

**DRAFT
ENVIRONMENTAL ASSESSMENT
AND
SECTION 404(b)(1) EVALUATION REPORT**

**MINOR CHANNEL IMPROVEMENTS
WIDENING the BEND EASING
GULFPORT HARBOR FEDERAL
NAVIGATION PROJECT**

MISSISSIPPI and LOUISIANA

A FEDERALLY AUTHORIZED NAVIGATION PROJECT

Prepared by
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Planning and Environmental Division
Environmental Resources Branch
Coastal Environment Team



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SECTION 404 (b)(1) EVALUATION REPORT

LIST OF ENCLOSURE(S)

Enclosure 1 – Public Notice

ACRONYMS AND ABBREVIATIONS

BA	Biological Assessment
BO	Biological Opinion
BMP	Best Management Practice
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CZC	Coastal Zone Consistency
DA	Disposal Area
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EJ	Environmental Justice
EO	Executive Order
EPA	Environmental Protection Agency

ER	Engineering Regulation
ESA	Endangered Species Act
F	Fahrenheit
FONSI	Findings of No Significant Impact
GMFMC	Gulf of Mexico Fishery Management Council
GIWW	Gulf Intracoastal Waterway
ITS	Incidental Take Statement
MDEQ	Mississippi Department of Environmental Quality
MDMR	Mississippi Department of Marine Resources
Mg/l	Milligrams per liter
MLW	Mean Low Water
MLLW	Mean Lower Low Water
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NLAA	Not Likely to Adversely Affect
NLAM	Not Likely to Adversely Modify
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
ODMDS	Ocean Dredged Material Disposal Site
O&M	Operations and Maintenance
PRD	Protected Resources Division
RBO	Regional Biological Opinion
SAV	Submerged Aquatic Vegetation
SHPO	State Historic Preservation Officer
TSS	Total Suspended Solids
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
WRDA	Water Resources Development Act
WQC	Water Quality Certification

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1.0 INTRODUCTION.

The U.S. Army Corps of Engineers (USACE), Mobile District is responsible for the operations and maintenance (O&M) of the federally-authorized Gulfport Harbor Navigation Channel Project, which includes removal of dredged material from the channel and placement of dredged material in approved placement areas (open-water, littoral, ocean, etc.). See **Figure(s) 1 and 2** in the Appendix. This Environmental Assessment (EA) has evaluated impacts that could potentially result from the proposed minor channel improvements (widening the bend easing) and future O&M to the federally-authorized Gulfport Harbor Navigation Channel Project in Gulfport, Mississippi. The material dredged from the proposed action will be placed in the previously approved and utilized Gulfport West Ocean Dredged Material Disposal Site (ODMDS).

1.1 PROJECT LOCATION AND ADJACENT PORT OF GULFPORT.

The proposed project location is situated directly south of Ship Island, which is part of the Mississippi Barrier Island complex, just offshore of the state(s) of Mississippi and Louisiana in the Gulf of Mexico. The Gulf Entrance Channel portion of the Gulfport Harbor Federal Navigation Project begins running parallel south of the island(s) and then makes a 45-degree turn north towards the barrier islands, Port of Gulfport, and state of Mississippi. The proposed widening of the bend easing is located at the bend where the channel turns northward. The majority of the Gulfport Harbor Federal Navigation Project is located in Mississippi waters; however, the proposed project location is in Louisiana state territorial waters (see **Figure 3** in the Appendix).

The Port of Gulfport, one of two deep draft commercial harbors in Mississippi, is located in Harrison County, approximately 75 miles west of Mobile, Alabama, and 75 miles east of New Orleans, Louisiana. Historically, the Port of Gulfport has offered deep water access for the shipping industry dating back to the early 1990s. The Port handles more than two million tons of cargo a year, is the second largest importer of green fruit in the United States and is the third busiest container port located directly on the Gulf of Mexico. The Port of Gulfport currently has two terminals (East Pier and West Pier) serving eight maritime tenants including: Dole Food Company, Crowley Maritime Corporation, Chemours, Chiquita Fresh North America, Gulf Coast Shipyard Group, Inc., McDermott International, Inc., Topship, LLC, The University of Southern Mississippi and one non-maritime tenant, Island View Casino Resort. Refrigerated commodities shipped through the Port of Gulfport include: bananas, pineapples, other fresh produce, frozen poultry and

pork. Containerized dry cargo commodities include: apparel, paper, cotton, lubricants, electrical equipment, automobiles, construction supplies and materials, and road-building machinery. Bulk commodities currently handled include ilmenite ore (used in the production of titanium dioxide) and crushed limestone.

1.2 Authorized and Existing Project.

The project was adopted by the following: the Rivers and Harbors Act, approved 3 July 1930 (H.Doc.692, 69th Cong., 2nd sess.), the Rivers and Harbors Act, approved 30 June 1948 (H.Doc.112, 81st Cong., 1st sess.), the Rivers and Harbors Act, approved 3 July 1958 (S.Doc. 123 84th Cong. 2nd sess.), in the Supplemental Appropriations Act, 1985, P.L. 99-88, approved 15 August 1985, and Section 202 of the Water Resources Development Act of 1986 (P. L. 99-662 dated 17 November 1986). The Water Resource Development Act of 1986 authorized improvements to the project and was amended by the Water Resource Development Act of 1988. Project improvements to authorized depths were completed in 1993. Following Hurricane Katrina, appropriations were received under Public Law 84-99, Flood Control and Coastal Emergencies, to construct Mississippi projects to their authorized dimensions. The authorized and existing project dimensions provide for: (a) a Gulf Entrance Channel 38 feet deep, 400 feet wide, and approximately 8 miles long across Ship Island Bar and; (b) a Sound Channel 36 feet deep, 300 feet wide, and approximately 12 miles long through the Mississippi Sound. It also includes: (a) a stepped anchorage basin at Gulfport Harbor 32-36 feet deep, 1,120 feet wide, and 2,640 feet long, (b) a commercial small-boat harbor, about 26 acres in area, and; (c) a Harbor Entrance Channel, 100 feet wide at a depth of 8 feet. The plane of reference is mean lower low water (MLLW).

2.0 The National Environmental Policy Act

The National Environmental Policy Act (NEPA) of 1969, as amended, excuses or excludes Federal agencies from the preparation of any formal environmental analysis with respect to actions that result in minor or no environmental effects, which are known as "categorical exclusions." An intermediate level of analysis, an EA, is prepared for an action that is not clearly categorically excluded, but does not clearly require an Environmental Impact Statement (EIS) [40 Code of Federal Regulations (CFR) §1501.3 (a) and (b)]. Based on the EA, Federal agencies either prepare an EIS, if one appears warranted, or issue a "Finding of No Significant Impact" (FONSI), which satisfies the NEPA requirement. This EA is prepared according to the USACE Engineer Regulation (ER) 200-2, Procedures for Implementing NEPA, and the Council of Environmental Quality (CEQ) Regulations (40 CFR § 1508.27) for Implementing the Procedural Provisions of NEPA (40 CFR § 1500-1508).

In accordance with the requirements of NEPA, an EA has been prepared to consider impacts associated with the Proposed Action. Based on the conclusion presented in the EA, it has been determined that the implementation of the Proposed Action would not result in long-term adverse impacts and that no significant cumulative impacts would occur. This EA is available at: <https://www.sam.usace.army.mil/Missions/Planning-Environmental/Environmental-Assessments/>. A FONSI will be prepared.

2.3 Alternatives

2.3.1 No Action Alternative

The No Action Alternative would be to continue to maintain the channel as authorized, and to not widen the bend easing at the Gulf Entrance Channel. Larger ships attempting to navigate the channel to access Gulfport Harbor may be impeded or delayed. This Alternative was considered and determined to not be a viable alternative to the Proposed Action.

2.3.2 Proposed Action Alternative

The Proposed Action involves minor channel improvements consisting of widening the bend easing (with subsequent maintenance dredging), to approximately 1,400 feet in width and 38 feet in depth, at the Gulf Entrance Channel, as part of the federally-authorized Gulfport Harbor Navigation Project (see **Figure(s) 1 and 2** in the Appendix). An additional -2 feet of advanced maintenance plus -2 feet of overdepth dredging will also be necessary. Maintenance dredging of soft-dredged material with a hopper, mechanical, and/or a hydraulic cutterhead dredge tends to disturb the bottom sediments several feet deeper than the target depth due to the inaccuracies of the dredging process. An additional -3 feet of sediment below the -2-foot paid allowable dredging cut may be disturbed in the dredging process with minor amounts of the material being removed. The dredged material from construction and subsequent maintenance will be placed in the Gulfport West ODMDs. The amount of dredged material to be removed for construction is estimated to be approximately 460,000 cubic yards. Estimated future maintenance material to be dredged is approximately 240,000 cubic yards annually. This action could be accomplished by a mechanical, hopper and/or hydraulic cutterhead dredge.

3.0 AFFECTED ENVIRONMENT

This Section characterizes the affected environment and provides descriptions of existing conditions for environmental resources in the overall project area and vicinity, which includes Gulfport Harbor.

3.1 Physical Environment

Gulfport Harbor is located on the southern shore of Harrison County in western Mississippi. The Gulfport Federal Navigation Channel extends approximately 20 miles offshore south into the Gulf of Mexico, crossing the Gulf Intracoastal Waterway (GIWW) and passing close to the western end of Ship Island. Existing ODMDs and open-water disposal sites are located adjacent to the navigation channel. Onshore, the regional environment is characterized as Coastal Lowlands, and the shore area, where not developed, consists typically of gently undulating swampy plains. Beach in the area is manmade and bordered by constructed seawalls. The Gulfport-Biloxi area is developed and beyond the seawalls are extensive commercial and residential developments. The project is located primarily within Mississippi Sound, a shallow coastal lagoon which

extends 9 miles offshore and encompasses the area between Mobile Bay, Alabama to the east and Lake Borgne, Louisiana, in the west. The continental shelf is topographically diverse and includes slopes, escarpments, knolls, basins, and submarine canyons. Approximately 10-12 miles offshore are Cat Island and Ship Island, part of the barrier islands in this region. These islands typically feature broad, sandy beaches to the north with dunes on the southern Gulf side. These islands have migrated westward with time, and will continue to do so due to continual erosion on the eastern ends and accretion on the western ends. In the past, the shipping channel has been realigned to the west to minimize impacts to the western end of Ship Island and the national historic site of Fort Massachusetts. To the southwest of the Mississippi barrier islands are the Chandeleur Islands, which are barrier islands located in the territorial waters of southeast Louisiana. Once composed of sandy beaches on the eastern side and marshes and mangroves on the western landward side, the islands have eroded. Storm damage has been severe since 1998, and the islands have been hit by Hurricanes Georges, Lili, and Ivan, Tropical Storm Isadore, and most recently Hurricane Katrina. Aerial photographs of the islands since Hurricane Katrina reveal that most of the barrier islands' mass has been reduced by 50 percent and much of the northern islands are submerged land masses.

The USACE, Mobile District, through its Mississippi Coastal Improvements Program Barrier Island Restoration Project, is actively restoring Ship Island to the pre-Hurricane Camille footprint. Construction is expected to be completed in 2021. Waters in Mississippi Sound are influenced by saline Gulf waters flowing into the Sound between the barrier islands as well as freshwater drainage from 20,000 square miles of land area. Main rivers draining into the Mississippi Sound are the Pascagoula River, the Pearl River, and the Mobile River. This mix of freshwater and saline conditions has created a dynamic estuarine environment.

3.2 Climate

The area is characterized by a humid, warm-temperate, sub-tropical climate, and is partially isolated from the Atlantic Ocean. Average annual air temperatures range between 60 and 70 degrees Fahrenheit (F). The normal annual rainfall is between 55 and 64 inches, distributed relatively evenly throughout the year. The northern Gulf of Mexico area is subject to hurricanes between June and October, occurring most frequently in September. In 1969, Hurricane Camille devastated the entire Mississippi coast, and in 2005, Hurricane(s) Katrina and Rita devastated coastal areas from Galveston, Texas through the entire Mississippi coast.

3.3 Bathymetry

Mississippi Sound has two different regions with markedly different bathymetric features (Blumberg et al., 2000). The upper and western Mississippi Sound is shallow, with depths ranging from about 3 feet to 9 feet. The remainder of the Sound is deeper, ranging from about 9 feet to over 600 feet in depth, with the deepest areas on the Gulf side, south of the barrier islands. Where the Gulfport Federal Navigation Channel extends across Mississippi Sound, the northern half of the Sound has natural water depths of about 13 feet or less. Depths in the southern half of the Sound range from about 13 to 20 feet south of Ship Island, natural depths range from about 20 to 35 feet in the vicinity of the

ship channel. Depths at the proposed project area (directly adjacent to the ship channel) are approximately 33 to 36 feet. The depths within approximately 1 mile immediately around the Chandeleur Islands range from 4 to 9 feet. Water depths then vary 10-15 feet around the islands. Water depths to the south and east continue to increase and more than approximately 3 miles further in those directions are more uniform, with contours ranging from 45 to 50 feet. The Gulfport Federal Navigation Channel passes between Cat Island and Ship Island through Ship Island Pass. The islands are separated by about 5 miles of open water, which overlie a fairly shallow sand bottom or bar. A naturally scoured channel, more than 30 feet deep, exists off the western edge of Ship Island, near the Gulfport Federal Navigation Channel. The currents around the barrier islands transport sand and tend to extend the western edges of the islands and erode the eastern ends. As the islands move west, the naturally scoured channel also moves west.

The maximum depth of the Gulf Entrance Channel is 45 feet, which includes an authorized depth of 38 feet, plus 2 feet for advanced maintenance, plus 2 feet for overdepth and up to 3 feet for dredging inconsistencies. This depth is maintained by the USACE in the approximately 10-mile, 400-foot wide segment that extends from the Gulf of Mexico across the Ship Island Bar into Mississippi Sound. The approximately 11-mile, 300-foot wide Sound Channel commences north of Ship Island and concludes at Gulfport Harbor's Turning Basin. The maximum depth of the Sound Channel is 43 feet, which includes an authorized depth of 38 feet, plus 2 feet for advanced maintenance, plus 2 feet for overdepth and up to 3 feet for dredging inconsistencies. Dredged materials are deposited at open-water sites on either side of the ship channel along the majority of its length. Material dredged from Ship Island Pass and the Gulf Entrance Channel is generally placed in the Gulfport West ODMDS. The northern portion of the ODMDS ranges in depths from 24 to 29 feet MLLW while the southern portion has depths of 30 to 35 feet MLLW. Open-water sites' depths are not shallower than 4 feet. The distance from the channel to the beginning edge of these disposal sites is generally no less than 0.5 mile. Shoaling is quite rapid in the Mississippi Sound and Ship Island Pass (USACE, 1975). As a result, frequent dredging is required.

3.4 Sediments

The Mississippi Sound is a bar-built estuary located in the Northern Gulf of Mexico along the Mississippi Gulf coast. The Sound has an area of approximately 810 square miles, bound by Mobile Bay to the east and the St. Bernard lobe of the Mississippi River delta to the west. Primary sources of sediment include the Mississippi River, Mobile River, Pascagoula River, and the Pearl River. Smaller rivers also flow into Mississippi Sound through estuaries and bays. These rivers include the Biloxi and Tchoutacabouffa Rivers that flow into Back Bay of Biloxi, and the Jourdan and Wolf Rivers flowing into St. Louis Bay. The majority of sediments deposited in the Sound probably have sources in the Appalachians Mountains, and are characteristic of the Eastern Gulf Province. The sediments located throughout the Mississippi Sound consist predominantly of silts and clays. The sediments north of the GIWW are predominantly silts and clays, whereas closer to the barrier islands, the sediments contain more sand. In this diurnal micro-tidal

environment (~ 5 feet), a westward long shore current results in westward littoral drift of sandy sediments along the barrier islands.

In December 2012, sediment samples were collected and analyzed from the Gulf Entrance Channel segment of the Gulfport Harbor Federal Navigation Project. These samples were collected as part of the characterization of material to be dredged and placed in the Gulfport Western ODMDS. Sediments from this portion of the project were analyzed to determine if the material could be excluded based on criteria (40 CFR 227.13b). Samples were also collected from within the confines of the Gulfport Western ODMDS, and these results are described in the *Final Evaluation of Proposed Dredged Material Gulfport Bar, Gulfport, Mississippi* dated November 2013 and *Final Gulfport Bar Federal Navigation Channel Project MPRSA Section 103 Evaluation* dated November 2013. The Gulf Entrance Channel dredged material met the exclusionary criteria for placement at the Gulfport Western ODMDS.

Sediment sampling and evaluation of dredged material are currently underway to ensure that the materials are suitable for placement within the Gulfport Western ODMDS. Given past sediment results and that this is new work material, the USACE, Mobile District anticipates the dredged material will be suitable for ocean placement. Following analysis of the results, a Section 103 Evaluation will be prepared and submitted to the U.S. Environmental Protection Agency (EPA).

3.5 Benthos, Motile Invertebrates, and Fishes.

3.5.1 Benthos and Motile Invertebrates

The benthic community in the Mississippi Sound was classified by Vittor and Associates in a study of the Mississippi Sound and selected sites in the Gulf of Mexico (Vittor, 1982). A total of 437 taxa were collected at densities ranging from 1,097 to 35,537 individuals per square meter. Generally, densities increase from fall through the spring months since most of the dominant species exhibit a late winter to early spring peak in production. These species, though sometimes low to moderate in abundance, occur in a wide range of environmental conditions. They are usually the most successful at early colonization and thus tend to strongly dominate the sediment subsequent to disturbances such as dredging activities. These species include polychaetes *Mediomastus* spp., *Paraprionospio pinnata*, *Myriochele oculata*, polychaete worm (*Owenia fusiformis*), *Lumbrineris* spp., (*Sigambra tentaculata*), the *Linopherus-Paraphinome* complex, and *Magelona* cf. *phyllisae*. The phoronid, *Phoronis* sp. and the Cumacean *oxyurostylis* also fit this category. *M. oculata* and *O. fusiformis* are predominate species in the Mississippi Sound. The numerically dominant species collected during the study were polychaete worm *M. californiensis* and *P. pinnata*.

Marine shrimp is by far the most popular seafood in the United States. There are many species of shrimp found in the Gulf of Mexico; however, only those of the family *Penaeidae* are large enough to be considered seafood. Brown shrimp (*Penaeus aztecus*), white shrimp (*P. setiferus*) and pink shrimp (*P. duorarum*) make up the bulk of Mississippi shrimp landings.

The life cycles of brown, white and pink shrimp are similar. They spend part of their life in estuaries, bays and the Gulf of Mexico. Spawning occurs in the Gulf of Mexico. One female shrimp releases 100,000 to 1,000,000 eggs that hatch within 24 hours. The post-larvae shrimp develop through several larval stages as they are carried shoreward by winds and currents. Post-larvae drift or migrate to nursery areas within shallow bays, tidal creeks, and marshes where food and protection necessary for growth and survival are available. There they acquire color and become bottom dwellers. If conditions are favorable in nursery areas, the young shrimp grow rapidly and soon move to the deeper water of the bays. When shrimp reach juvenile and subadult stages (3-5 inches long) they usually migrate from the bays to the Gulf of Mexico where they mature and complete their life cycles. Most shrimp will spend the rest of their life in the Gulf. Shrimpers actively fish around the Mississippi barrier islands.

3.5.2 Fishes

A number of studies evaluating the fish and invertebrates of gulf waters have been conducted. These studies looked at species abundance and diversity in coastal waters. Common migratory fish in the study area are Atlantic croaker (*Micropogonias undulates*), spot (*Leiostomus xanthurus*), and sand seatrout (*Cynoscion arenarius*). Important forage fish within the area are the pelagic species; Bay anchovy (*Anchoa mitchilli*), striped anchovy (*Anchoa hepsetus*), and Gulf menhaden (*Brevoortia patronus*).

Most marine species considered to be of significant economic importance utilize open water areas of the Gulf of Mexico for spawning purposes rather than the confines of semi-enclosed estuaries. However, almost all of these species, except for anadromous forms, migrate seaward seasonally for spawning, then larvae and early juveniles return to the estuaries, which serve as nursery grounds. Estuaries provide larvae and juveniles with protective habitat, an influx of freshwater, a continuous mixing zone, and an abundance of food supply.

Spotted sea trout and red fish are species of concern to coastal states due to their game fish importance. The red drum is an important recreational species throughout its range. Juveniles generally live in estuaries and move to near-shore oceanic waters, such as the project area, as they reach maturity (Pearson 1929). Adults range widely over the near-shore continental shelf waters throughout the year but apparently move to coastal waters to spawn (Overstreet 1983). Spawning is generally thought to take place in coastal waters near inlets (Jannke 1971, Holt *et al.* 1985) although Lyczkowski-Shultz *et al.* (1988) found eggs and larvae out to 20 miles from shore in the eastern Gulf of Mexico.

3.6 Coastal Flora

Coastal Mississippi and Louisiana consist of several habitats including beaches, sand dunes, coastal maritime forests, emergent wetlands, submerged aquatic vegetation (SAV), rivers, tidal creeks, tidal flats, scrub/shrub wetlands, forested wetlands, and open-water benthic habitats. These areas are home to an immensely diverse, resilient, and environmentally significant group of species, including some threatened and endangered fauna. Ecological habitats within the project site include estuarine subtidal and intertidal water bottoms populated with diverse benthic communities.

3.6.1 Wetlands

The project area contains no tidal nor emergent wetlands. Only open-water, marine habitat is present in the project area.

3.6.2 Submerged Aquatic Vegetation

Previous surveys indicate that the closest SAV beds are in the Mississippi Sound north of the barrier islands. The project area is too deep to support SAVs.

3.7 Coastal Fauna.

Birds in the vicinity of the project may include: Gulls, pelicans, terns, sandpipers, plovers, stilts, skimmers, oystercatchers, herons, egrets and ibises. Twenty-nine marine mammal species, including the West Indian manatee, have been or are known to occur in the Gulf of Mexico. Of the species sited along the upper continental shelf, three marine mammal species are commonly found in the project vicinity. They include Atlantic bottlenose dolphin (*Tursiops truncatus*), Atlantic spotted dolphin (*Stenella frontalis*), and spinner dolphin (*Stenella longirostris*). In recent years, the West Indian manatee has become a more common transient, frequently migrating from Florida along the coast as far as Louisiana in warmer weather. However, this species typically remains close to the coast and would not be expected near the barrier islands. Other marine mammal species, such as whales, are inhabitants of the deeper waters (greater than 200 feet) off the continental shelf. They would be unlikely to be encountered in the coastal waters near the barrier islands, but these animals could appear as transients through the area. No sightings of these species have been recorded near the project area.

3.8 Oyster Reefs.

The project area does not contain any established oyster reefs. The Mississippi Department of Marine Resources (MDMR) manages 17 natural oyster reefs. Approximately 97% of the commercially harvested oysters in Mississippi come from the reefs in the western Mississippi Sound, primarily from Pass Marianne, Telegraph and Pass Christian reefs. No established reefs are south of the barrier islands (Dauphin, Petit Bois, Horn, Ship and Cat Islands).

3.9 Essential Fish Habitat.

Congress defines Essential Fish Habitat (EFH) as “those waters and substrates necessary to fish for spawning, breeding, feeding or growth to maturity.” The designation and conservation of EFH seeks to minimize adverse effects on habitat caused by fishing and non-fishing activities. The Gulf of Mexico Fishery Management Council (GMFMC) and National Marine Fisheries Service (NMFS) have identified EFHs for the Gulf of Mexico in its Fishery Management Plan Amendments. These habitats include estuarine areas, such as estuarine emergent wetlands, seagrass beds, algal flats, and mud, sand, shell, and rock substrates. In addition, marine areas, such as the water column, vegetated and non-vegetated bottoms, artificial and coral reefs, geologic features and continental shelf features have also been identified. The habitat within the vicinity of the

project consists of open-water marine environment with a sandy bottom and subject to high wave action and currents.

Open-water marine environments provide habitat for various species of invertebrates and vertebrates. Epibenthic crustaceans and infaunal polychaetes dominate the diets of higher trophic levels, such as flounder, catfish, croaker, porgy, and drum. The fish species composition of the estuarine and offshore area along the northern Gulf of Mexico is of a high diversity due to the variety of environmental conditions, which exist within the area. The major fisheries landed along the Mississippi and Louisiana Gulf coast are Spanish mackerel (*Scomberomerus maculatus*), king mackerel (*Scomberomerus cavalla*), cobia (*Rachycentron canadum*), bluefish (*Pomatomus saltatrix*), pompano (*Trachinotus carolinus*), little tunny (*Euthynnus alletteratus*), spotted sea trout (*Cynoscion nebulosus*), red drum (*Sciaenops ocellatus*), and several shark species. In addition, numerous species of less interest may be taken, including ladyfish (*Elops saurus*), crevalle jack (*Caranx hippos*), blue runner (*Caranx crysos*), and black drum (*Pogonias cromis*). Trawlers work the area primarily for brown and white shrimp (*Peneus aztecus* and *P. setiferous*), but occasional trawlers seeking finfish species, including menhaden (*Brevoortia patronus*) and croaker (*Micropogonias undulatus*), as well as other industrial species that may trawl this bottom (GMFMC-1998, 2004 and 2005). The species managed by the GMFMC are listed in **Table 1** below.

Table 1: Fishery Management Plans and Managed Species for the Gulf of Mexico (NMFS 2017)

Shrimp Fishery Management Plan brown shrimp – <i>Penaeus aztecus</i> pink shrimp – <i>P. duorarum</i> royal red shrimp – <i>Pleoticus robustus</i> white shrimp – <i>P. setiferus</i>	Reef Fish Fishery Management Plan (continued) Greater amberjack – <i>S. dumerili</i> Lesser amberjack – <i>S. fasciata</i> Almaco jack – <i>S. rivoliana</i> Banded rudderfish – <i>S. zonata</i> Gray triggerfish – <i>Balistes capriscus</i> Hogfish – <i>Lachnolaimus maximus</i>
Reef Fish Fishery Management Plan Queen snapper – <i>Etelis oculatus</i> Mutton snapper – <i>Lutjanus analis</i> Blackfin snapper – <i>L. buccanella</i> Red snapper – <i>L. campechanus</i> Cubera snapper – <i>L. cyanopterus</i> Gray (mangrove) snapper – <i>L. cyanopterus</i> Lane snapper – <i>L. synagris</i> Silk snapper – <i>L. vivanus</i> Yellowtail snapper – <i>Ocyurus crysrys</i> Wenchman – <i>Pristipomoides aquilonaris</i> Vermillion snapper – <i>Rhomboplites aurorubens</i> Speckled hind – <i>Epinephelus drummondhayi</i> Goliath grouper – <i>E. itajara</i> Red grouper – <i>E. morio</i> Yellowedge grouper – <i>Hyporthodus flavolimbatus</i> Warsaw grouper – <i>H. nigrilus</i> Snowy grouper – <i>H. niveatus</i> Black grouper – <i>Mycteroperca bonaci</i> Yellowmouth grouper – <i>M. interstitialis</i> Gag – <i>M. microlepis</i> Scamp – <i>M. phenax</i> Yellowfin grouper – <i>M. venenosa</i> Goldface tilefish – <i>Caulolatilus chrysops</i> Blueline tilefish – <i>C. microps</i>	Spiny Lobster Fishery Management Plan Caribbean spiny lobster – <i>Panulirus argus</i>
	Coral and Coral Reef Fishery Management Plan Hydrozoa corals (stinging and hydrocorals) Hexacorals (stony and black corals) *There are over 140 species of corals listed in the Coral Fishery Management Plan. Taxonomy is undergoing review and will be updated in Coral Amendment 7
	Coastal Migratory Pelagic Fishery Management Plan cobia – <i>Rachycentron canadum</i> king mackerel – <i>Scomberomorus cavalla</i> Spanish mackerel – <i>S. maculatus</i>
	Red Drum Fishery Management Plan red drum – <i>Sciaenops ocellatus</i>

Tilefish – *Lopholatilus chamaeleonticeps*

Within the project area, EFH has been designated for managed species of Gulf of Mexico dolphin, wahoo, red drum, blue marlin, sharks (11 species), coastal migratory pelagics (3 species), reef fish (43 species), stone crab (2 species) and shrimp (4 species). No habitat areas of particular concern were identified for this area.

3.10 Threatened and Endangered Species

The NMFS-Protected Resource Division (PRD) lists the following species as either threatened and/or endangered in the State of Mississippi: fin (*Balaenoptera physalus*), sei (*Balaenoptera borealis*), and sperm (*Physeter macrocephalus*) whales, green (*Chelonia mydas*), hawksbill (*Eretmochelys imbricata*), Kemp's ridley (*Lepidochelys kempii*), leatherback (*Dermochelys coriacea*), and loggerhead (*Caretta caretta*) sea turtles, Gulf sturgeon (*Acipenser oxyrinchus desotoi*), oceanic whitetip shark (*Carcharhinus longimanus*), and giant manta ray (*Manta birostris*). The NMFS-PRD threatened and/or endangered species list for the State of Louisiana is the same. The shallow nature of the project area precludes any use by the listed whale species. The proposed action area is outside of Gulf Sturgeon Critical Habitat. The species of particular concern for the project area include sea turtles, Gulf sturgeon, oceanic whitetip shark, and giant manta ray.

The loggerhead sea turtle is currently listed as endangered by the U.S. Fish and Wildlife Service (USFWS) and threatened by NOAA Fisheries. Loggerhead sea turtles occur throughout the temperate and tropical regions of the Atlantic, Gulf of Mexico, Pacific, and Indian Oceans. This species may be found hundreds of miles out to sea, as well as in inshore areas such as bays, lagoons, salt marshes, creeks, and the mouths of large rivers. These sea turtles have historically nested on Mississippi's beaches, barrier islands, and are likely to be in the project area.

The Kemp's ridley sea turtle is listed as endangered under the Endangered Species Act (ESA) (USFWS, 2018). The Kemp's ridley occurs mainly in coastal areas of the Gulf of Mexico and the northwestern Atlantic Ocean, with occasional individuals reaching European waters. They are likely to be found in the project area. Immature turtles have been found along the eastern seaboard of the U.S. and in the Gulf of Mexico. In the Gulf, studies suggest that immature turtles stay in shallow, warm, nearshore waters in the northern Gulf until cooling waters force them offshore or south along the Florida coast (Renaud, 1995). Little is known of the movements of the post-hatching stage (pelagic stage) within the Gulf. Studies have indicated that this stage varies from 1-4 or more years and the immature stage lasts about 7-9 years (Schmid and Witzell, 1997). The maturity age of this species is estimated to be 7-15 years. Kemp's ridley sea turtles are regularly seen in Mississippi coastal waters and could potentially nest on the Mississippi coastal beaches.

The breeding populations of the green sea turtle off Florida and off the Pacific coast of Mexico are listed as endangered. All other breeding populations are listed as threatened

(USFWS, 2018). Although green sea turtles are found worldwide, this species is concentrated primarily between the 3° North and 35° South latitudes. Green sea turtles tend to occur in waters that remain warmer than 68°F; however, there is evidence that they may be buried under mud in a torpid state in waters to 50°F (Ehrhart, 1977; Carr et al., 1979).

Only occasionally do females produce clutches in successive years. Estimates of age at sexual maturity range from 20–50 years (Balazs, 1982; Frazer and Ehrhart, 1985), and they may live over 100 years. Immediately after hatching, green turtles swim past the surf and other shoreline obstructions, primarily at depths of about 8 inches or less below the water surface, and are dispersed both by vigorous swimming and surface currents (Balazs, 1982). The whereabouts of hatchlings to juvenile size is uncertain. Green turtles tracked in Texas waters spent more time on the surface, with less submergence at night than during the day, and a very small percentage of the time was spent in the federally maintained navigation channels. The tracked turtles tended to utilize jetties, particularly outside of them, for foraging habitat (Renaud and Carpenter, 1994).

The hawksbill sea turtle is the second smallest sea turtle and is somewhat larger than the Kemp's ridley. The hawksbill sea turtle is small to medium size, with a very elaborately colored shell of thick overlapping scales. The overlapping carapace scales are often streaked and marbled with amber, yellow, or brown. Hawksbill turtles have a distinct, hawks-like beak. The name of the turtle is derived from the tapered beak and narrow head. Hawksbill sea turtles are a highly migratory species. These turtles generally live most of their life in tropical waters, such as the warmer parts of the Atlantic Ocean, Gulf of Mexico, and the Caribbean Sea. Florida and Texas are the only states where hawksbills are sighted with any regularity (NMFS and USFWS, 1993) and may be only occasional visitors to the project area while transiting. Juvenile hawksbills are normally found in waters less than 45 feet in depth. They are primarily found in areas around coral reefs, shoals, lagoons, lagoon channels, and bays with marine vegetation that provides both protection and plant and animal food. Unlike the green turtles, hawksbills can tolerate muddy bottoms with sparse vegetation. They are rarely seen in Louisiana, Alabama, and Mississippi waters.

The leatherback sea turtles are the largest of all sea turtles. These turtles may reach a length of about 7 feet and weigh as much as 1,600 pounds. The carapace is smooth and gray, green, brown, and black. The plastron is yellowish white. Juveniles are black on top and white on the bottom. This species is highly migratory and is the most pelagic of all sea turtles (NMFS and USFWS, 1992). They are commonly found along continental shelf waters. Leatherback sea turtles' range extends from Cape Sable, Nova Scotia, south to Puerto Rico and the U.S. Virgin Islands. They may be found in the project area. Leatherbacks are found in temperate waters while migrating to tropical waters to nest (Ross, 1981). The distribution of this species has been linked to thermal preference and seasonal fluctuations in the Gulf Stream and other warm water features (Fritts et al., 1983). The general decline of this species is attributed to exploitation of eggs (Ross, 1981). Leatherback sea turtles are omnivorous. They feed mainly on pelagic soft-bodied invertebrates, such as jellyfish and tunicates. Their diet may also include squid, fish,

crustaceans, algae, and floating seaweed. Highest concentrations of these prey animals are often found in upwelling areas or where ocean currents converge.

Gulf sturgeon is a subspecies of the Atlantic sturgeon. In early spring, subadult and adult fish migrate into rivers from the Gulf of Mexico and continue until early May. In late September or October, subadult and adult sturgeon begin downstream migrations. Adult fish spend eight to nine months each year in rivers and three to four of the coolest months in estuarine or Gulf waters. Gulf sturgeon are bottom-feeders which apparently only feed during their stay in marine waters; food items are rarely found in the stomachs of specimens sampled from rivers. Mississippi Sound along with other adjacent areas have been designated as 'critical habitat' for the Gulf sturgeon (Unit 8 of the USFWS and NMFS's final rule). Unit 8 area provides juveniles, subadult and adult feeding, resting, and passage habitat for the Gulf sturgeon from Pascagoula River and the Pearl River subpopulations. One or both of these subpopulations have been documented by tagging data, historic sightings, and incidental captures as using Mississippi Sound within one nautical mile of the nearshore Gulf of Mexico adjacent to the barriers island and within the passes. Substrates in these areas range from sand to silt, all of which contain known Gulf sturgeon prey items. The proposed action area is outside of Gulf Sturgeon Critical Habitat.

The giant manta ray is found worldwide in tropical, subtropical, and temperate bodies of water and is commonly found offshore, in oceanic waters, and near productive coastlines. However as juveniles, giant manta rays have also been observed in estuarine waters near oceanic inlets, with use of these waters as potential nursery grounds. Giant manta rays could potentially be found in the project area, however due to their mobility, they are expected to avoid the project area during operations. No long-term impacts to available habitat is anticipated. Oceanic whitetip sharks are generally a pelagic species, remaining offshore in the open ocean, outer continental shelf, or around oceanic islands in water depths greater than 600 feet. The project area does not contain these types of habitats, therefore no adverse impacts are anticipated for these fish species, as they are not expected to occupy the area or vicinity.

3.11 Water Quality.

Water quality within the Mississippi Sound and the adjacent Gulf of Mexico is influenced by several factors, including the discharge of freshwater from rivers, seasonal climate changes, and variations in tide and currents. The primary driver of water quality is the rivers that feed into the Sound. Freshwater inputs from the local watersheds provide nutrients and sediments that serve to maintain productivity both in the Sound and in the extensive salt marsh habitats bordering estuaries of the Sound. The salt marsh habitats act to regulate the discharge of nutrients to coastal waters and serve as a sink for pollutants. Suspended sediments enter the Sound and Gulf from fresh water sources, but are hydraulically restricted due to barrier islands and near shore areas. In addition, dynamic features such as the Loop Current, eddies, and river plumes create variations in temperature, salinity, and water density. Temperature and salinity strongly influence chemical, biological, and ecological patterns and processes. Differences in water density affect vertical ocean currents and may also concentrate buoyant materials such as

detritus, and plankton. Greatest stratification in the water occurs in summer (Thompson *et al.*, 1999).

Sufficient dissolved oxygen concentrations, water clarity, and typical salinity ranges with little to no stratification in the water column occur within this site. Water quality within the project area is influenced mainly by non-point source pollution. Studies of pollutant transport suggest that the primary source of water quality contaminants near the Gulfport Federal Navigation Channel is Biloxi Bay or river sources farther to the east. Marine sources also influence the transport of contamination near Ship Island Pass and West Ship Island (Lytle and Lytle, 1985). Contaminants can be transported either because they are dissolved in the water column or bound to suspended sediments. Typically, the shelf of the Gulf of Mexico has low levels of contaminants such as hydrocarbons and metals. Concentrations of contaminants tend to increase toward the Mississippi Delta and toward deeper water where silt and clay contents are higher (Thompson *et al.*, 1999).

Nearshore and open Gulf waters are normally at or near oxygen saturation. However, high organic loading, high bacterial activity related to decomposition of organic material, and restricted circulation due to stratification of the water column during summer can cause near-bottom waters to be depleted of oxygen. Severe anoxic events are generally observed in waters west of the Mississippi Delta, but oxygen depletion problems do occur infrequently over the Mississippi inner shelf.

3.12 Air Quality.

Existing air quality in coastal Harrison County/St. Bernard Parish was assessed in terms of types of sources contributing to emissions that are regulated by National Ambient Air Quality Standards (NAAQS). NAAQS have been developed for oxides of nitrogen, hydrocarbons, particulate matter, carbon monoxide, sulfur dioxide, lead, volatile organic compounds and other hazardous air pollutants. Sources of air pollution in the project area are mainly from non-point sources such as boat motors and marine vessel traffic emissions. No major sources of air pollution were found within the vicinity of the project area. Furthermore, Harrison County/St. Bernard Parish is in attainment for all NAAQS. Existing air quality conditions near the project study area reflect the ongoing industrial and commercial operations in the immediate vicinity, as well as surrounding traffic and residential outputs.

3.13 Aesthetics and Recreation.

Coastal-based tourism, gambling and recreation account for a significant portion of Mississippi and Louisiana's tourism and recreations industry. Opportunities for recreation include arts and entertainment, boating, golfing, sightseeing, picnicking, swimming, bird watching, and fishing. Mississippi's Gulf Coast, located between New Orleans, Louisiana and Mobile, Alabama, includes three counties: Hancock, Harrison and Jackson. All three counties provide ample opportunity for boating, swimming, fishing and relaxing on coast beaches. For land lovers, the Mississippi Gulf Coast also offers plenty to do away from the water, including cultural, historic, educational and family-friendly attractions. Visitors can enjoy outdoor activities such as fishing and swimming as well as taking the ferry out to the barrier islands. The chain of barrier islands just off-shore houses portions of the

Gulf Islands National Seashore containing miles of wilderness and cultural areas to explore.

3.14 Noise.

Noise levels in the area are typical of recreational, boating, and fishing activities. Noise levels fluctuate with the highest levels usually occurring during the spring and summer months due to increased recreational activities.

3.15 Cultural Resources

Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended and implementing regulations 36 CFR Part 800 requires the USACE, Mobile District to consider the effects of its undertakings upon historic properties (which includes but is not limited to historical, architectural, archaeological, and cultural resources). This also includes the requirement to consult with other agencies such as the State Historic Preservation Officer (SHPO) and the appropriate Tribal Nations to avoid or minimize or mitigate adverse effects upon those resources. Consultation with the Louisiana SHPO and the appropriate Tribal Nations will be conducted.

4.0 EFFECTED ENVIRONMENT.

Performing an evaluation of environmental impacts for proposed Federal actions is a requirement of Federal law (40 C.F.R. §§ 1500-1508). An impact analysis must be compared to a significance threshold to determine whether a potential consequence of an alternative is considered a significant impact. If the impact is significant, it may be mitigable (i.e., measures are available to reduce the level of impact, so it is no longer significant) or unmitigable. "Significance" under NEPA is determined using two variables: context and intensity. Factors to consider when determining significance include: impacts that may be both beneficial and adverse, degree to which action affects public health and safety, unique characteristics of the geographic area, degree to which effects may be highly controversial, highly uncertain effects or unique or unknown risks, degree to which action may establish precedent for future actions with significant impacts, etc.

4.1 Physical Environment.

The significant criterion for physical environment would be a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project. The physical environment in the vicinity of the proposed action area would not be altered in any significant way. The proposed action would not alter water flows nor land usage.

4.2 Climate

The significance criterion for climate would be a permanent disruption in the climate and weather patterns in the Mississippi Sound and/or the project area near Ship Island. Generally, the activities associated with the proposed action would not result in overall regional climate, meteorological or oceanographic impacts. No activities associated with

any of the alternatives could result in impacts on regional processes and would not change the climate or weather patterns in the project area. As a result there would be no impacts to winds, rainfall, temperature, astronomic tides, or the Gulf of Mexico circulation patterns.

4.3 Bathymetry

The significance criterion for bathymetry would be a permanent change in depth that affects currents, tides, and or natural water movement in the Mississippi Sound or the Gulf of Mexico. The proposed action would not have adverse effects to bathymetry in the Mississippi Sound near the proposed project area. Minor amounts of new work dredging associated with this action would remove material directly adjacent to the existing channel and would not alter bathymetry significantly.

The dredging and placement activities may be accomplished by using hopper dredges, hopper dredges with pump-out capabilities, mechanical dredges (clamshell, etc) or hydraulic pipeline dredges. However, generally the Gulf Entrance Channel is maintained with a hopper dredge. The new work dredging and future O&M would not result in bathymetric effects outside of the area of physical disturbance and based on the relative small size of the area of disturbance as compared to the remaining area in the Mississippi Sound, impacts would be less than significant.

4.5 Sediments

The significance criteria for sediments in the vicinity of the proposed project area would be a change in sediment characteristics that becomes permanent; a change in grain size and consistency; a long-term decline in water quality as a result of sediment/water interactions; or a decline in sediment quality that causes permanent impacts to biological resources.

Dredging and disposal operations could potentially result in the temporary increases of suspended sediments, the loss of benthic organisms, increases in nutrients, and bathymetry changes in the project area. The increase in turbidity could reduce light penetration through the water column, thereby reducing photosynthesis, surface water temperatures, and aesthetics. These conditions could potentially temporarily alter visual predator-prey relations in the immediate project vicinity. In addition, sediment adheres to fish gills, resulting in temporary respiratory stresses, and natural movement of eggs and larvae could be potentially altered as a result of the sediment adherence. However, the salinity of water associated with the proposed project area is high enough to promote rapid settling of finer particles. Ninety-eight percent of discharged sediments from hydraulic dredging have been observed to settle out within 200 feet of discharge points during similar operations in the project vicinity (USACE 1978). All of these described impacts are temporary and are anticipated to return to background conditions shortly after disposal operations.

In addition, the Section 404(b)(1) Evaluation Report (see the **APPENDIX**) concluded that the proposed dredging and placement action will not jeopardize or adversely impact any oyster reefs, SAVs, wetlands or other critical habitat. The sediment quality and texture of

the material dredged from the bend easing portion of the Federal Navigation channel is expected to be homogenous to that existing in the Gulfport West ODMDS due to their close proximity to each other. Sediment quality investigations are being performed in the proposed action area to demonstrate whether the material is substantially free of contaminants of concern and suitable for placement in the Gulfport West ODMDS. It will be determined whether or not the proposed placement will unreasonably degrade or endanger human health, welfare or amenities of the marine environment, ecological system, or economic considerations. In making this determination, the criteria established by the Regional Administrator, EPA, pursuant to Section 102(a) of the Ocean Disposal Act, will be applied. A final Section 103 Evaluation Report will be submitted to EPA, Region 4, Atlanta, Georgia. The USACE, Mobile District will request concurrence from the EPA with the USACE's evaluation to use the Gulfport West ODMDS for placement of new work and future maintenance dredged material from the bend easing area.

4.6 Benthos, Motile Invertebrates and Fishes

There would be temporary disruption of the aquatic community caused by the dredging and placement. Non-motile benthic fauna within the project action area would be destroyed by dredging and placement operations, but should begin to repopulate within a few months after project completion. Some of the motile benthic and pelagic fauna, such as crabs, shrimp, and fishes, are able to avoid the disturbed area and should return shortly after the activity is completed. Larval and juvenile stages of these forms may not be able to avoid the activity due to limited mobility.

Rates of benthic community recovery observed after dredged material placement ranged from a few months to several years. The relatively opportunistic species-poor benthic assemblages associated with low salinity estuarine sediments can recover in periods of time ranging from a few months to approximately one year (Leathem *et al.*, 1973; McCauley *et al.*, 1976 and 1977; Van Dolah *et al.* 1979 and 1984; Clarke and MillerWay, 1992), while the more diverse communities of high salinity estuarine sediments may require a year or longer (e.g. Jones, 1986).

The project area does not provide specific habitat that could not be found in other areas of the Mississippi Sound and the Gulf of Mexico. There is no significant resource at this site that is essential for the continued survival of any particular species. With the small area (percentage wise) of ecosystem that will be affected at a given point in time and the use open-water disposal methods being employed, no significant long-term impacts to the benthos, motile invertebrates, and fishes are expected to occur as a result of the proposed action. Therefore, it was determined that no adverse impacts to the aquatic community would result from the proposed construction and future maintenance of the bend easing and subsequent placement at the Gulfport West ODMDS.

4.7 Coastal Flora.

The significance criterion for Coastal Flora would be the permanent loss or gain of habitat suitable for wetland vegetation. Vegetation communities that occur in the proposed project area are almost exclusively open-water, marine habitats. Currently the proposed action area does not contain emergent tidal marsh vegetation.

4.7.1 Wetlands

Emergent wetlands are not located in the vicinity of the project and will not be impacted.

4.7.2 Submerged Aquatic Vegetation

The significance criterion for SAV would be the permanent loss or gain of habitat suitable for SAV. No significant impacts to the SAVs were identified in this evaluation. The closest known SAVs are located several miles from the dredging and placement activities associated with this project and no SAVs are located within the expected 400-foot turbidity mixing zone of channel dredging.

4.8 Coastal Fauna

The significance criteria for marine mammal communities in the vicinity of the project area would be loss of a species; a permanent habitat change that would make the area unsuitable to meet life history requirements; or a disruption that would cause permanent interference with the movement of native resident or migratory marine mammals.

Marine mammals, such as bottlenose dolphins and West Indian manatees, could potentially utilize the project area. Dredging operations could result in harassment, as defined by the Marine Mammal Protection Act, of marine mammal species if the mammals are in close proximity to an operating dredge. However, this would be a temporary condition and the marine mammals could avoid the vessel disturbance. Water depth and bottom type also affect the propagation of sound energy. Analysis of sound propagation in shallow waters indicates lower frequencies at which there is no sound propagation. However higher frequency noise has the potential to propagate and may cause temporary avoidance near the dredging operations. These levels are not known to cause any injury, temporary or permanent, to marine life, and would not remain in any single location for longer than a few days. These conditions would eliminate propagation for a substantial portion of the noise generated by dredging operations associated with the proposed action. Considering the limits on propagation of underwater noise for shallow water depths and soft bottom conditions within the project area, the tendency of marine species to avoid anthropogenic noise, and previous exposure to placement activities, any noise impacts from the proposed action are expected to be minor and would be less than significant.

Marine and coastal birds such as diving and plunging birds are common in the area and could utilize the site of the proposed action for foraging. Foraging birds could be displaced during dredging and placement activities. The noise and activity of dredging and placement operations could deter birds from using areas in the immediate vicinity of equipment during active periods but could also offer an additional food source. Increased turbidity associated with dredging operations could temporarily decrease foraging success of diving and plunging birds that feed in deepwater areas, however, these birds are not dependent upon the dredge and placement sites for survival. Foraging habitat is readily available in the northern Gulf and Mississippi Sound and it is expected that plunging and diving birds would shift to other areas if temporarily displaced. Following

dredging, birds would be expected to resume normal use of the area. Any impacts would be expected to be localized, temporary, and minor.

4.9 Oyster Reefs

No impacts to oyster reefs from the proposed widening of the bend easing and placement of dredged material (with subsequent O&M) in the Gulfport West ODMS were identified in this evaluation. The closest oyster reefs are located several miles from the dredging and placement activities associated with this project. No significant impacts to commercial and recreational oyster reefs would result from the implementation of the proposed action.

4.10 Essential Fish Habitat

The USACE, Mobile District will take extensive steps to reduce and avoid potential impacts to EFH as well as other significant area resources. No estuarine emergent wetlands, oyster reefs, or SAVs would be adversely affected by the proposed action. Most of the motile benthic and pelagic fauna, such as crab, shrimp, and fish, should be able to avoid the disturbed area and should return shortly after the activity is completed. No long-term direct impacts to managed species of finfish or shellfish populations are anticipated. However, it is reasonable to anticipate some non-motile and motile invertebrate species will be physically affected through disposal operations. These species are expected to recover rapidly soon after the disposal operations are complete. As detailed in section 3.10 of this assessment, no significant long-term impacts to this resource are expected as result of this action.

Increased water column turbidity during dredging and placement would be temporary and localized. The spatial extent of elevated turbidity is expected to be within 400 feet of the operation, with turbidity levels returning to ambient conditions within a few hours after completion of the dredging activities. Due to the nature of dredging and placement activities and the small area (percentage wise) of ecosystem that would be affected at a given point in time, no significant long-term impacts are expected to occur. The USACE, Mobile District will initiate EFH consultation with the NMFS, Habitat Conservation Division (HCD) through a public notice.

4.11 Threatened and Endangered Species

Significant impacts to threatened and endangered species would be the loss of or long term reduction in the size of a population; a habitat modification that causes a permanent disruption to breeding, foraging or other life history requirement; permanent interference with the movement of resident or migratory protected species; and loss of any area designated a critical habitat.

West Indian manatees are known to exist throughout the entire project area as they move during warmer periods of the year. Given this possibility, the USACE has historically agreed to implement "Standard Manatee Construction Conditions" during maintenance dredging and disposal operations in Mississippi. The USACE recommends these

conditions be implemented during the improvement activities and associated future maintenance to avoid any adverse impacts to West Indian manatees.

Sea turtles and Gulf sturgeon may also be affected by dredging and disposal operations if they were to be struck by the dredge as it transits the site or by the movement of hydraulic pipelines. Activities associated with the removal of O&M materials from Gulfport Harbor Channel(s) by hopper dredges have already been analyzed in the November 2003 Gulf Regional Biological Opinion (GRBO) titled “Dredging of Gulf of Mexico Navigation Channels and Sand Mining (“Borrow”) Areas Using Hopper Dredges by Corps of Engineers (COE) Galveston, New Orleans, Mobile, and Jacksonville Districts” as amended and modified on June 24, 2005, and January 9, 2007. Removal and placement of new work material is not covered under the GRBO, however impacts are anticipated to be similar. The USACE, Mobile District will implement terms and conditions for sea turtles and Gulf sturgeon identified in NMFS-PRD’s *Gulf Regional Biological Opinion*. These protective measures will be utilized if a hydraulic hopper dredge is utilized. The project area is outside of designated Gulf sturgeon Critical Habitat. Formal consultation is being requested from NMFS-PRD for impacts to federally-protected species (green, hawksbill, Kemp’s ridley, leatherback, and loggerhead sea turtles, Gulf sturgeon, oceanic whitetip shark, and giant manta ray). The project area is outside the jurisdiction of any USFWS office.

4.12 Water Quality

The significance criteria for water quality in the vicinity of the project area would be a permanent change in water quality from organic and inorganic chemicals; or a long-term change in water quality that results in the loss of a commercially viable or protected species, loss of foraging habitat for coastal birds, or loss of important habitats. Placement of dredged sediments in United States waters is allowed provided there is avoidance of “unacceptable effects,” compliance with applicable water quality standards after considering dispersion and dilution, toxic effluent standards, and marine sanctuary requirements, and no jeopardy to endangered species (Section 404 Federal Water Pollution Control Act [Pub. L. 92-500]). Therefore, violation of any of these standards is considered an adverse impact to water quality.

The dredging and placement operations are expected to create some degree of construction-related turbidity in excess of the natural condition in the proximity of the channel and placement site. Impacts from sediment disturbance during these operations are expected to be temporary, minimal and similar to conditions experienced during past routine O&M of the channel. The dredged material from the bend easing adjacent to the channel and placement at the Gulfport West ODMDS will consist primarily of silt and clay material. Future shoaling is also anticipated to be similar in nature. Suspended particles are expected to settle out within a short time, with no long-term measurable effects on water quality. No measurable changes in temperature, salinity, PH, hardness, oxygen content or other chemical characteristics are expected. The Gulfport West ODMDS has been historically used for the placement of dredged material since 1977. Thus, the Mobile District does not anticipate any adverse impacts as a result of this action. The entire Gulfport Harbor Federal Navigation Channel project has a current water quality

certification from the Mississippi Department of Environmental Quality (MDEQ) for O&M dredging of the navigation channel and placement of dredged material in approved placement areas. In addition, EPA issued a Section 103 concurrence with USACE, Mobile District's determination pursuant to the Marine Protection, Research and Sanctuaries Act (MPRSA) with USACE, Mobile District's determination to place material dredged from the Gulf Entrance Channel at the Gulfport Western ODMDs. For the proposed action, MDEQ has stated "We have no objections to the activity provided conditions of the WQC [Water Quality Certification] are met and appropriate best management practices are implemented that would minimize any potential impact to MS waters." The USACE, Mobile District will also coordinate with the Louisiana Department of Environmental Quality to obtain a WQC and EPA to obtain a Section 103 concurrence.

4.13 Air Quality

The significance criterion for air quality would be the air quality standards are not violated by the implementation of the proposed action or that air quality would not be degraded from present conditions in the vicinity of the project area. The evaluation of impacts to air quality associated with the alternatives was based on the identification of air contaminants and estimated emission rates. The air contaminants considered are those covered by the NAAQS and monitored by Harrison County/St. Bernard Parish including carbon monoxide, ozone, nitrogen oxide, particulate matter with diameters less than 10 microns, particulate matter less than 2.5 microns in diameter, and sulfur oxides.

The proposed action would have no significant long-term effect on air quality. The project area is currently in attainment with NAAQS, and the proposed action is not expected to affect the attainment status of the project area or region. Air quality would be temporarily and insignificantly affected due to emissions resulting from dredge operations and other necessary equipment.

4.14 Aesthetics and Recreation

The proposed widening of the bend easing at the Gulf Entrance Channel with placement of material at the Gulfport West ODMDs is not anticipated to have any adverse impacts to recreation or aesthetics. Future maintenance of the channel would also be similar to existing operation efforts. The area may be intensely trawled during offshore migrations in summer and early fall for fish and shrimp. Commercial and recreational vessels and dredges have concurrently utilized the same area in the past without incident.

4.15 Noise

The significance criteria for the noise impacts in the vicinity of the project area would be a permanent elevation of above-surface noise levels compared to existing ambient conditions or temporary creation of a high noise level (>85 dB) in the vicinity of sensitive receptors. Disrupting nesting behavior in marine birds would be a significance criterion for surface noise, while behavior of marine mammals is a consideration for underwater noise. Noise impacts from project equipment are expected to increase in the vicinity during maintenance dredging work as a result of engine noise from the dredge, and noise emitted from other job related equipment. While there is little that can be done to reduce

noise during the operation, these impacts would be short term and restricted to the immediate vicinity of the activity. No long-term increase in noise would occur in or around the project area. Noise is not expected to be a significant impact.

4.16 Cultural Resources

The Federal navigational channel was assessed for likelihood of shipwrecks by Mistovich in 1988, which identified high potential areas in the channel section near Ship Island, which was surveyed for historic properties. The bend that is the subject of the current undertaking was determined to be a low probability area for historic properties. In 1988, USACE conducted a marine archaeological survey of the entire navigational channel, including the portion adjacent to the proposed widening of the bend easing Area of Potential Effect (APE). No anomalies were identified near the current bend easing APE, confirming Mistovich's assessment. In 2009, USACE widened the entire channel to the previously proposed extent, including the area adjacent to the current bend easing APE. No unanticipated discoveries were located during this effort. The dredge material placement locations have been previously assessed for potential historic properties, with none found. No historic properties or potential historic properties were identified adjacent to the current project area in any surveys and the area has been determined to be a low probability area for historic properties. Given the previous efforts and the assessment of the APE as a low probability area for historic properties, USACE has determined that the current undertaking will result in no effects to historic properties. The Louisiana SHPO and appropriate Tribal Nations are being consulted regarding USACE's effects to historic properties determination.

5.0 CUMULATIVE EFFECTS SUMMARY

Federal regulations implementing the NEPA (40 CFR Sections 1500-1508) require that the cumulative impacts of a Proposed Action be assessed. NEPA defines cumulative effects as an "impact on the environment which results from the incremental impacts 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. This section analyzes the proposed action as well as any connected, cumulative, and similar existing and potential actions occurring in the area and surrounding the site. The temporal and spatial extent of this analysis includes similar past, present and future actions of dredging Gulfport Harbor Federal Navigation Channel(s) (specifically the Gulf Entrance Channel with placement at the Gulfport West ODMDS).

This action would consist of dredging a wider bend easing area at the Gulf Entrance Channel with placement of material at the Gulfport West ODMDS. Maintenance materials dredged from the Gulf Entrance Channel portion of the Gulfport Harbor Federal Navigation Project authorized project are typically placed in the Gulfport West ODMDS. With the proposed action, water quality in the immediate vicinity of the placement area would be temporarily impaired for a short period of time due to an increase in turbidity. The dredging and placement would be controlled and monitored so that none of these

operations would cause an increase in turbidity greater than 50 NTUs above background levels outside a 400-ft mixing zone. Adverse effects on biota from changes in water quality would be temporary and localized. Impacts to commercial and recreational fishing and shellfish harvesting from implementation of the proposed action are expected to be minor and temporary with no long-term adverse effects anticipated. While the proposed placement of dredged materials may be a temporary inconvenience to commercial and recreational fishermen during construction, it is not expected to have any long-term adverse effects on fishing activities or fishery resources in the area. The proposed action would comply with environmental statutes and commitments and would not result in significant long-term adverse effects on biological resources, protected species, marine mammals, or birds.

In the past, the Gulfport West ODMDS has been used to place dredged material from the area since the 1970s. Between 1977 and 2015, approximately 28.7 million cubic yards of dredged material has been placed in the Gulfport ODMDS(s) (both West and East sites). The Gulfport East ODMDS site is not utilized due to potential transport of material back into the channel. The Gulfport East ODMDS site was last utilized in 2015. Routine maintenance material from the Gulf Entrance Channel is typically placed in the Gulfport West ODMDS on an annual or biennial basis, averaging 1 million cubic yards for each dredging event. The Gulfport Harbor Federal Navigation Channel Project was last improved in 2011, in which the Sound and Bar Channel(s) were widened to authorized dimensions (220 feet to 300 feet, and 300 feet to 400 feet, respectively). The material from the improvement effort was placed in the open-water and littoral zone placement sites adjacent to the channel, and beneficially at the Chandeleur Islands Dredged Material Disposal Site in Louisiana.

Foreseeable similar future projects that impact the Gulf bottom could have a minor effect on sedimentation, shoaling or siltation rates due to possible changes in hydrology. Historical dredging records have not shown increased shoaling rates resulting from ship channel maintenance or improvements. Testing has shown that sediment from the navigation channel met the Limiting Permissible Concentration (LPC) for water quality, toxicity, and bioaccumulation, and is suitable for ocean, open-water or beneficial use placement. Implementation of the proposed action is not expected to have a significant incremental cumulative impact on soils or sediments. Due to the distance from potential sources of contamination, it is not anticipated that the dredged material would be contaminated and thus unsuitable for placement. The dredged material from the bend easing will be tested prior to placement at the Gulfport West ODMDS.

Incremental impacts from other known and foreseeable future actions such as future dredging and placement events at the Gulf Entrance Channel also are expected to have minor, temporary impacts on water quality and fishery resources. Incremental effects from implementation of the proposed action would result in insignificant cumulative impact on fishery resources.

The currently permitted, but unconstructed Port of Gulfport Harbor Expansion Project involves filling of up to 282 acres of open-water bottom in the Mississippi Sound, the

construction of wharfs, bulkheads, terminal facilities, container storage areas, intermodal container transfer facilities, dredging and dredged material disposal and infrastructure, and construction of a breakwater of approximately 4,000 linear feet. The USACE, Regulatory Division issued a Record of Decision for the EIS on November 28, 2017. While this is a planned project, the time of implementation is unknown. In addition, the Mississippi State Port Authority is currently pursuing a Department of Army permit to improve the navigation channel, with subsequent O&M of the improved channel to be assumed by USACE, Mobile District.

USACE is required by Congress to maintain the federally-authorized Gulfport Harbor navigation channel to provide safe navigation for commercial and recreational vessels. Thus, the proposed widening of the bend easing is expected to have no significant direct cumulative impacts to biological resources, water chemistry, or oceanographic resources. Effects from the proposed action, when considered with other past, present, and reasonably foreseeable future actions are not expected to result in significant cumulative adverse impacts on biological resources.

6.0 OTHER CONSIDERATIONS

6.1 Coastal Zone Management Act of 1972

The entire Gulfport Harbor Federal Navigation Project has received a Coastal Zone Consistency (CZC) from the Mississippi Department of Marine Resources (MDMR) and the proposed action will adhere to the conditions of the CZC to the maximum extent practicable. However, the MDMR has stated the proposed action area is outside of the jurisdiction of the MDMR and the authority of the Mississippi Coastal Management Program. The USACE, Mobile District has determined that the proposed action is consistent with the Louisiana Coastal Management Program to the maximum extent practicable, and will coordinate with the Louisiana Department of Natural Resources (LDNR) to obtain a Consistency Determination.

6.2 Clean Water Act of 1972

A Section 401 water quality certification (WQC) has been received from the MDEQ for the entire Gulfport Harbor Federal Navigation Channel Project. In regards to the proposed action, MDEQ has stated “Those impacts appear to occur outside the boundaries of MS waters. We have no objections to the activity provided conditions of the WQC are met and appropriate best management practices are implemented that would minimize any potential impact to MS waters”. The USACE, Mobile District will coordinate with the Louisiana Department of Environmental Quality (LDEQ) for the dredging action to obtain a Louisiana WQC. A Section 404(b)(1) evaluation report has been prepared and is included in the **APPENDIX** of this EA. All State water quality standards will be met.

6.3 Rivers and Harbors Act of 1899

The proposed work would not obstruct navigable waters of the United States.

6.4 Marine Mammal Protection Act of 1972, as amended

Incorporation of the safe guards used to protect threatened or endangered species during project implementation will also protect any marine mammals in the area; therefore, the project is in compliance with this Act.

6.5 Endangered Species Act of 1973, as amended

This project is being coordinated with NMFS-PRD, and will be in full compliance with the Act. The project area is outside the jurisdiction of the USFWS.

6.6 Marine Protection, Research and Sanctuaries Act

MPRSA states that any proposed placement of dredged material into ocean waters must be evaluated through the use of criteria published by the USEPA in Title 40 of the CFR, Parts 220-228 (40 CFR § 220-228). Sediments from the project area are being evaluated as to whether they met the regulations for ocean placement. Given past sediment results and that this is new work material, the USACE, Mobile District anticipates the dredged material will be suitable for ocean placement. Following analysis of the results, a Section 103 Evaluation will be prepared and submitted to the EPA.

6.6 E.O. 11988, Protection of Children

The proposed action complies with Executive Order 13045, “Protection of Children from Environmental Health Risks and Safety Risks”, and does not represent disproportionately high and adverse environmental health or safety risks to children in the United States.

The proposed action is located in open-water and uninhabited; thus, no changes in demographics, housing, or public services would occur as a result of the proposed project. With respect to the protection of children, the likelihood of disproportionate risk to children is not significant. The widening of the bend easing and placement activities do not involve activities that would pose any disproportionate environmental health risk or safety risk to children.

6.7 E.O. 11990, Environmental Justice

The proposed action complies with Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations”, and does not represent disproportionately high and adverse human health or environmental effects on minority populations and low-income populations in the United States.

The proposed action is not designed to create a benefit for any group or individual. The widening of the bend easing and placement activities do not create disproportionately high or adverse human health or environmental impacts on minority or low-income populations of the surrounding community. Review and evaluation of this action has not disclosed the existence of identifiable minority or low-income communities that would be adversely impacted by the proposed project.

7.0 COORDINATION

The general public will be notified of the proposed action via 30-day public notice. The public notice, draft EA and Section 404(b)(1) Evaluation Report will be made available to Federal and state agencies and the interested public. Any comments received during the comment period will be incorporated into the final EA and Section 404(b)(1) Evaluation Report.

8.0 CONCLUSION

The proposed widening of the bend easing at the Gulf Entrance Channel portion of the Gulfport Harbor Federal Navigation Project and subsequent placement of dredged material at Gulfport Western ODMDs would have no significant environmental impacts on the existing environment. Furthermore, future maintenance of that newly constructed feature would have no significant environmental impacts on the existing environment. No mitigation actions are required for the proposed project. The implementation of the proposed action would not have a significant adverse impact on the quality of the environment and an EIS is not required.

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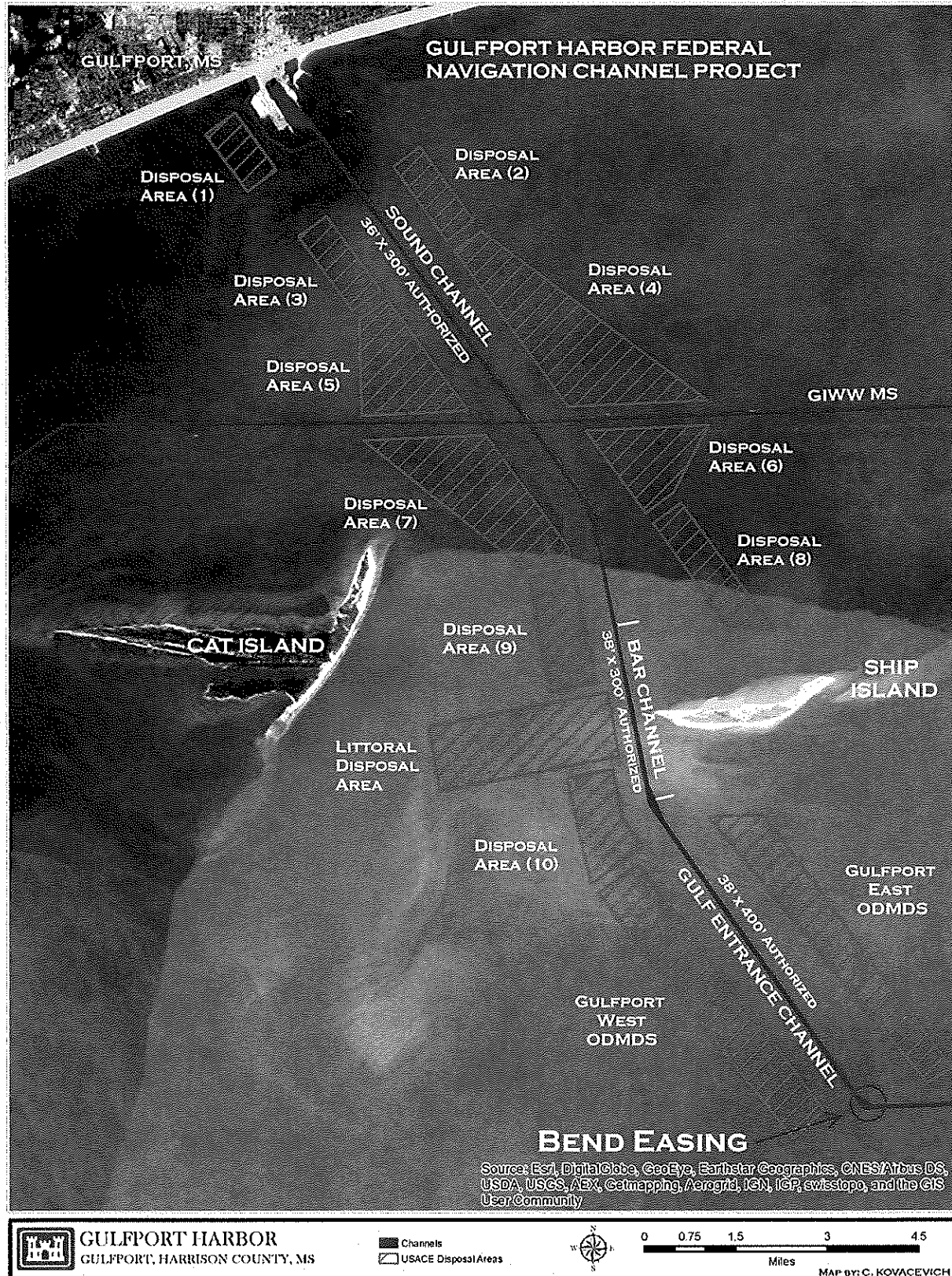


Figure 1. Gulfport Harbor Federal Navigation Channel Project and proposed widening of the bend easing

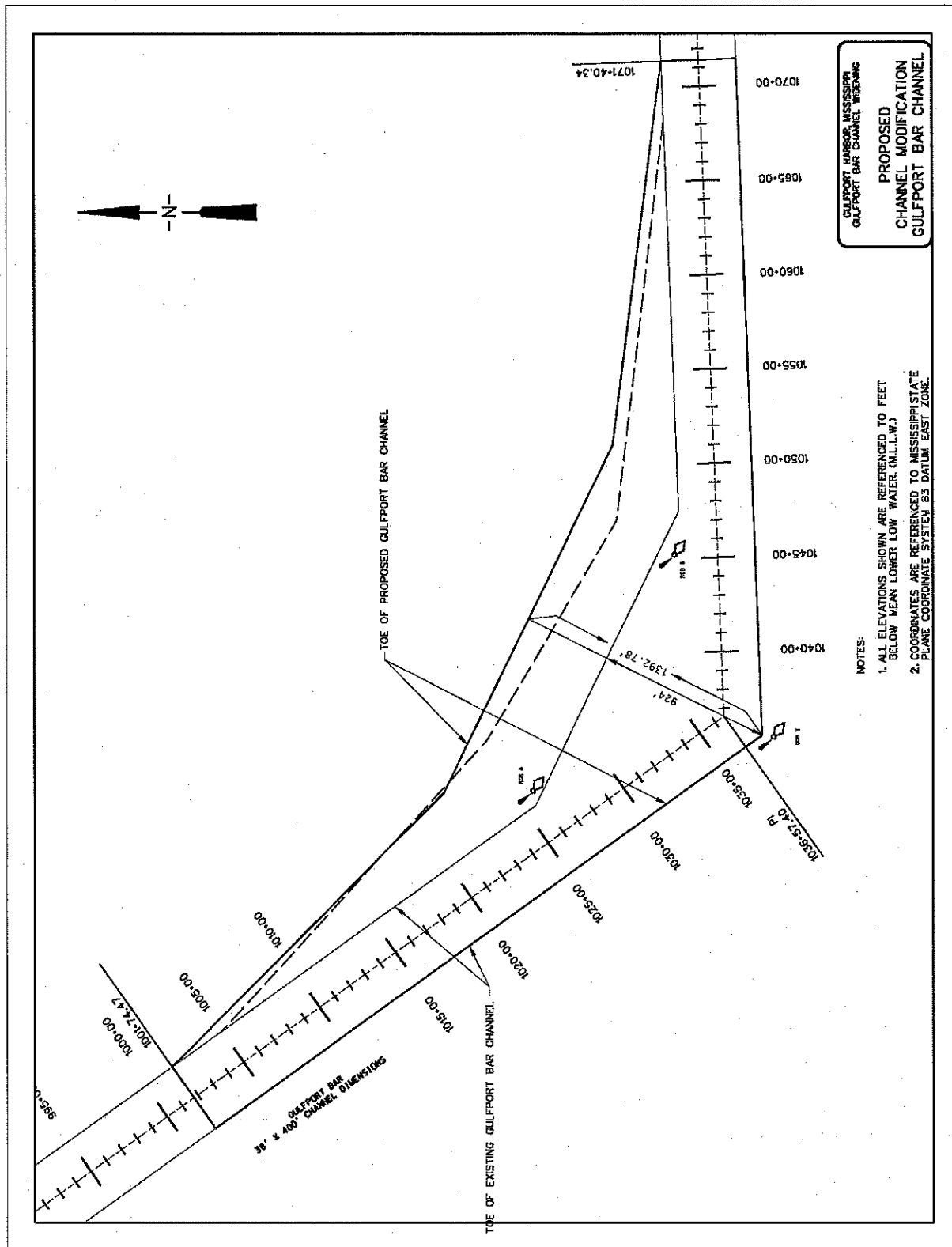


Figure 2. Proposed widening of the bend easing at the Gulf Entrance Channel

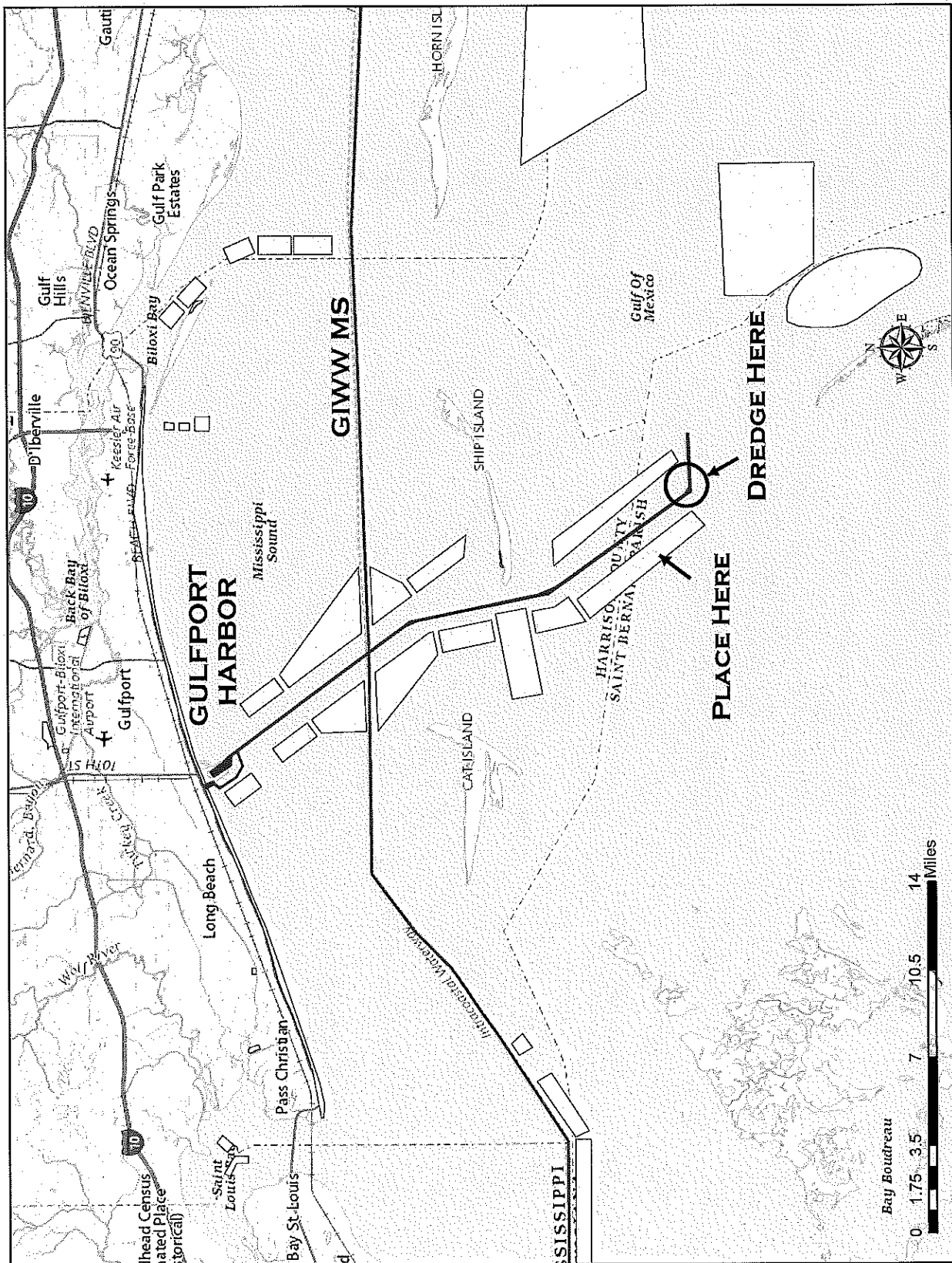


Figure 3: Proposed widening of the Bend Easing Vicinity Map

APPENDIX

SECTION 404 (b)(1) EVALUATION REPORT

MINOR CHANNEL IMPROVEMENTS WIDENDING the BEND EASING GULFPORT HARBOR FEDERAL NAVIGATION PROJECT

MISSISSIPPI and LOUISIANA

A FEDERALLY AUTHORIZED NAVIGATION PROJECT

I. PROJECT DESCRIPTION:

A. **Location:** The proposed widening of the bend easing of the Gulf Entrance Channel at Gulfport Harbor Federal Navigation Project is located southeast of Ship Island in the Gulf of Mexico, Louisiana (territorial waters). See **Figure(s) 1, 2 and 3** in the Appendix of the Environmental Assessment (EA).

B. **General Description:** The authorized project dimensions provide for: (a) a Gulf Entrance Channel 38 feet deep, 400 feet wide, and approximately 8 miles long across Ship Island Bar and; (b) a Sound Channel 36 feet deep, 300 feet wide, and approximately 12 miles long through the Mississippi Sound. It also includes: (a) a stepped anchorage basin at Gulfport Harbor 32-36 feet deep, 1,120 feet wide, and 2,640 feet long, and (b) a commercial small-boat harbor, about 26 acres in area, and; (c) a Harbor Entrance Channel, 100 feet wide at a depth of 8 feet. The plane of reference is mean lower low water (MLLW).

The proposed action involves minor channel improvements consisting of widening the bend easing, to approximately 1,400 feet in width and 38 feet in depth, at the Gulf Entrance Channel, as part of the federally-authorized Gulfport Harbor, Mississippi Navigation Project (see **Figure(s) 1 and 2**). An additional -2 feet of advanced maintenance plus -2 feet of overdepth dredging will be also be necessary. Maintenance dredging of soft-dredged material with a hopper, mechanical, and/or a hydraulic cutterhead dredge tends to disturb the bottom sediments several feet deeper than the target depth due to the inaccuracies of the dredging process. An additional -3 feet of sediment below the -2-foot paid allowable dredging cut may be disturbed in the dredging process with minor amounts of the material being removed. The dredged material from construction and subsequent maintenance will be placed in the Gulfport West ODMDs. The amount of dredged material to be removed for construction is estimated to be 460,000 cubic yards.

C. Authority and Purpose: The project was adopted by the following: the Rivers and Harbors Act, approved 3 July 1930 (H.Doc.692, 69th Cong., 2nd sess.), the Rivers and Harbors Act, approved 30 June 1948 (H.Doc.112, 81st Cong., 1st sess.), the Rivers and Harbors Act, approved 3 July 1958 (S.Doc. 123 84th Cong. 2nd sess.), in the Supplemental Appropriations Act, 1985, P.L. 99-88, approved 15 August 1985, and Section 202 of the Water Resources Development Act of 1986 (P. L. 99-662 dated 17 November 1986). The Water Resource Development Act of 1986 authorized improvements to the project and was amended by the Water Resource Development Act of 1988.

The proposed widening of the bend easing will allow for larger ships to safely navigate the channel and to reduce shipping delays into the Port. A need exists to maintain full commercial shipping and military deployment capacity for the Port of Gulfport, in light of the U.S. Department of Defense's designation of the Port of Gulfport as a Strategic Seaport in 2015.

D. General Description of Dredged or Fill Material:

(1) **General Characteristics of Material:** The material to be dredged and placed in the Gulfport West ODMDs will be new work dredged material from a bend easing at the Gulf Entrance Channel. Subsequent maintenance material will also be dredged from the area as part of routine operations. Maintenance dredged material from the Gulfport Entrance Channel is predominantly comprised of silt and clay, ranging from 64% to 99%. However, the northernmost portion of the channel near Ship Island is 47% silt and clay and 53% sand. The new work material and subsequent O&M material is expected to be similar.

(2) **Quantity and Source of Material:** Approximately 460,000 cubic yards of material is anticipated for this dredging event from the Gulf Entrance Channel bend easing. Future maintenance material is estimated to be 240,000 cubic yards annually.

E. Description of the Proposed Discharge Site:

(1) **Location:** The Gulfport West ODMDs is located southwest of Ship Island in the Gulf of Mexico, Mississippi and Louisiana territorial waters.

(2) **Size:** The footprint of the proposed widening of the bend easing to approximately 1,400 feet in width and can be seen in **Figure(s) 1 & 2** in the Appendix.

(3) **Type of Site:** The placement area is the Gulfport West ODMDs, an ocean disposal site administered by the U.S. Environmental Protection Agency.

(4) **Type of Habitat:** The northern portion of the Gulfport West ODMDs is characterized by predominantly fine to medium quartz sand, ranging from 67% to 70%. The southern portion of the Gulfport West ODMDs has higher percentages of silt and clay, ranging from 54% to 80%. No submerged aquatic vegetation or oyster reefs are present at this site.

(5) **Timing and Duration of Discharge:** The dredging placement activities for this project can occur any time of the year.

F. **Description of the Disposal Method:** Placement will be accomplished by using hopper dredges, hopper dredges with pump out capabilities, mechanical dredges (clamshell, etc.) or hydraulic pipeline dredges.

II. Factual Determinations (Section 230.11):

A. Physical Substrate Determinations:

(1) **Sediment Type:** The material dredged from the Gulf Entrance channel and placed in the Gulfport West ODMS ranges from fine to medium quality quartz sand located closer to Ship Island in the northern portion, to silt and clay in the southern portions, classified as “fat clay”.

(2) **Dredged/Fill Material Movement.** The predominant sediment transport pattern in this area is from east to west.

(3) **Physical Effects on Benthos.** It is certain that some benthic organisms would be destroyed by the proposed action; however, due to the constant movement of material by currents, benthic organism diversity and abundance would appear to be low. Research conducted by the U.S. Army Corps of Engineers, Engineering, Research and Development Center (ERDC) under the Dredged Material Research Program suggests that the benthic community is adapted to a wide range of naturally occurring environmental changes and that no significant or long-term changes in community structure or function are expected.

Bottom organisms include polychaete worms, crabs, shrimp, mollusks, and echinoderms. Non-motile species are directly covered by the dredged material, engulfed by mud flow or covered by heavy siltation within 1,200 feet of the dredge discharge. Responses of benthic infauna to large scale disturbance by dredged material placement were studied in areas around Corpus Christi, Texas. The study looked at biological responses to dredged material disturbance that were linked to both pre-disturbance conditions and differences between disturbed and neighboring undisturbed areas. Results for this study area indicated that benthic communities are poised to respond relatively quickly to disturbances given their historical exposure to impacts and resultant colonization by opportunistic species. The impacts of the dredged material placement were evident for less than a year. The response of benthic communities to disposal of dredged material was assessed at three sites in Mississippi Sound in 2006. The findings indicated that adults re-colonized the newly deposited sediments either through vertical migration or later immigration from adjacent areas within a period of three to 10 months. A related study conducted in Mississippi Sound associated with the Gulfport Federal navigation project indicated benthic recovery rates to predisposal conditions occurred within 12 months.

A major factor influencing benthic recovery rates is the prior disturbance history of a particular area. Studies indicate that benthic recovery occurs more rapidly in relatively shallow areas, such as the Mississippi Sound, where the resident benthic communities are already adapted to dynamic conditions and shifting sediments. Being that the Mississippi Sound is a depositional shallow water body with dynamic sediment processes, it would be expected that benthic recovery would be consistent with that shown by previous studies.

(4) **Other effects.** No other effects are anticipated.

(5) **Actions Taken to Minimize Impacts (Subpart H).** No actions that would further reduce impacts due to the placement of the dredged material are deemed necessary.

B. Water Column Determinations:

(1) **Salinity.** There would be no significant change in salinity gradients or patterns.

(2) **Water Chemistry (pH, etc.).** Sampling results of studies of the elutriate analyses indicate little, to no discernable changes, on water chemistry for the proposed action.

(3) **Clarity.** Minor increases in turbidity may be experienced in the immediate vicinity of the project during disposal operations. However, these increases will be temporary and would return to pre-project conditions shortly after completion.

(4) **Color.** No effect.

(5) **Odor.** No effect.

(6) **Taste.** No effect.

(7) **Dissolved Gas Levels.** Temporary decreases in dissolved oxygen could likely result from the operations depending on timing of discharge. If decreases occur, they will be of a short duration. No significant effect to the water column is anticipated.

(8) **Nutrients.** Slight increases in nutrient concentrations may occur; however, these would rapidly return to normal. These described increases would have no significant effect to the water column.

(9) **Eutrophication.** No effect.

C. Water Circulation, Fluctuation, and Salinity Gradient Determinations:

(1) **Current Patterns and Circulation.**

(a) **Current Patterns and Flow.** Placement of dredged material into the ODMDS would have no effect on current patterns and flow in the vicinity of the project area.

(b) **Velocity.** No effect.

(2) **Stratification.** No effect.

(3) **Hydrologic Regime.** No effect.

(4) **Normal Water Level Fluctuations.** No effect.

(5) **Salinity Gradient.** No effect on the salinity gradient is anticipated.

D. **Suspended Particulate/Turbidity Determination:**

(1) **Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Placement Site:** Suspended particulate and turbidity levels are expected to undergo minor increases during dredging and placement activities, however, suspended sediment of this type will quickly fall out of the water column and return to normal conditions. No significant effects would occur as a result of these increases. Turbidity during disposal is not expected to violate State water quality certification conditions.

(2) **Effects on Chemical and Physical Properties of the Water Column:**

(a) **Light Penetration.** Increased turbidity levels in the project area as a result of the placement of dredged material would reduce the penetration of light into the water column only slightly and would be a minor short-term impact.

(b) **Dissolved Oxygen.** No significant effects.

(c) **Toxic Metals and Organics.** No effects.

(d) **Pathogens.** No effect.

(e) **Esthetics.** Placement of dredged material would likely decrease the esthetic qualities of the project area for a short period of time during and shortly after placement. The placement areas equilibrate and rapidly return to normal upon exposure to the wave climate.

(3) **Effects on Biota:**

(a) **Primary Production Photosynthesis.** No significant effects greater

than those experienced under current project conditions are anticipated.

(b) **Suspension/Filter Feeders.** Some local increases in suspended particulates may be encountered during the dredging and disposal actions, but these increases would not cause significant impacts to these organisms unless they are directly covered with sediment. If directly covered with dredged material, it is expected that some organisms will be destroyed. Rapid recruitment of these organisms will promote a rapid recovery to normal populations. Overall, the impact to these organisms is expected to be minor and insignificant.

(c) **Sight Feeders.** Sight feeders would avoid impacted areas and return when conditions are suitable. However, it is difficult to relate the presence or absence of sight feeders in an area to the placement of dredged material. Sight feeders, particularly fishes, may vary in abundance as a result of temperature changes, salinity changes, seasonal changes, dissolved oxygen level changes, as well as other variables. No significant impacts are expected to occur on sight feeders.

(4) **Actions Taken to Minimize Impacts (Subpart H).** No further actions are deemed appropriate.

D. **Contaminant Determinations.** Due to the distance from potential sources of contamination, similarity between dredging and placement area, and sandy nature of some of the dredged material, it is not anticipated that the dredged material would be contaminated and thus unsuitable for placement. Testing to verify the suitability for placement at the Gulfport West ODMDS will occur prior to construction. Additionally, based on post oil-spill testing results from 2010, PAH and TPH testing of surface sediments collected in the Pascagoula Harbor Navigation Channels and Pascagoula ODMDS in November and December 2010, there are no discernable changes in the sediment quality that are attributable to the *Deepwater Horizon* Oil Spill.

E. **Aquatic Ecosystem and Organism Determinations:**

(1) **Effects on Plankton.** No significant effects greater than those experienced under current project conditions are anticipated.

(2) **Effects on Benthos.** Benthic organisms would be destroyed by the dredging and placement material, but no long-term effects are expected on the benthic community as a result of the proposed action.

(3) **Effects on Nekton.** No significant effects greater than those experienced under current project conditions are anticipated.

(4) **Effects on Aquatic Food Web.** No significant effects greater than those experienced under current project conditions are anticipated.

(5) **Effects on Special Aquatic Sites.** No effect.

- (a) **Sanctuaries and Refuges.** No effect.
- (b) **Wetlands.** No effect.
- (c) **Mud Flats.** Not applicable.
- (d) **Vegetated Shallows.** Not applicable.
- (e) **Coral Reefs.** Not applicable.
- (f) **Riffle and Pool Complexes.** Not applicable.

(6) **Effects on Threatened and Endangered Species.** Pursuant to Section 7 of the Endangered Species Act, operations and maintenance (O&M) dredging and placement of material action(s) at Gulfport Harbor was previously coordinated with National Marine Fisheries Service (NMFS)-Protected Resources Division (PRD) and the U.S. Fish and Wildlife Service (USFWS). During past certification efforts for O&M actions, concurrences were received from these agencies. The project area is outside of Gulf Sturgeon Critical Habitat. This proposed action is being coordinated with NMFS-PRD.

(7) **Effects on Other Wildlife.** No significant effects.

(8) **Actions to Minimize Impacts.** No other actions to minimize impacts on the aquatic ecosystem are deemed appropriate.

G. Proposed Disposal Site Determinations:

(1) **Mixing Zone Determination.** The Mississippi Department of Environmental Quality (MDEQ) would specify a mixing zone limit not to exceed 50 Nephelometric Turbidity Units (NTUs) for turbidity compliance. The USACE, Mobile District, will adhere to that turbidity requirement. The Louisiana Department of Environmental Quality has not specified a mixing zone in the past.

(a) **Depth of water at the disposal site.** Depths of water at the site vary from 20 feet (shallower northern portion) to 39 feet (deeper southern portion).

(b) **Current velocity, direction, and variability at the disposal site.** Astronomical tides, winds, and freshwater discharge dominate the circulation patterns within the Mississippi Sound. Data collected within the Gulf of Mexico between November 1980 and September 1981 indicate that the progression of the tide through Ship Island Pass segments the Gulf into eastern and western areas, dominating

circulation within this portion of the Gulf. The eastern area is between Horn Island Pass, Mississippi, and the main pass entering Mobile Bay, Alabama. The western area is between Horn Island Pass and the Chandeleur Islands. As tide propagates from the Gulf into Mississippi Sound, a clockwise movement of water occurs in the eastern area while a counterclockwise movement occurs in the west. Predominant currents in the vicinity of the Gulfport West ODMS are to the west-southwest.

(c) **Degree of turbulence.** Not significant.

(d) **Stratification attributable to causes such as obstructions, salinity or density profiles at the disposal site.** No effect.

(e) **Discharge vessel speed and direction, if appropriate.** No effect.

(f) **Rate of discharge.** Rate of discharge will vary according to the particular type of dredge disposing of the material.

(g) **Ambient concentrations of constituents of interest.** Not applicable.

(h) **Dredged material characteristics, particularly concentrations of constituents, amount of material, type of material (sand, silt, clay, etc.) and settling velocities.** The proposed action would involve placement of dredged material consisting of dredged material (ranging from sand to silt and clay) from the Gulfport Federal Navigation channel(s) (Gulf Entrance Channel). Rapid settling of the dredged material is anticipated.

(i) **Number of discharge actions per unit of time.** The number of discharge actions per unit of time will vary depending upon the particular disposal activity.

(2) **Determination of Compliance with Applicable Water Quality Standards.** The proposed activity is expected to be in compliance with all applicable water quality standards.

(3) **Potential Effects on Human Use Characteristics.**

(a) **Municipal and Private Water Supply.** No effect.

(b) **Recreational and Commercial Fisheries.** Recreational and commercial fishing would be temporarily impacted primarily as a result of the physical presence of heavy equipment during operation activities.

(c) **Water Related Recreation.** No significant effects.

(d) **Aesthetics.** No significant effects.

(e) **Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves.** Placement of the material will be in the vicinity of Fort Massachusetts on Ship Island which is a valuable cultural resource listed on the National Register of Historic Places. There should be no impact to this structure.

(f) **Other Effects.** No effect.

H. **Determination of Cumulative Effects on the Aquatic Ecosystem.** The proposed action is not expected to have significant cumulative adverse impacts.

I. **Determination of Secondary Effects of the Aquatic Ecosystem.** The proposed action is not expected to have any significant secondary adverse effects on the aquatic ecosystem.

III. **Finding of Compliance with the Restrictions on Discharge:**

A. No significant adaptations of the Section 404(b)(1) guidelines were made relative to this evaluation.

B. The proposed discharge represents the least environmentally damaging practicable alternative.

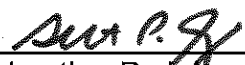
C. The planned dredging and placement of materials would not violate any applicable State water quality standards; nor will it violate the Toxic Effluent Standard of Section 307 of the Clean Water Act (CWA).

D. The proposed widening of the bend easing will not jeopardize the continued existence of any federally-listed endangered or threatened species or their critical habitat provided the specified conditions in this document are implemented during maintenance dredging and disposal operations.

E. The proposed placement of fill material will not contribute to significant degradation of waters of the United States, nor will it result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreation and commercial fishing; life stages of organisms dependent upon the aquatic ecosystem; ecosystem diversity, productivity and stability; or recreational, aesthetic or economic values.

F. Appropriate and practicable steps will be taken to minimize potential adverse impacts of discharge on the aquatic ecosystem.

Date: 11 June 2019


Sebastien P. Joly
Colonel, U.S. Army
District Commander