terrebonne Non-Federal Levees, LGM, HNC, the GIWW, and prior work constructed by TLCD and other non-Federal entities within the MRT-MTG alignment (See Section 1.6 for details).

4.4 Wildlife

Future Conditions with No-Action

Direct, Indirect, and Cumulative Impacts

Without implementation of the proposed action, land loss in the proposed deposition area would likely continue at the present rate resulting in a reduction of habitat diversity and availability for resident terrestrial wildlife such as nutria, muskrat, mink and river otter; migratory waterfowl such as snow geese, gadwalls, pintails, mallard, teal, coot redheads, lesser scaup, mergansers, wigeons, canvasbacks and black ducks; and other avian species such as ibis, egrets, cormorants, terns, gulls, skimmer, pelicans, and various raptors. Recent CWPRRA and beneficial use projects have resulted in the creation of wetlands habitat within the surrounding areas which provides valuable and diverse habitat for foraging, refugia, nesting, and loafing of terrestrial wildlife, migratory waterfowl, and other avian species.

Future Conditions with the Proposed Action

Direct, Indirect, and Cumulative Impacts

The proposed action would result in the direct loss of approximately 0.5 acres of BLH, 4 acres of fresh marsh, and 5 acres of brackish marsh habitat.

Minimal and temporary adverse direct and indirect impacts to wildlife would be anticipated. While construction activities are expected to mainly occur over open water, there is the potential for noise or wave action generated by construction activities to displace terrestrial wildlife in the area; however this would be a temporary disturbance, with wildlife likely to return following the construction of the preload levee. Migratory waterfowl and other avian species would be temporarily displaced from the project area. It is anticipated that wildlife populations would move to existing adjacent habitat areas during construction activities. The placement of fill material for the preload levee would reduce some shallow open water habitat, thereby reducing available foraging habitat for some avian species. However, the reduction in the amount of shallow open water is negligible compared to that remaining in the project area.

For any standing water removed in the J-1 borrow site, there is a potential for temporary impacts to species that utilize the site for breeding and foraging. The adjacent Bayou Petit Gaillou on the southwest border currently provides adequate foraging habitat for wildlife including alligators.

Cumulative impacts to this resource would be the additive combination of impacts by this and other Federal, state, local, and private flood risk reduction efforts, including, but not limited to the Terrebonne Non-Federal Levees and construction by TLCD and/or other non-Federal entities within the MRT-MTG levee alignment. Impacts from completed projects, including LGM, HNC, and the GIWW (See Section 1.6 for details) would also coincide with this resource.

4.5 Essential Fish Habitat

Future Conditions with No-Action

Direct, Indirect, and Cumulative Impacts

Without implementation of the proposed action, no direct impacts to EFH would occur in the marsh restoration area. However, land loss, due to subsidence, SLR and saltwater intrusion would continue in the project area at the current rate. Therefore, indirect impacts to EFH would likely occur as existing estuarine emergent marsh areas continue to be converted to open water.

Future Conditions with the Proposed Action

Direct, Indirect, and Cumulative Impacts

With implementation of the proposed action, minor impacts in the form of increased turbidity to essential fish habitat are anticipated with mitigation measures in place (see Section 5). Short term minor EFH impacts would include a temporary and localized increase in estuarine water column turbidity during the placement of borrow fill material in shallow open water areas and in the channel. No impacts would result to EFH from the J-1 borrow site.

Cumulative impacts to this resource would be the additive combination of impacts by this and other Federal, state, local, and private flood risk reduction efforts, including, but not limited to the Terrebonne Non-Federal Levees and construction by TLCDC and/or other non-Federal entities within the MRT-MTG levee alignment. Impacts from completed projects, including LGM, HNC, and the GIWW (See Section 1.6 for details) would also coincide with this resource.

4.6 Threatened, Endangered and Protected Species

Future Conditions with No-Action

Direct, Indirect, and Cumulative Impacts

Under the no action alternative, minimal direct, indirect, or cumulative impacts to T&E and protected species or their critical habitat would occur. The presence of T&E in the project area is unlikely and therefore the no action alternative is not likely to adversely affect T&E or their critical habitat.

Future Conditions with the Proposed Action

Direct, Indirect, and Cumulative Impacts

Although threatened or endangered species may occur within the larger watershed, their presence within the project area is highly unlikely. 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. Therefore, in coordination with USFWS on 13 April 2021 (See Appendix D), the proposed action would not result in adverse direct or indirect impacts to (i.e., “not likely to adversely affect”) Federally-listed threatened or endangered species, or their critical habitat, under the jurisdiction of USFWS.

During in-water work in areas that potentially support manatees, all personnel associated with the project should be instructed about the potential presence of manatees, manatee speed zones, and the need to avoid collisions with and injury to manatees. All personnel should be advised that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act of 1972 and the Endangered Species Act of 1973. Additionally, personnel should be instructed not to attempt to feed or otherwise interact with the animal, although passively taking pictures or video would be acceptable.

- All on-site personnel are responsible for observing water-related activities for the presence of manatee(s). USFWS recommends the following to minimize potential impacts to manatees in areas of their potential presence:
- All work, equipment, and vessel operation should cease if a manatee is spotted within a 50-foot radius (buffer zone) of the active work area. Once the manatee has left the buffer zone on its own accord (manatees must not be herded or harassed into leaving), or after 30 minutes have passed without additional sightings of manatee(s) in the buffer zone, in-water work can resume under careful observation for manatee(s).
- If a manatee(s) is sighted in or near the project area, all vessels associated with the project should operate at "no wake/idle" speeds within the construction area and at all times while in waters where the draft of the vessel provides less than a four-foot clearance from the bottom. Vessels should follow routes of deep water whenever possible.
- If used, siltation or turbidity barriers should be properly secured, made of material in which manatees cannot become entangled, and be monitored to avoid manatee entrapment or impeding their movement.
- Temporary signs concerning manatees should be posted prior to and during all in-water project activities and removed upon completion. Each vessel involved in construction activities should display at the vessel control station or in a prominent location, visible to all employees operating the vessel, a temporary sign at least 8" X 11" reading language similar to the following: "CAUTION BOATERS: MANATEE AREA/ IDLE SPEED IS REQUIRED IN CONSTRUCTION AREA AND WHERE THERE IS LESS THAN FOUR FOOT BOTTOM CLEARANCE WHEN MANATEE IS PRESENT". A second temporary sign measuring 8" X 11" should be posted at a location prominently visible to all personnel engaged in water-related activities and should read language similar to the following: "CAUTION: MANATEE AREA/ EQUIPMENT MUST BE SHUTDOWN IMMEDIATELY IF A MANATEE COMES WITHIN 50 FEET OF OPERATION".
- Collisions with, injury to, or sightings of manatees should be immediately reported to the Service's Louisiana Ecological Services Office (337/291-3100) and the Louisiana Department of Wildlife and Fisheries, Natural Heritage Program (1-800-442-2511). Please provide the nature of the call (i.e., report of an incident, manatee sighting, etc.); time of incident/sighting; and the approximate location, including the latitude and longitude coordinates, if possible.

In addition, USFWS recommends that on-site contract personnel be trained to identify colonial nesting birds and their nests and avoid affecting them during the breeding season (i.e., the time period outside the activity window).

During nesting season, construction must take place outside of USFWS/LDWF buffer zones. Previous field surveys of the project completed on April 22, 2021 and May 7, 2021 indicated no presence of bald eagle nests within or adjacent to the project area. Prior to the start of construction, a Corps Biologist and USFWS Biologist will perform a survey for nesting birds. If nesting bald eagles are present, the National Bald Eagle Management Guidelines would be followed.

CEMVN has concluded there is no critical habitat for any threatened, endangered, or candidate species under the purview of NMFS has been designated within the project area, including the borrow site, and that there would be no adverse impacts (i.e., “no effect”) to any of the NMFS Federally-listed species that could potentially occur within the project area.

Cumulative impacts to this resource would be the additive combination of impacts by this and other Federal, state, local, and private flood risk reduction efforts, including, but not limited to the Terrebonne Non-Federal Levees, LGM, HNC, the GIWW, and prior work constructed by TLCD and other non-Federal entities within the MRT-MTG alignment (See Section 1.6 for details).

4.7 Water and Sediment Quality

Future Conditions with No-Action

Direct, Indirect, and Cumulative Impacts

Without the proposed project, water quality in the project area would still be impacted by the MTG Hurricane Risk Reduction project, as well as other factors such as weather and climate, development, and industry. Conditions would be similar to those described in the summary of historical and existing conditions as well as in the future with project conditions for the MTG Environmental Impact Statement (EIS).

Future Conditions with the Proposed Action

Direct, Indirect, and Cumulative Impacts

Under the proposed action, future with project water quality conditions would differ slightly from those described in the future with project conditions for the Morganza to the Gulf of Mexico Environmental Impact Statement (EIS).

During construction of the proposed action, the placement of fill materials is expected to generate minor releases of clay minerals (hydrated aluminum phyllosilicates containing other oxidized minerals such as iron and manganese) and small amounts of decomposed organic matter. These releases may create minor, short-lived water column impacts, including elevated turbidity and suspended sediment plumes in adjacent surface waters. Suspended sediment could absorb solar radiation causing elevated water temperatures, and suspended organic materials could cause a temporary increase in oxygen demand capable of decreasing dissolved oxygen levels. Additionally, staging locations occur adjacent to surface waters and low-quality fragmented marsh habitat. Incidental discharges of fill material into Humble Canal may occur during construction or with stormwater runoff, causing temporary localized elevated turbidity and suspended sediment levels. Following construction activities, heavier materials used to construct the preload levee footprint and initial levee lift would settle and compact while lighter unconsolidated material near the sediment or soil surface would be washed away by rainfall runoff or surface water movement.

See Appendix E for 404(b)(1) analysis with further details on water quality impacts of the proposed action. For any standing water in the J-1 borrow site, there is a potential for temporary water and sediment quality impacts.

Cumulative impacts to this resource would be the additive combination of impacts by this and other Federal, state, local, and private flood risk reduction efforts, including, but not limited to the

Terrebonne Non-Federal Levees and construction by TLCD and/or other non-Federal entities within the MRT-MTG levee alignment.

4.8 Air Quality

Future Conditions with No-Action

Direct, Indirect, and Cumulative Impacts

With no action, no new direct, indirect or cumulative impacts to ambient air quality would be expected to occur.

Future Conditions with the Proposed Action

Direct, Indirect, and Cumulative Impacts

With implementation of the proposed action, direct and indirect impacts to ambient air quality within the immediate vicinity of the project area, including the borrow site, are expected to be temporary, primarily due to the emissions of construction equipment. Due to the short duration of the proposed project, any increases or 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 construction activities associated with the proposed action cease, air quality within the vicinity is expected to return to pre-construction conditions.

Cumulative impacts to this resource would be the additive combination of impacts by this and other Federal, state, local, and private flood risk reduction efforts, including, but not limited to the Morganza to the Gulf levee system and Terrebonne NFL. Impacts from completed projects, including LGM, HNC, and the GIWW (See Section 1.6 for details) would also coincide with this resource.

4.9 Cultural Resources

Future Conditions with No Action

Direct, Indirect, and Cumulative Impacts

If there is no action taken, there is no anticipated change to cultural resources. No cultural resources have been identified within the area of potential effect, and no direct, indirect, or cumulative impacts to cultural resources are expected to occur.

Future Conditions with the Proposed Action

Direct, Indirect, and Cumulative Impacts

No cultural resources have been identified within the area of potential effect, including the borrow site, and no direct, indirect, or cumulative impacts to cultural resources are expected to occur.

4.10 Tribal Resources

Future Conditions with No Action

Direct, Indirect, and Cumulative Impacts

Under the No Action alternative, tribal resources, including significant archaeological sites, burial locations, as well as plant and animal materials would be negatively affected by the land-loss trends throughout the Terrebonne Basin; however there is no potential for USACE to significantly adversely affect protected tribal resources, tribal rights, or Indian lands without an action.

Future Conditions with the Proposed Action

Direct, Indirect, and Cumulative Impacts

While Terrebonne Parish has a long history of occupation by Native American communities, prior to its establishment and throughout its history, there are currently no protected tribal resources, tribal rights, or Indian lands that have the potential to be significantly directly, indirectly, or cumulatively impacted by the proposed action. Therefore, CEMVN has determined that no tribal resources, rights, or lands will be significantly affected by implementing this action. The results of the NHPA Section 106/E.O. 13175 process between USACE and Federally-recognized Tribes will confirm this determination. The consultation period ended on July 10, 2021 and No Federally-recognized Tribes objected to the Section 106 determination or informed CEMVN of additional resources to address.

4.11 Recreational Resources

Future Conditions with No-Action

Direct, Indirect, and Cumulative Impacts

Without intervention, communities within Terrebonne Basin would continue to be at risk from high water events induced by coastal storm surges and rainfall events. Recreational resources would continue to evolve from existing conditions because of both land use trends and natural processes over the course of time. Land loss would likely continue and there could be an overall loss of habitat within the system that once provided cover, resting, nesting and foraging habitat. The loss of these habitats, and the effect such losses would have on wildlife and aquatic species, could cause recreational resources in the basin to transition.

Future Conditions with the Proposed Action

Direct, Indirect, and Cumulative Impacts

The pre-load levee at the Humble Canal Floodgate site extends into the Pointe-aux-Chenes Wildlife Management Area and could have minimal and temporary adverse direct and indirect impacts to recreational resources. The pre-load levee may be built in wildlife habitats and fisheries and temporarily displace animals using the area during construction. Consumptive recreation associated with hunting and fishing in these habitats, as well as non-consumptive recreation such as birding and wildlife observation, may be temporarily impacted. Refer to Aquatic Resources/Fisheries and Wildlife sections in this document for associated impacts.

Cumulative impacts to this resource would be the additive combination of impacts by this and other Federal, state, local, and private flood risk reduction efforts, including, but not limited to the Terrebonne NFL and construction by TLCD and/or other non-Federal entities within the MRT-MTG levee alignment.

4.12 Visual Resources

Future Conditions with No-Action

Direct, Indirect, and Cumulative Impacts

The forecasting of what the project area's visual landscape will look like in the future is determined by:

1. Physical and ecological changes (e.g., land use or vegetative succession).
2. Identifying trends in recreation and land use.
3. Reviewing government agencies' planning information.

The extent of effort involved for forecasting the project areas' visual landscape's future is limited by time and the availability of relevant information. Additionally, physical and ecological changes combined with trends in recreation and land use may be found elsewhere in this document. Therefore, the focus of this section is on identifying relevant project area information related to desired visual resources' conditions; this information can be found at <https://www.wlf.louisiana.gov/page/pointeauxchenes>.

The Louisiana Department of Wildlife and Fisheries provides oversight on activities occurring in Pointe-aux-Chenes Wildlife Management Area. The aforementioned Louisiana Department of Wildlife and Fisheries website contains details on conservation measures including operation and management activities. These conservation measures including any planned wildlife habitat restoration projects may result in changes to the Pointe-aux-Chenes Wildlife Management Area's visual environment. There would be no additional direct, indirect, or cumulative impacts to visual resources as result of the no action alternative.

Future Conditions with the Proposed Action

Direct, Indirect, and Cumulative Impacts

Direct, indirect or cumulative impacts to visual resources caused by this alternative are primarily based on this alternative's impacts to cultural and recreational resources; these impacts may include the introduction of potentially visually distressful elements into the project area's viewshed, modifications to the built-environment that involves elevating or demolishing historic structures or project features that restrict physical access to the Pointe-aux-Chenes Wildlife Management Area. The proposed action to construct the preload levee and retrieve material from the J1 borrow site would not have any additional direct, indirect, or cumulative impacts to the project area.

4.13 Environmental Justice

Future Conditions with No-Action

Direct, Indirect, and Cumulative Impacts

Under the No Action Alternative, there will be no direct, indirect, or cumulative EJ impacts and minority and low-income residents will continue to experience flood risk associated with storm surge events. The no action alternative will not construct the preload levees. Therefore, all

residents, including those residents that are low-income and minority, may be impacted in the future as they are today.

Future Conditions with the Proposed Action

Direct, Indirect, and Cumulative Impacts

The proposed project feature would be implemented as part of the MRT-MTG project authorized under Section 7002(3)5 of WRRDA 2014, PL 113-121. The objective of this project feature is to construct an initial, or preload levee, to prepare the site for the future construction of a floodgate, and associated floodwalls, and earthen levees in the vicinity of Humble Canal. The preload levee will provide a good base and working surface for future construction by promoting settlement and strengthening the foundations of the future levee and floodwalls. The preload levee will tie-in to existing flood protection levees. The proposed actions would involve construction activities for the preload levee and borrow material retrieved from the J-1 borrow site near Montegut, LA.

The proposed project includes the construction of the preload levees and the use of staging areas and borrow pits. The preload levees will be constructed adjacent to the existing levees but at a higher elevation, so novel impact/disruption to the hydraulics at this location will be minimal. The channel will not be closed off under the preload contract. Therefore, flows will be maintained through this location limiting disruption to the existing hydraulics of Humble Canal. The footprint of the preload levee is located in wetlands and its construction will not cause direct adverse impacts to EJ communities in the area. There will be no direct impacts to low-income and minority residents in the vicinity of the proposed pre-load levee.

Construction activities associated with the preload levees may cause temporary, minor indirect adverse impacts such as noise and transportation associated detours. The human environment is expected to return to pre-construction conditions after activities are completed. A staging area is located along the Humble Canal on the southern bank near the existing barge gate. The staging area will be used temporarily for equipment and materials needed to construct the preload levee. Impacts to residents in the immediate area will include minor noise and a possible minor increase in truck traffic entering and leaving the staging area. A borrow pit has been identified for use to extract suitable clay material to construct the pre-load levees.

Positive indirect impacts associate with constructing the preload levees is that these levees are the first phase in providing storm surge risk reduction benefits to the community. The SEIS will evaluate a sector gate that may be placed across the Humble Canal that would tie into the preload levees, and other features of the proposed Morganza to the Gulf levee system that would reduce the risk of storm surge. At this time, the construction timeframe of the Humble Canal Sector Gate is unknown.

4.14 Noise and Vibration

Future Conditions with No-Action

Direct, Indirect and Cumulative Impacts

Under the No Action Alternative, the project would not be implemented and none of the project features would be developed. This analysis assumes that ambient noise levels under the No Action Alternative would be the same as existing conditions. Neither construction-related activities

nor increased operational activities would occur so there would be no direct, indirect or cumulative impacts.

Future Conditions with the Proposed Action

Direct Impacts

Noise from construction equipment would occur throughout the construction phase of the proposed action. Ambient noise levels within the project area would increase because of additional noise from construction equipment. Noise levels would vary, depending on the construction phasing and specific pieces of equipment in use at any given time.

There are residences near the construction area and along the haul route, including Montegut Elementary School. The speed limit on Hwy 55 at the Montegut Elementary School is 35 mph and the school is 75 feet from the roadway. A large diesel truck going 50 mph, 50 feet away produces approximately 84 dBA, but the reduced speed and increased distance of the school from the roadway would reduce the impact of the noise. Currently, heavy equipment for agricultural use travel on these county roads. The increase in heavy traffic would be temporary and would return to a pre-construction level at the completion of the project.

Indirect Impacts

There is no operational portion of this project, therefore continuing and indirect noise from this project would have no impact on receptors.

The noise and vibration caused by this project is likely to disturb wildlife and fish during the construction activity, as addressed in Sections 4.4, 4.6 and 4.7. The activities during construction may also disturb visitors to the Pointe Aux Chenes Wildlife Management Area, as addressed in the Recreation Impacts (See Section 4.11).

Cumulative Impacts

Positive cumulative impacts associate with constructing the preload levees is that these levees are the first phase in providing storm surge risk reduction benefits to the community. Any noise levels from the construction and operation of a proposed sector gate across Humble Canal would be evaluated in a future NEPA document. If the surrounding environment is not significantly changed, the existing and any proposed future levees, and trees between the new structures and receptors would continue to act as a sound barrier and attenuate this construction and operational noise and vibration. There is no planned concurrent construction in the area that would compound the noise and vibration from this activity.

4.15 Socioeconomics

4.15.1 Socioeconomics

Future Conditions with No-Action

Direct Impacts and Indirect Impacts

Under the No Action alternative there will be no construction of the project in the area and employment, income, housing, social connectedness, and all other measures of socioeconomics will be the same as the existing conditions. Without construction of the project, this area will still be a high risk for flooding. Severe flooding has adverse effects on the vitality of a community. The existing condition socioeconomics reflect current high-risk flooding conditions.

Future Conditions with the Proposed Action

Direct Impacts, Indirect Impacts, and Cumulative Impacts

With the proposed action in place there will be temporary increases in employment and income during construction of the project. The project footprint does not include any private parcels. The housing in the project area will not be adversely affected by the proposed project. With implementation of the proposed project area in place the surrounding communities will be at lower risk for severe flooding. This may lead to an increased economic vitality surrounding the proposed project area. Cumulative impacts to socioeconomics would be the additive combination of impacts by this and other Federal, state, local, and private flood risk reduction efforts, including, but not limited to the Terrebonne Non-Federal Levees and construction by TLCD and/or other non-Federal entities within the MRT-MTG levee alignment

4.15.2 Transportation

Future Conditions with No-Action

Direct and Indirect Impacts

Under the no action alternative there will be no expected changes to transportation as there will be no construction.

Future Conditions with the Proposed Action

Direct Impacts

With the implementation of the proposed project, there will be increased traffic between the borrow pit location and the Humble Canal preload construction site during the construction period. Impacted roads include Aragon Road, LA State Highway 58, and LA State Highway 55. Contractors and sub-contractors transporting material will stay in compliance with state and parish load limits and traffic ordinances. Increased traffic will only occur during project hours of operation which may occur seven days a week between the hours of 7am to 7pm. The proposed project does not include any road closures or detours. Increased debris along roads during construction due to transportation of materials to the proposed project area will be removed immediately and cleaned. There will be limestone turnouts and wash points at the exit point of the borrow site and construction site to mitigate the presence of debris on the roadways.

Indirect Impacts

Construction of the proposed project will increase travel time on Aragon Road, LA State Highway 58, and LA State Highway 55. Increased travel time will only occur during project hours of operation- seven days a week, between 7am and 7pm.

Cumulative Impacts

Cumulative impacts to transportation would be the additive combination of impacts by this and other Federal, state, local, and private flood risk reduction efforts, including, but not limited to the Terrebonne Non-Federal Levees and construction by TLCD and/or other non-Federal entities within the MRT-MTG levee alignment.

4.15.3 Commercial Fisheries

Future Conditions with No-Action

Direct Impacts and Indirect Impacts

Under the no action alternative fishing resources will remain the same.

Future Conditions with the Proposed Action

Direct Impacts, Indirect Impacts, and Cumulative Impacts

With implementation of the proposed project there may be increased adverse impacts on fishery resources due to changes in fishery access, salinity, turbidity, and submerged aquatic vegetation. Cumulative impacts to commercial fisheries would be the additive combination of impacts by this and other Federal, state, local, and private flood risk reduction efforts., including, but not limited to the Terrebonne Non-Federal Levees and construction by TLCD and/or other non-Federal entities within the MRT-MTG levee alignment

4.16 Cumulative Impacts Analysis

The Council on Environmental Quality (CEQ) Regulations define cumulative impacts (CI) as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such other actions. CI can result from individually minor but collectively significant actions taking place over a period of time.”

Coastal Louisiana, including the project area, has been greatly impacted by natural subsidence, levees, hurricanes and oil and gas infrastructure. Recent events, such as hurricanes (see Section 3.1.3) and oil spills like the 2010 BP Deepwater Horizon spill, each contribute to the loss of habitat but are largely indiscernible from other impacts. Direct and indirect impacts of past, present and reasonably foreseeable future events were considered in the analysis of the proposed project consequences. These impacts include historical and predicted future land loss rates for the area and restoration projects in the vicinity. The proposed action would have reversible temporary adverse impacts to some environmental resources, but overall cumulative moderate benefits to the environmental resources.

The approximately 9.5 acres (2.5 AAHUs) of project impacts to wetlands (i.e. BLH, fresh and brackish marsh) and open water would be in addition to, and often synergistic with, the impacts and benefits from other wetland acres restored, nourished and protected by other Federal, state, local, and private restoration efforts within or near the Project area, the Louisiana state coastal area, and the nation’s coastal areas. Impacts to the wetlands would be mitigated and coordinated with USFWS and NMFS.

Though CWPPRA projects are nominated and implemented one at a time and must have individual merit, the cumulative value of the wetland restoration and protection projects in the area can exceed the summed values of the individual projects. Similar wetland restoration projects in the area would operate synergistically with the proposed alternative to enhance the structural and functional integrity of the ecosystem, improve primary productivity rates, and thereby improve the overall environmental resources. The nearest CWPPRA project for restoration listed by the state database involve shoreline protection, marsh management, and hydrological restoration: West Lake Boudreaux Shoreline Protection and Marsh Creation (5.5 miles away, status completed).

Environmental benefits from these project types address the suite of environmental threats along this area of coast. In recognition that the environmental needs are varied in type and differ by location, the state of Louisiana developed a 2017 Coastal Master Plan for Southwest Louisiana as a way to prioritize restoration projects. The proposed plan is consistent with this coastwide planning.

Physical cumulative impacts are related to mining dredge materials. The effect of borrowing from offshore sources has been evaluated and determined to have no adverse impact. Cumulative impacts would result from the removal of benthic organisms. There is no difference in the cumulative and direct/indirect impacts for this project. Offshore borrow sites disruptions from the proposed and other past, current and future activities are separated by time and space, thus allowing the recolonization of benthic organisms. Separation of time and space also reduce any potential cumulative impact with other actions for wave climate. Therefore, no adverse cumulative impacts are expected.

5 Mitigation

5.1 Mitigation Measures

An assessment of the potential environmental impacts to important resources found that the approved project and the proposed changes include the loss of marsh and BLH habitat (approximately 0.5 acres of BLH and 4 acres of fresh and 5 acres of brackish marsh) for the initial pre-load construction.

Mitigation alternatives investigated included the following:

- Alternative 1: No Action Alternative – this alternative cannot be selected as CEMVN is required to mitigate for unavoidable impacts.
- Alternative 2: Expanding an existing CWPPRA project – would require a project to already exist in the watershed and be completed within suitable time and budget.
- Alternative 3: Constructible mitigation site – this would involve creating a BLH, brackish, and fresh marsh mitigation site to offset the impacts of habitat lost from the project.
- Alternative 4: Mitigation bank credit purchase (proposed mitigation plan) – buying in-kind mitigation bank credits.

USACE-approved mitigation banks with perpetual conservation servitudes currently in compliance with their authorizing instrument (mitigation bank instrument) and able to mitigate fresh and brackish marsh and BLH Coastal Zone impacts were considered as a potential

alternative. Alternative 4 assumes that the mitigation requirement could be satisfied through the purchase of fresh, brackish/saline, and BLH mitigation bank credits.

The WIIN Act of 2016 (PL 114-322) states that all potential credits from mitigation banks and the Louisiana in-lieu fee (ILF) programs with service areas that include the impacted areas should be considered as reasonable alternatives. The Louisiana ILF program is currently not acceptable until Federal requirements for USACE projects can be met. Tidal marsh mitigation banks in Louisiana have a service area made up of either the Deltaic or Chenier Plain. There are mitigation banks in the watershed with available fresh marsh and BLH credits for purchase, but there are no mitigation banks in the watershed with available brackish/saline marsh credits for purchase. As such, the study area for mitigating the brackish marsh requirement is the Deltaic Plain (“the plain”). See “Location Map” in Figure A-2, Appendix A for a map of this boundary. There are brackish/saline marsh credits available in the plain. As such, if mitigation bank credits were purchased to satisfy all or part of the remaining brackish marsh requirement, mitigation for project impacts incurred would occur outside of watershed.

In coordination with the resource agencies, the USACE-certified WVA models for fresh and brackish marsh and BLH were used in determining the AAHUs to offset the habitat impacts. CEMVN proposes to purchase sufficient mitigation bank credits to satisfy 1.77 AAHUs of fresh marsh impacts and 0.18 AAHUs of BLH impacts in the watershed, and 0.58 AAHUs of brackish marsh impacts in the plain.

5.2 Mitigation impacts to relevant resources

Overall, the proposed mitigation measure would offset impacts from construction of the pre-load levee. However, as stated above, mitigation would involve the purchasing of brackish marsh credits outside of the watershed. For fresh marsh and BLH, in-kind credits purchased inside the watershed would offset the wetland habitats lost in the project footprint. This mitigation approach would result in a permanent loss of brackish marsh habitat in the watershed. As such, breeding, nesting, and foraging habitat for wildlife, T&E and protected species, and aquatic species associated with brackish marsh would be reduced in the watershed and improved elsewhere in the plain. However, because there is an abundance of brackish marsh habitat in the plain, this small loss of AAHUs will have a minimal impact on species populations. Credits purchased for fresh marsh and BLH would remain in the watershed.

No impacts associated with navigational, cultural, tribal, visual, noise and vibration, socioeconomic, and EJ resources would result. Mitigation outside of the watershed would provide benefits to all other relevant resources, especially for the natural community and fully offset wetland habitat impacts from the pre-load levee. Cumulatively, when added to other past, present, and reasonably foreseeable future ecosystem restoration and mitigation projects, this alternative would help counter the overall trend of loss of fresh and brackish marsh and BLH habitat and the loss of associated species.

6 Coordination and Public Involvement

A Public Notice for EA #583 has been published in the Baton Rouge and New Orleans Advocate for 30 days beginning August 12, 2021 and ending September 11, 2021.

Preparation of this EA and FONSI was 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, received copies of the draft EA and draft FONSI:

Advisory Council on Historic Preservation
Associated Federal Pilots
Big River Coalition
Coastal Protection and Restoration Authority
Coastal Protection and Restoration Authority Board of Louisiana
Crescent River Port Pilots Association
Governor's Executive Assistant for Coastal Activities
Louisiana Department of Environmental Quality
Louisiana Department of Natural Resources, Coastal Management Division
Louisiana Department of Natural Resources, Coastal Restoration Division
Louisiana Department of Transportation and Development
Louisiana Department of Wildlife and Fisheries
Louisiana Division of Administration, State Land Office
Louisiana State Historic Preservation Officer
Lower Mississippi River Committee (LOMRC)
Maritime Navigation Safety Association
New Orleans Baton Rouge Steamship Pilot Association
Terrebonne Levee Conservation District
Terrebonne Parish Consolidated Government
The Associated Branch (Bar) Pilots
U.S. Coast Guard Marine Safety Unit Baton Rouge
U.S. Coast Guard Sector New Orleans
U.S. Department of Commerce, National Marine Fisheries Service
U.S. Department of the Interior, Fish and Wildlife Service
U.S. Environmental Protection Agency, Region VI
U.S. Natural Resources Conservation Service, State Conservationist
Caddo Nation of Oklahoma
Chitimacha Tribe of Louisiana
Choctaw Nation of Oklahoma
Coushatta Tribe of Louisiana
Mississippi Band of Choctaw Indians
Jena Band of Choctaw Indians
Muscogee Creek Nation
Seminole Nation of Oklahoma
Tunica-Biloxi Tribe of Louisiana

US Fish and Wildlife Recommendations

CEMVN received recommendations in a Draft CAR from USFWS dated May 24, 2021. The document and these recommendations can be found in Appendix D. CEMVN's responses are as follows:

1. Forest clearing associated with project features should be conducted during the fall and winter to minimize impacts to nesting migratory songbirds.

Response 1. – Concur. Forest clearing will be conducted during fall and winter to minimize impacts to nesting migratory songbirds.

2. Important fish and wildlife habitat (emergent wetlands, forested wetlands, and non-wetland forest) should be conserved by avoiding and minimizing the acreage of those habitats directly and indirectly impacted by project features.

Response 2 – Concur. In coordination with the project delivery team, avoidance and minimization of impacts were both considered for reducing project impacts to the maximum extent practicable, including impoundment impacts along the existing levee. Compensatory mitigation from Corps-approved mitigation banks will be required to mitigate all unavoidable impacts to wildlife habitat impacted from the project.

3. Avoid impacts to threatened and endangered species, at-risk species, and species of concern such as the bald eagle, and wading bird nesting colonies.

Response 3 – Concur. Impacts for T&E species, at-risk species, and species of concern will be avoided. Bird abatement procedures would be implemented to prevent wading birds (i.e., herons, egrets, night-herons, ibis, and roseate spoonbills), anhingas, and/or cormorants from nesting during their nesting period. In the event that implementation of the bird abatement plan is not successful and nesting does occur, all activity occurring within 1,000 feet of a nesting colony would be restricted to the non- nesting period. For nesting brown pelicans, activity should be avoided within 2,000 feet of the colony. Activity would be restricted within 650 feet of nesting black skimmers, gulls, and terns.

4. West Indian manatee conservation measures should be included in all contracts, plans, and specifications for in-water work in areas where the manatee may occur.

Response 4 – Concur. Manatee conservation procedures would be included in all contracts, plans, and specifications for in-water work in areas where the manatee may occur.

5. A survey should be conducted to determine if a bald eagle nest is present within or adjacent to the project area. If a bald eagle nest occurs within 660 feet of the proposed project area, then an evaluation must be performed to determine whether the project is likely to disturb nesting bald eagles. That evaluation may be conducted on-line at <http://www.fws.gov/southeast/birds/Eagle/tamain.html>.

The Service developed the National Bald Eagle Management Guidelines to provide landowners, land managers, and others with information and recommendations to minimize potential project impacts to bald eagles. A copy of the guidelines is available at: <https://ecos.fws.gov/ServCat/DownloadFile/36458?Reference=36436>

Response 5 - Concur. Previous field surveys completed on April 22, 2021 and May 7, 2021 indicated no presence of bald eagle nests in the project area. See Section 4.6 which states that USACE biologists would conduct bald eagle surveys prior to construction.

6. Any impacts to Essential Fishery Habitat should be discussed with the NMFS to determine if the project complies with the Magnuson-Stevens Fishery Conservation and Management

Act (MSFCMA, Magnuson-Stevens Act, P.L. 104-297, as amended) and its implementing regulations.

Response 6 - Concur. USACE seeks to avoid impacts to EFH and would coordinate with NMFS on any unavoidable impacts.

7. Compensation should be provided for any unavoidable losses of BLH and marsh habitat, caused (directly or indirectly) by project features. All mitigation should be developed/coordinated with the Service, LDWF, and other natural resource agencies.

Response 7 – Concur. Compensation will be provided for unavoidable losses of habitat from project features.

8. Any proposed change in project features or plans should be coordinated in advance with the Service, LDWF, NMFS and other resource agencies.

Response 8. Concur. CEMVN will continue to coordinate with the resource agencies on any proposed changes.

9. The Service recommends that the USACE contact the Service for additional consultation if:
 - 1) the scope or location of the proposed project is changed significantly;
 - 2) new information reveals that the action may affect listed species or designated critical habitat;
 - 3) the action is modified in a manner that causes effects to listed species or designated critical habitat; or
 - 4) a new species is listed or critical habitat designated. Additional consultation as a result of any of the above conditions or for changes not covered in your consultation should occur before changes are made and/or finalized.

Response 9 – Concur. CEMVN will consult with USFWS on any proposed changes.

7 Compliance with Environmental Laws and Regulations

There are many Federal and state laws pertaining to the enhancement, management and protection of the environment. Federal projects must comply with environmental laws, regulations, policies, rules and guidance. Compliance with laws will be accomplished upon 30-day public and agency review of this EA #583 and associated Finding of No Significant Impact.

Farmland Protection Policy Act of 1981

The Farmland Protection Policy Act of 1981 (FPPA) was enacted to minimize the extent that Federal programs contribute to the unnecessary and irreversible conversion of farmland to non-agricultural uses, and to assure that Federal programs are administered in a manner that, to the extent practicable, would be compatible with the State, local government, and private programs and policies to protect farmland.

Under this policy, soil associations are used to classify areas according to their ability to support different types of land uses, including urban development, agriculture, and silviculture. The USDA Natural Resource Conservation Service (NRCS) designates areas with particular soil characteristics as either “Farmland of Unique Importance,” “Prime Farmland,” “Prime Farmland if Irrigated,” or variations on these designations. Prime farmland, as defined by the FPPA, is land that has the best combination of physical and chemical characteristics for producing food, feed,

forage, fiber, and oilseed crops and is available for these uses. Farmland of unique importance is land other than prime farmland that is used for the production of specific high-value food and fiber crops, such as citrus, tree nuts, olives, cranberries, and other fruits and vegetables. A recent trend in land use in some areas has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, drought-prone, and less productive, and cannot be easily cultivated as compared to prime farmland (NRCS 2016).

No prime or unique farmlands, as defined and protected by the Farmland Protection Policy Act, would be affected by the proposed project (See Appendix D for coordination letter received from Natural Resource Conservation Service).

Clean Air Act of 1972

The Clean Air Act (“CAA”) sets goals and standards for the quality and purity of air. It requires the EPA to set National Ambient Air Quality Standards (“NAAQS”) for pollutants considered harmful to public health and the environment. The Project area is in Terrebonne Parish, which is currently in attainment of NAAQS. The Louisiana Department of Environmental Quality is not required by the CAA and Louisiana Administrative Code, Title 33 to grant a general conformity determination.

Clean Water Act of 1972 – Section 401 and Section 404

The Clean Water Act (CWA) sets and maintains goals and standards for water quality and purity. Section 401 requires a Water Quality Certification from the Louisiana Department of Environmental Quality (LDEQ) that a proposed project does not violate established effluent limitations and water quality standards. Surface water quality standards are established Louisiana Administrative Code (LAC) Title 33, Part IX (2020). State Water Quality Certificate (WQC) 210601-03 (dated August 3, 2021) was received from the Louisiana Department of Environmental Quality on August 3, 2021 (Appendix D).

As required by Section 404(b)(1) of CWA, an evaluation to assess the short- and long-term impacts associated with the discharge of dredged and fill materials into waters of the United States resulting from this Project has been completed (Appendix E). The Section 404(b)(1) public notice was mailed out for public review comment period beginning August 12, 2021 and ending September 11, 2021

Coastal Zone Management Act of 1972

The Coastal Zone Management Act requires that "each federal agency conducting or supporting activities directly affecting the coastal zone shall conduct or support those activities in a manner which is, to the maximum extent practicable, consistent with approved state management programs." Coordination with the Louisiana Department of Natural Resources (LDNR) on a modified coastal zone consistency for C20130001 on the Morganza to the Gulf levee alignment began in an email dated May 7, 2021 (Appendix D). LDNR concurred by letter dated June 21, 2021 with the determination that the proposed action is consistent, to the maximum extent practicable, with the Louisiana Coastal Resources Program; Consistency (C20130001 Mod 02). (Appendix D)

Endangered Species Act of 1973

The Endangered Species Act (“ESA”) is designed to protect and recover threatened and endangered (“T&E”) species of fish, wildlife and plants. The USFWS identified in their coordination letter, five T&E species, the Pallid sturgeon, West Indian manatee, piping plover, red knot, and

American alligator that are known to occur or believed to occur within the vicinity of the Project area. No plants were identified as being threatened or endangered in the Project area. CEMVN initiated coordination with the USFWS on April 13, 2021 (Appendix D). The project, as proposed, is not likely to adversely affect Federally-listed threatened or endangered species, or their critical habitat, under the jurisdiction of USFWS. This fulfills the requirements under Section 7(a)(2) of the ESA. (Appendix D)

The proposed action would include Standard Manatee Conditions for In-Water Activities with the contractor instructing all personnel regarding the potential presence of manatees in the project area, and the need to avoid collisions with these animals. If a manatee(s) is sighted within 100 yards of the project area, moving equipment must be kept at least 50 feet away from the manatee or shut down. There would be restrictions on vessel operation, restrictions on the use of siltation barriers, and mandatory signage designed to avoid any harm to manatees in the project area. More specific information would be contained in the dredging contracts.

Fish and Wildlife Coordination Act of 1934

The Fish and Wildlife Coordination Act (“FWCA”) provides authority for the USFWS involvement in evaluating impacts to fish and wildlife from proposed water resource development projects. It requires that fish and wildlife resources receive equal consideration to other project features. It requires Federal agencies that construct, license or permit water resource development projects to first consult with the USFWS, NMFS and state resource agencies regarding the impacts on fish and wildlife resources and measures to mitigate these impacts. Section 2(b) requires the USFWS to produce a Coordination Act Report (“FWCAR”) that details existing fish and wildlife resources in a project area, potential impacts due to a proposed project and recommendations for a project. The USFWS reviewed the proposed changes to the previously approved ridge restoration and marsh creation project described in EA #583 and provided a draft FWCAR with project specific recommendations on May 25, 2021. The Draft CAR can be found in Appendix D.

Hazardous, Toxic, and Radioactive Waste

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

An ASTM E 1527-13 Phase 1 Environmental Site Assessment (ESA), HTRW 21-03 dated June 7, 2021, was completed for the project area and a copy is being maintained on file at CEMVN. The probability of encountering HTRW for the proposed action is low based on the initial site assessment. If a recognized environmental condition (REC) is identified in relation to the Project area, the U.S. Army Corps of Engineers, New Orleans District would take the necessary measures to avoid the REC so that the probability of encountering or disturbing HTRW would continue to be low.

Prior HTRW reports have been completed for the proposed J-1 borrow site. An Initial Phase 1 ESA entitled “Morganza To The Gulf Of Mexico, Hurricane Protection Levees, Reach J-1, HTRW #233” was prepared by MVN on April 23, 2005. A subsequent Phase I ESA entitled “Terrebonne Parish Non-Federal Levee System Repairs, Replacements, Modifications, and Improvements,

Terrebonne Parish, Louisiana (Susie Canal Levee, Orange Street Levee, and J-1 Borrow Pit” was completed on November 7, 2008. Both Phase I ESAs included the J-1 borrow area as part of the project area. Neither the April 2005 nor the November 2008 ESA identified any RECs or HTRW associated with the proposed J-1 borrow area. On May 18, 2021, an update to the two previous Phase 1 ESAs was completed on the J-1 borrow site in conjunction with EA #583. The probability of encountering HTRW at the proposed borrow site is low based on the initial and subsequent assessments. A copy of the J-1 borrow area assessment update will be maintained on file at CEMVN.

Magnuson-Stevens Fisheries Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), as amended, Public Law (P.L.) 104-208, addresses the authorized responsibilities for the protection of EFH by NMFS in association with regional fishery management councils. The NMFS has a “findings” with the CEMVN on the fulfillment of coordination requirements under provisions of the MSFCMA. In those findings, the CEMVN and NMFS have agreed to complete EFH coordination requirements for federal civil works projects through the review and comment on National Environmental Policy Act documents prepared for those projects. EA #583 was provided to the NMFS for review and comment on August 12, 2021.

Migratory Bird Treaty Act

The bald eagle was removed from the List of Endangered and Threatened Species in August 2007 but continues to be protected under the BGEPA and the MBTA. During nesting season, construction must take place outside of USFWS/LDWF buffer zones. A Corps Biologist and USFWS Biologist survey for nesting birds. This will be done prior to the start of construction.

National Historic Preservation Act of 1966

Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended, requires Federal agencies to take into account the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. The procedures in 36 CFR Part 800 define how Federal agencies meet these statutory responsibilities. The Section 106 process seeks to accommodate historic preservation concerns with the needs of Federal undertakings through consultation among the agency official and other parties with an interest in the effects of the undertaking on historic properties, including the State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO) and any Tribe that attaches religious or cultural significance to historic properties that may be affected by an undertaking. The goal of consultation is to identify historic properties potentially affected by the undertaking, assess its effects and seek ways to avoid, minimize or mitigate any adverse effects on historic properties. NHPA consultation letters pursuant to Section 106 were mailed to SHPO on June 10, 2021 for 30-day review. In a letter dated July 7, 2021, SHPO concurred that the actions of this EA are determined as having no effect on historic properties (See Appendix D).

Tribal Consultation

It is the policy of the federal government to consult with Federally-recognized Tribal Governments on a Government-to-Government basis as required in E.O. 13175 (“Consultation and Coordination with Indian Tribal Governments,” U.S. President 2000). The requirement to conduct coordination and consultation with Federally-recognized Tribes on and off of Tribal lands for “any activity that has the potential to significantly affect protected tribal resources, tribal rights (including treaty rights), and Indian lands” finds its basis in the constitution, Supreme Court cases, and is clarified in later planning laws. The USACE Tribal Consultation Policy, 1 Nov 2012, specifically implemented this E.O. and later Presidential guidance. The 2012 USACE Tribal

Consultation Policy and Related Documents provide definitions for key terms, such as tribal resources, tribal rights, Indian lands, consultation, as well as guidance on the specific trigger for consultation.

Table 7 2012 USACE Tribal Consultation Policy Definitions

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

While Terrebonne Parish has a long history of occupation by Native American communities, prior to its establishment and throughout its history, there are currently no protected tribal resources, tribal rights, or Indian lands that have the potential to be significantly affected by the proposed actions within in the watershed. However, in accordance with CEMVN’s responsibilities under the NHPA Section 106 process and E.O. 13175, CEMVN has offered the following Federally-recognized Indian tribes the opportunity to review and comment on the proposed action: 1) the Chitimacha Tribe of Louisiana, 2) the Choctaw Nation of Oklahoma, 3) the Coushatta Tribe of Louisiana, 4) the Jena Band of Choctaw Indians, 5) the Mississippi Band of Choctaw Indians, and, 6) the Tunica-Biloxi Tribe of Louisiana. See Appendix D for consultation letter date and response received from Seminole Nation of Oklahoma dated 15 June 2021 and the Choctaw Nation of Oklahoma dated 8 July 2021.

8 Conclusion

The proposed action would result in construction of a preload levee that would support further MRT-MTG project. Future impact analysis of other constructible features with the MRT-MTG alignment and their impacts would occur in future supplemental NEPA documents.

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

9 Prepared By

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