

**SECTION 404(B)(1) EVALUATION REPORT
FOR
MODIFICATIONS TO THE SHIP ISLAND RESTORATION PROJECT
MISSISSIPPI COASTAL IMPROVEMENTS PROGRAM, COMPREHENSIVE BARRIER ISLAND
RESTORATION
MISSISSIPPI SOUND, HARRISON COUNTY, MISSISSIPPI**

1.0 PROJECT DESCRIPTION

1.1 Location

Ship Island is part of the Mississippi barrier island chain, which consists of Cat Island to the west, and Horn Island and Petit Bois Island to the east. These islands lay between six and twelve miles off the Mississippi coast. Ship Island is located within the boundaries of the Gulf Islands National Seashore (GUIS) Mississippi unit under the National Park Service (NPS) jurisdiction. GUIS includes outstanding natural, cultural, and recreational resources along the northern Gulf of Mexico coasts of Mississippi and Florida. The 13 borrow areas included in the proposed action are located as follows:

Ship Island Borrow Area Option 2: Located within Mississippi state waters, approximately 1.5 miles south of East Ship Island at a depth of approximately -28 feet.

PBP-OCS West (1 through 6): Approximately 2 miles offshore of Petit Bois Island, near the safety fairway. Portions of OCS-PBP West 1 and 3, and all of OCS-PBP West 2 are located within Mississippi state waters. OCS-PBP West 4 and 6 are entirely in Federal waters. Ambient water depths range from -40 to -55 feet.

PBP-OCS East (1 through 5): Located entirely in Federal waters approximately 3.5 miles offshore of Petit Bois Island, near the safety fairway. Ambient water depths range from -45 to -60 feet.

Ship Island Pass (Old Gulfport Harbor Channel): Located within the NPS's GUIS boundaries, between the current Gulfport Harbor channel and the western shore of West Ship Island, abandoned for navigational purposes in the 1990s. This site is entirely within Mississippi state waters.

1.2 Description of the Proposed Action

Recent increases in dredging work across the country has caused dredging prices to increase. Due to the increases in dredging costs and project funding constraints, the Mobile District proposes to do the following in lieu of purchasing sandy material from Alabama:

Ship Island Borrow Area Option 2: expand the currently authorized area (referred to as Ship Island Borrow Area Option 3) from 183 acres and 2.7 mcy to 634 acres and 7.8 mcy.

PBP-OCS West (1 through 6): expand authorized dredging boundaries to include 150 foot "anchorage only" area, as well as an additional 3 feet of max allowable overdepth on top of the

current 2 feet of allowable overdepth, for a total max allowable dredge volume of 13.6 mcy (current authorization is for 5.1 mcy max allowable dredge volume). (Note: additional depths beyond those previously described in the 2016 MsCIP SEIS do not exceed 3 feet.)

PBP-OCS East (1 through 5): expand authorized dredging boundaries to include 150 -foot “anchorage only” area, as well as an additional 3 -feet of max allowable overdepth on top of the current 2 -feet of allowable overdepth, for a total max allowable dredge volume of 3.8 mcy (current authorization is for 1.2 mcy max allowable dredge volume). (Note: additional depths beyond those previously described in the 2016 MsCIP SEIS do not exceed 3 -feet.)

Ship Island Pass (Old Gulfport Harbor Channel): utilize 22 acres and approximately 0.5 mcy of material as an additional borrow area option. (Note: borrow area limits and depths do not exceed those previously described in the 2010 EA for the West Ship Island North Shore Restoration.)

This proposed action is in addition to the previously approved Comprehensive Barrier Island Restoration. For a detailed description of the existing project see the MsCIP Supplemental Environmental Impact Statement dated January 2016 at <https://www.sam.usace.army.mil/Missions/Program-and-Project-Management/Civil-Projects/MsCIP/MsCIP-Downloads/>. The 404(b)(1) for the existing project can be found in Appendix P for the MsCIP SEIS, also at <https://www.sam.usace.army.mil/Missions/Program-and-Project-Management/Civil-Projects/MsCIP/MsCIP-Downloads/>.

1.3 Alternatives to the Proposed Action

The only alternative is the no action alternative, which would consist of dredging the existing borrow areas that would involve the U.S. Army Corps of Engineers, Mobile District purchasing sandy material from the State of Alabama. A recent increase in dredging around the country has caused dredging prices to increase. Due to these increases in dredging costs, the purchasing of sandy material from Alabama would exhaust the remaining funds for the MsCIP Comprehensive Barrier Island Restoration and prevent the completion of the ship Island restoration. Failing to complete restoration of Ship Island would continue to leave the Mississippi coast more vulnerable to coastal storm damage, as well as put the project performance at risk.

1.4 General Description of the Discharge Sites

The placement sites are along the southern shoreline of eastern Ship Island and the now filled area that was once Camille Cut. The sites are typical of the Mississippi barrier island complex. Beach sediment sampling and analyses were conducted throughout the barrier islands in 2006 and 2009. In 2010, samples were collected along transects on West Ship Island and Horn Island to determine variability of grain size across the islands. In addition, three deeper samples were collected at West Ship Island to investigate grain size variability with depth. The samples collected were analyzed for color, angularity, grain size, and gradation. The majority of sand on the barrier island beaches consists of quartz sand light gray in color, sub-angular to

rounded shape, and had a median (D50) grain size of 0.30 to 0.51 mm. Sand distributed across the islands exhibited greater variation in D50 grain size, ranging from 0.21 to 0.48 mm. Composite samples to depths of 40 or 5 -feet at West Ship Island had D50 grain size ranging from 0.27 to 0.37 mm.

2.0 FACTUAL DETERMINATIONS

2.1 Physical Substrate Determinations

2.1.1 Substrate elevation and slope:

The constructed Camille Cut project area would be approximately 1,100 ft wide at an elevation of +7 ft, with a 1V:20H slope. The constructed berm ties into West and East Ship Islands. Sand placement along East Ship Island would consist of an approximate 1,200 ft wide restored shoreline with an approximate elevation of +6 ft NAVD88 with a 1V:12H to 1:20 slope from the seaward edge of the berm to the toe of the fill. The equilibrium design width would average approximately 700 feet. The combined Camille Cut and East Ship Island equilibrated fill will encompass approximately 1,500 acres of which approximately 800 acres will be above the MHWL, and 700 acres will lie below the MHWL.

2.1.2 Fill type:

The construction analysis for Ship Island examined the characteristics of the material from borrow sites to determine the sand suitability. The analysis focused on grain size and available volume. The analysis of mixes identified a combined D50 between 0.26 and 0.33 mm as necessary to ensure stability of the fill for at least 30 years. The borrow areas contain the high quality quartz sand with some shell fragments, with a relatively large grain size and color ranging from light gray to white.

2.1.3 Dredged/fill material movement:

The Camille Cut fill ties into the existing berm along the eastern end of West Ship Island and transitions into the East Ship Island placement area. Because the seaward slope of the construction profile is steeper than the native slope, the construction profile is expected to adjust over a 6 to 12-month period through the erosion of the upper profile with deposition near the toe of the fill until its shape, termed “equilibrium profile,” mimics the natural nearshore profile shape. The equilibrium design width would average approximately 700 feet. The construction and equilibrium beach profiles would contain essentially equal volumes of sand; the volume eroded from the upper profile during the adjustment process would equal the volume deposited at the toe of the fill. In addition to restoring the southern shoreline at East Ship Island, the sand placed in that area would migrate with the littoral drift to support the overall replenishment of the system. The construction template for the restored southern shoreline would consist of an average berm crest with of roughly 1,200 ft at an elevation of +6 ft NAVD88 with a 1V:12H to 1:20 slope from the seaward edge of the berm to the toe of the fill. Further details of the long-term morphological modeling are provided in Appendix B of the 2016 MsCIP SEIS.

2.1.4 *Physical effects on benthos:*

Potential impacts could occur from removal and placement activities. Dredging sediments for restoration uses would cause a direct temporary disruption to the benthic community located in borrow areas and long-term impact to benthic communities in placement areas. Both infauna and epifauna invertebrates including mollusks and crustaceans would be impacted resulting from the physical removal of sediment from the borrow areas as well as the physical placement of sediment at the placement areas.

2.1.5 *Other effects:*

Removal of material from the borrow areas would result in long-term minor changes in bathymetry at the borrow sites. Removal of material would not significantly affect island morphology, the movement of sand, or hydrological processes. The slopes of the inshore borrow areas would be expected to flatten and backfill with sand and finer-grained material over time.

2.1.6 *Actions taken to minimize impacts:*

Since the material to be placed is naturally occurring sand similar to the substrate of the beach nourishment site, no further actions are deemed necessary.

2.2 Water Circulation/Fluctuation and Salinity Determination

2.2.1 *Water*

(a) Salinity

No significant effects.

(b) Water Chemistry

Dredging and placement activities associated with the proposed action would result in short-term direct impacts and would not significantly degrade water quality in or near the barrier islands. Temperature, salinity, and dissolved oxygen (DO) profiles would be affected as a result of water column mixing during sediment removal and placement activities. Profiles would return to previous conditions following completion of activities. Any impacts to profiles would be temporary and minor.

(c) Clarity

Minor increases in turbidity may be experienced in the immediate vicinity of the project during dredging and placement activities. During construction, turbidity levels around the placement locations would be monitored, as appropriate, to confirm that turbidity levels outside the 750-foot mixing zone do not exceed the background turbidity levels by more than the typical state standard of 50 NTUs. Previous modeling of impacts for the 2016 MsCIP SEIS indicated that exceedance of the standard outside the mixing zone could occur requiring a waiver for reasonable and temporary deviations from the turbidity standards.

(d) Color

No significant effects.

(e) Odor

No effect.

(f) Taste

No effect.

(g) Dissolved Gases

Minor changes in DO are expected; however, these changes would not be significant as discussed in the 2016 MsCIP SEIS.

(h) Nutrients

Concentrations of nutrients could increase locally for short periods following sediment removal and placement. However, inflow from coastal rivers and the currents and waves in the Mississippi sound would quickly dilute material in the water column and not promote nutrient concentration. Any impacts would be temporary and minor.

(i) Eutrophication

No effects.

2.2.2 Current patterns and circulation

(a) Current patterns and flow

No significant effects.

(b) Velocity

No significant effects.

(c) Stratification

No significant effects.

(d) Hydrologic effects

No significant effects.

(e) Normal water level fluctuations

No effects.

(f) Salinity gradients

No significant effects.

2.3 Suspended Particulate/Turbidity Determinations

2.3.1 *Expected changes in suspended particulate and turbidity levels in the vicinity of the placement site.*

Construction would be expected to temporarily impact localized turbidity around placement areas. The generation of turbidity is a potential risk, since turbidity would increase as a result of these activities and could reduce light penetration through the water column, thereby reducing photosynthesis, affecting surface water temperatures and aesthetics in the vicinity. These conditions could also alter visual predator-prey relations and result in respiratory stresses in fish. During construction, turbidity levels around the placement locations would be monitored, as appropriate, to confirm that turbidity levels outside the 750-foot mixing zone do not exceed the background turbidity levels by more than 50 NTUs. Mississippi Department of Environmental Quality (MDEQ) can grant exemptions to the turbidity standards in cases of emergency to protect public health and welfare, and for environmental restoration projects. Project activities could result in reasonable and temporary deviations from the standard if reviewed and approved by MDEQ.

Sand placement near SAV areas may require site-specific BMPs to avoid temporary or permanent impact. It is not anticipated that the activities from this project would impact the turbidity of the water after the project is completed.

2.3.2 *Effects on the chemical and physical properties of the water column.*

(a) Light Penetration

Slight decreases in the degree of light penetration may occur during placement activities. These impacts would be temporary in nature and restricted to the immediate area of placement.

(b) Dissolved Oxygen

Changes in DO and nutrients could also occur due to mixing and release of sediments into the water column during sediment removal and placement. DO concentrations could decrease during and immediately following dredging due to the movement of anoxic water and sediments through the water column. DO could also be affected by short-term increases in organic material and associated aerobic decomposition. Any impacts would be expected to be restricted to the immediate vicinity of the removal and placement areas. Once activities cease and disturbed material settles, DO concentrations would return to pre-disturbance levels. Any impacts would be temporary and minor.

(c) Toxic Metals and Organics

No effects

(d) Pathogens

No effects

(e) Aesthetics

Only temporary degradation to the aesthetic environment would occur as a result of dredging and placement operations. Impacts would primarily occur as a result of the physical presence of heavy equipment. Some minor increases in turbidity may be observed in the immediate vicinity of dredging and placement activities but these increases would be minor and short-term in nature.

2.3.3 *Effects on biota*

(a) Primary Production Photosynthesis

No long-term significant impacts are expected to occur due to the physical nature of the material to be dredged. Construction could temporarily impact localized turbidity around borrow and placement areas. The generation of turbidity is a potential risk, since turbidity would increase as a result of these activities and could reduce light penetration through the water column, thereby reducing photosynthesis, affecting surface water temperatures and aesthetics in the vicinity.

(b) Suspension/Filter Feeders

No significant effects. No oyster reefs, worm reefs, or significant clam communities are known to be prominent within the vicinity of the project.

(c) Sight Feeders

No significant effects.

2.3.4 *Actions taken to minimize impacts*

No further actions are deemed appropriate.

2.4 Contaminant Determination

The material to be utilized meets the criteria set forth in 20 CFR 230.60(b). The material is characterized as clean sand which is sufficiently removed from sources of pollution and is located in areas of high current velocities to provide reasonable assurance that the material would not be contaminated by such pollution. In addition, the material originates in the near vicinity of the placement activity, is similar to the substrate of the placement site, and receives the same overlying waters as the placement site. Hence, no further physical, biological, or chemical testing is required pursuant to the 404(b)(1) guidelines.

2.5 Aquatic Ecosystem and Organism Determinations

2.5.1 *Effects on plankton*

Elevated turbidity levels and decreased light transmission caused by suspended material during dredging and placement activities could result in a temporary localized reduction in phytoplankton and zooplankton abundance as discussed in the 2016 MsCIP SEIS. Impacts would be restricted to localized patches of plankton. Any impacts would not be considered significant.

2.5.2 *Effects on benthos*

Temporary disruption of the aquatic community is anticipated by the dredging and placement activities. The dredging and direct placement of sands from the borrow sites would result in the mortality of some percentage of the existing benthic assemblages. However, it is expected that the area would re-colonize within several months after completion.

2.5.3 *Effects on nekton*

No significant effects.

2.5.4 *Effects on aquatic food web*

No significant effects.

2.5.5 *Effects on special aquatic sites*

(a) Sanctuaries and Refuges

Not applicable.

(b) Wetlands

Not applicable.

(c) Mud Flats

Not applicable.

(d) Vegetated Shallows

No significant effects.

(e) Coral Reefs

Not applicable.

(f) Riffle and Pool Complexes

Not applicable.

2.5.6 *Threatened and Endangered Species.*

Pursuant to Section 7 of the Endangered Species Act, the proposed action is being coordinated with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS).

2.5.7 *Other wildlife.*

No significant effect.

2.5.8 *Actions to minimize impacts.*

All reasonable and prudent measures recommended by the NPS, USFWS, and NMFS would be initiated during dredging and placement activities.

2.6 Disposal Site Determinations

2.6.1 *Mixing zone determinations.*

The proposed action would comply with the zone of mixing as determined by the State of Mississippi. The current WQC permit for the Ship Island restoration has a variance allowing for reasonable exceedance of turbidity standards outside the mixing zone. It is anticipated that the State of Mississippi, Department of Environmental Quality, Office of Pollution Control, will permit the same standard for the proposed action.

2.6.2 *Determination of compliance with applicable water quality standards.*

As a result of previous water quality certification (WQC) application activities, it is believed that the proposed Federal action would comply with applicable water quality standards. WQC and Coastal Zone Consistency (CZC) with state coastal management plans have been requested from the Mississippi Department of Environmental Quality (MDEQ) and Mississippi Department of Marine Resources (MDMR) for the proposed action.

2.6.3 *Potential effects on human use characteristics*

(a) Municipal and Private Water Supply.

There will be no impacts to water supplies located in the region.

(b) Recreational and Commercial Fisheries.

Sediment removal and placement would temporarily disrupt fish distribution and localized commercial and recreational fishing in the immediate vicinity of the activities. However, once operations were completed, the fish community would return to the area and commercial and recreational fishing activities would return to previous conditions.

(c) Water Related Recreation.

During the borrow and placement activities, recreational activities such as sunbathing, nature viewing, boating, sailing, and fishing along the barrier islands may be temporarily disrupted, limited, or altered. Potential temporary impacts may include noise, visual intrusion, and turbidity.

(d) Aesthetics.

Temporary impacts to aesthetics would occur in the immediate vicinity of the project during sediment removal and placement activities. Many people utilize Mississippi Sound and the barrier islands within the project area and would likely be disturbed by the presence of heavy equipment and working vessels during implementation of the restoration. However, sediment dredging and placement activities would be temporary and impacts would be minor.

(e) Parks, National and Historic Monuments National Seashores Wilderness Areas, Research Sites, and Similar Preserves.

All of Ship Island is located within the boundaries of the Gulf Island National Seashore, Mississippi unit, and is under the jurisdiction of the NPS. All dredging and placement activities associated with the proposed borrow area expansion are being coordinated with the NPS and no adverse impacts are expected to occur for any of these resources.

2.7 Determination of Cumulative Effects on the Aquatic Ecosystem.

The proposed action is not expected to have significant cumulative adverse impacts. The action would have cumulative beneficial impacts due to the erosion attenuation and habitat restoration.

2.8 Determination of Secondary Effects on the Aquatic Ecosystem.

The proposed action is not expected to have any significant secondary adverse effects on the aquatic ecosystem.

3.0 FINDING OF COMPLIANCE

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

b. The only alternative identified is the “no action” alternative which was deemed unacceptable.

c. After consideration of placement site dilution and dispersion, the placement fill material along the beach and near shore zone would not cause or contribute to, violations of any applicable State water quality standards for Class III waters.

d. As required by the CZMA, the proposed action is consistent with the Mississippi Coastal Zone Management Program to the maximum extent practicable.

e. The proposed action would not jeopardize the continued existence of any species listed as threatened or endangered or result in the likelihood of destruction or adverse modification of any critical habitat as specified by the Endangered Species Act of 1973, as amended.

f. The proposed action would not result in any significant adverse effects on human health or welfare, including municipal or 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.

g. No wetlands or submerged aquatic vegetation would be destroyed by the proposed action.

h. The proposed action is specified as complying with the requirements of these guidelines.

DATE _____

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

ENVIRONMENTAL ASSESSMENT

**Comprehensive Barrier Island Restoration, Mississippi Coastal Improvements
Program (MsCIP)**

Modifications for Borrow Area Expansion and Addition

Mississippi Sound, Harrison County, Mississippi

A Federally Authorized Project



U.S. ARMY CORPS OF ENGINEERS

MOBILE DISTRICT, WITH COOPERATING AGENCIES

**U.S. DEPARTMENT OF THE INTERIOR, NATIONAL PARK SERVICE, AND
BUREAU OF OCEAN AND ENERGY MANAGEMENT, GULF OF MEXICO REGION**

MARCH 2019

Table of Contents

- 1. INTRODUCTION 1
 - 1.1. Proposed Action Location 1
 - 1.1.1. Gulf Islands National Seashore 2
 - 1.2. Purpose and Need for the Proposed Action 3
- 2. NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) CONSIDERATIONS 3
- 3. DESCRIPTION OF THE PROPOSED ACTION 4
- 4. ALTERNATIVES CONSIDERED 6
 - 4.1. Preferred Alternative 6
 - 4.2. No Action Alternative 6
- 5. AFFECTED ENVIRONMENT 11
 - 5.1. Hydrology and Coastal Processes 11
 - 5.2. Water Quality 11
 - 5.3. Sediments 12
 - 5.4. Biological Resources 12
 - 5.4.1. Essential Fish Habitat 13
 - 5.4.2. Threatened and/or Endangered Species 15
 - 5.5. Cultural Resources 17
 - 5.6. Aesthetics 18
 - 5.7. Noise 18
 - 5.8. Air Quality 18
- 6. ENVIRONMENTAL IMPACTS 19
 - 6.1. Hydrology and Coastal Processes 19
 - 6.2. Water Quality 20
 - 6.3. Sediments 21
 - 6.4. Biological Resources 21
 - 6.4.1. Essential Fish Habitat 22
 - 6.4.2. Threatened and/or Endangered Species 22
 - 6.5. Cultural Resources 23
 - 6.6. Aesthetics 28
 - 6.7. Noise 28
 - 6.8. Air Quality 28

7. OTHER PERTINENT ENVIRONMENTAL LAWS AND REGULATIONS.....	28
7.1. Coastal Zone Consistency	28
7.2. Water Quality Certification.....	29
7.3. Protection of Children.....	29
7.4. Environmental Justice	29
8. CUMULATIVE EFFECTS SUMMARY	29
9. CONCLUSION.....	30
10. LIST OF PREPARERS.....	30
11. REFERENCES.....	31

List of Figures

Figure 1: Ship Island Borrow Area Proposed Expansion.....	7
Figure 2: PBP-OCS West Borrow Areas 1-4 Proposed Expansion	8
Figure 3: PBP-OCS West 5-6 and East 1-5 Borrow Areas Proposed Expansion	9
Figure 4: Ship Island Pass Borrow Area (Old Gulfport Channel) Proposed Borrow Area	10
Figure 5: Ship Island Borrow Area with Survey Footprint and Ship Island Pass (Old Gulfport Channel) Borrow Area	26
Figure 6: PBP-OCS Borrow Areas and Survey Footprints	27

List of Tables

Table 1: Borrow Areas as Currently Authorized, Proposed Changes, and Differences ..	5
Table 2. Gulf Coast Council Fishery Management Plans and Managed Species for the Gulf of Mexico (2017)	14
Table 3. NMFS-PRD Listed Threatened and/or Endangered Species within the Gulf of Mexico.....	15
Table 4. USFWS Listed Threatened and/or Endangered Species within the Project Area.....	16

Acronyms and Abbreviations

APE	Area of Potential Effect
BO	Biological Opinion
BOEM	Bureau of Ocean and Energy Management
CAA	Clean Air Act
CZC	Coastal Zone Consistency
EA	Environmental Assessment
EFH	Essential Fish Habitat
ERDC	Engineering and Research Design Center
GUIS	Gulf Islands National Seashore
HCD	Habitat Conservation Division
MCY	Million Cubic Yards
MLLW	Mean Lower Low Water
MSCIP	Mississippi Coastal Improvements Program
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NPS	National Park Service
PBP-OCS	Petit Bois Pass-Outer Continental Shelf
PRD	Protected Resources Division
SEIS	Supplemental Environmental Impact Statement
SHPO	State Historic Preservation Officer
USACE	US Army Corps of Engineers
USEPA	US Environmental Protection Agency
USFWS	US Fish and Wildlife Service
WQ	Water Quality

ENVIRONMENTAL ASSESSMENT

Comprehensive Barrier Island Restoration, Mississippi Coastal Improvements Program (MsCIP)

Modifications for Borrow Area Expansion and Addition

Mississippi Sound, Harrison County, Mississippi

1. INTRODUCTION

The U.S. Army Corps of Engineers (USACE), Mobile District, in cooperation with the National Park Service (NPS) and the Bureau of Ocean Energy Management (BOEM), proposes to add a new borrow area and modify the currently approved borrow areas for the restoration of Ship Island as part of the Mississippi Coastal Improvements Program (MsCIP). The Petit Bois Pass - Outer Continental Shelf (PBP-OCS) and Ship Island borrow areas would be expanded (**Figure 1**, **Figure 2**, and **Figure 3**), and the Ship Island Pass (formerly referred to as the Old Gulfport Channel) would be included as a new borrow area (**Figure 4**). The MsCIP is an integrated system and has taken a system-wide approach to increase the resiliency of the Mississippi coast against damages from future storms. USACE, Mobile District prepared this Environmental Assessment (EA) to address potential impacts associated with the proposed changes to features (i.e. borrow areas) of the authorized project. This EA is tiered from the MsCIP Supplemental Environmental Impact Statement (SEIS) dated January 2016, as well as the October 2010 West Ship Island Northern Shoreline Restoration EA. Both of these documents can be found at <https://www.sam.usace.army.mil/Missions/Program-and-Project-Management/Civil-Projects/MsCIP/MsCIP-Downloads/>, and will be incorporated into this EA by reference.

Ship Island and the Ship Island Pass borrow area are located within the boundaries of the Gulf Islands National Seashore (GUIS) Mississippi unit under the jurisdiction of NPS. The project area offshore of the islands includes portions of the OCS, which is under BOEM jurisdiction for leasing and regulating the recovery of minerals. BOEM jurisdiction extends to the subsoil and seabed of all submerged lands seaward of State-owned waters to the limits of the OCS. NPS and BOEM are cooperating agencies for this project.

1.1. Proposed Action Location

Ship Island is part of the Mississippi barrier island chain, which consists of Cat Island to the west, and Horn Island and Petit Bois Island to the east. These islands lay between six and twelve miles off the Mississippi coast. The 13 borrow areas included in the proposed action are located as follows:

Ship Island Borrow Area Option 2: Located within Mississippi state waters, approximately 1.5 miles south of East Ship Island at a depth of approximately -28 feet.

PBP-OCS West (1 through 6): Approximately 2 miles offshore of Petit Bois Island, near the safety fairway. Portions of OCS-PBP West 1 and 3, and all of OCS-PBP West 2 are located within Mississippi state waters. OCS-PBP West 4 and 6 are entirely in Federal waters. Ambient water depths range from -40 to -55 feet.

PBP-OCS East (1 through 5): Located entirely in Federal waters approximately 3.5 miles offshore of Petit Bois Island, near the safety fairway. Ambient water depths range from -45 to -60 feet.

Ship Island Pass (Old Gulfport Harbor Channel): Located within the NPS's GUIB boundaries, between the current Gulfport Harbor channel and the western shore of West Ship Island, abandoned for navigational purposes in the 1990s. This site is entirely within Mississippi state waters.

1.1.1. Gulf Islands National Seashore

Gulf Islands National Seashore, a unit of the NPS, includes outstanding natural, cultural, and recreational resources along the northern Gulf of Mexico coasts of Florida and Mississippi. These resources include several coastal defense forts spanning more than two centuries of military activity, archeological values, pristine examples of intact coastal barrier islands, salt marshes, bayous and submerged seagrass beds, complex terrestrial communities, emerald green water, and white sand beaches. The barrier islands within the Seashore are nationally significant for several reasons. Specifically, these islands:

- Contain one of the most complete collections of publicly accessible seacoast defense structures in the United States, representing a continuum of development from early French and Spanish exploration and colonization through World War II;
- Provide the public with recreational opportunities on natural and scenic island, beach, dune and water areas which possess the rare combination of remaining undeveloped and in a wilderness state, yet are located in close proximity to major population centers;
- Provide habitat for several endangered species in diverse ecosystems, stop-over habitat for migratory birds, and critical nursery habitat for marine flora and fauna, and serve as an enclave for complex terrestrial and aquatic plant and animal communities that characterize the northern Gulf Coast, and fully illustrate the natural processes which shape these unique areas;
- Contain land and marine archeological resources which represent a continuum of human occupation in a coastal environment and are important in enhancing the knowledge of the past including interactions between the earliest settlers and original inhabitants of this area of the Gulf Coast; and

- Provide a benchmark to compare conditions in developed areas of the Gulf Coast to natural areas within the park.

The Mississippi barrier islands located within Gulf Islands National Seashore are Petit Bois, Horn, East and West Ship Islands, and portions of Cat Island; additionally, NPS administers the 401-acre Davis Bayou area on the mainland near Ocean Springs, Mississippi. The Seashore's purpose, besides preserving, protecting, and interpreting its Gulf Coast barrier island and bayou ecosystems and its system of historic coastal defense fortifications, is to provide for public use and enjoyment of these resources to the largest extent possible.

1.2. Purpose and Need for the Proposed Action

The purpose for this action is to obtain sufficient compatible sandy material in a cost effective manner to complete the restoration of Ship Island. The currently authorized borrow sources are insufficient due to recent increases in dredging costs and project funding constraints. The costs of dredging has increased in response to an exceptional increase in dredging work across the country. As a result, the Mobile District decided to forego the previous decision to purchase material from the state of Alabama and instead modify existing borrow areas and add a new borrow area. The new borrow area, Ship Island Pass (Old Gulfport Harbor Channel), was previously evaluated and used for the West Ship Island Northern Shoreline restoration in 2010.

2. NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) CONSIDERATIONS

This EA has been prepared to address the potential impacts associated with the dredging and placement of the material from the Ship Island Pass (Old Gulfport Harbor channel), as well as the potential impacts associated with the expansion of the currently authorized State and Federal borrow areas, PBP-OCS East and West and the Ship Island Borrow Area Option 3.

The project as currently authorized includes the restoration of Ship Island using sandy material dredged from 16 borrow areas, including up to a possible 19.8 million cubic yards (mcy) of material from PBP-AL East and West that would be purchased from the state of Alabama. Potential impacts associated with the dredging and placement of material out of Ship Island Borrow Area Option 3, as well as the PBP-OCS East and West sites were addressed in the 2016 MsCIP SEIS. The Ship Island Pass (Old Gulfport Harbor channel) was previously used as a borrow area for the work completed on the northern shore of West Ship Island in 2011. Impacts associated with the dredging and placement of that material were discussed in the October 2010 EA for the West Ship Island North Shore Restoration. Both of these documents are incorporated into this EA by reference.

This EA will be used to support the NEPA compliance requirements for the Federal agencies with jurisdiction over parts of the tentatively selected plan, including USACE, NPS, and BOEM. As a Federal agency with jurisdiction to manage the resources available on OCS, BOEM was invited by USACE to participate as a cooperating agency in the preparation of the 2016 SEIS as well as this EA. BOEM's connected, though separate, proposed action is to issue an amendment to the negotiated agreement between BOEM and USACE made December 2016. The negotiated agreement was made under BOEM's authority under the Outer Continental Shelf Lands Act for use of sand, gravel, and shell resources for Coastal Storm Damage Reduction projects from the OCS.

3. DESCRIPTION OF THE PROPOSED ACTION

In lieu of purchasing the material from Alabama, the Mobile District is proposing the following modifications (See **Table 1**: Borrow Areas as Currently Authorized, Proposed Changes, and Differences):

Ship Island Borrow Area Option 2: expand the currently authorized area (referred to as Ship Island Borrow Area Option 3) from 183 acres and 2.7 mcy to 634 acres and 7.8 mcy. (**Figure 1**)

PBP-OCS West (1 through 6): expand authorized dredging boundaries to include 150 foot "anchorage only" area, as well as an additional 3 feet of max allowable overdepth on top of the current 2 feet of allowable overdepth, for a total max allowable dredge volume of 13.6 mcy (current authorization is for 5.1 mcy max allowable dredge volume). (See **Figure 2** and **Figure 3** for proposed depths.) (Note: additional depths beyond those previously described in the 2016 MsCIP SEIS do not exceed 3 feet.)

PBP-OCS East (1 through 5): expand authorized dredging boundaries to include 150 foot "anchorage only" area, as well as an additional 3 feet of max allowable overdepth on top of the current 2 feet of allowable overdepth, for a total max allowable dredge volume of 3.8 mcy (current authorization is for 1.2 mcy max allowable dredge volume). (See **Figure 3** for proposed depths.) (Note: additional depths beyond those previously described in the 2016 MsCIP SEIS do not exceed 3 feet.)

Ship Island Pass (Old Gulfport Harbor Channel): utilize 22 acres and approximately 0.5 mcy of material as an additional borrow area option. (**Figure 4**) (Note: borrow area limits and depths do not exceed those previously described in the 2010 EA for the West Ship Island North Shore Restoration.)

Borrow Area	Current ¹ Area (acres)	Proposed Area (acres)	Area Δ (acres)	Current Required Dredge Elevation (ft NAVD88)	Proposed Required Dredge Elevation (ft NAVD88)	Required Dredge Elevation Δ (ft)	Current Allowable Dredge Elevation (ft NAVD88)	Proposed Allowable Dredge Elevation (ft NAVD88)	Allowable Dredge Elevation Δ (ft)	Current Total Dredge Volume (mcy)	Proposed Total Dredge Volume (mcy)	Total Dredge Volume Δ (mcy)
Ship Island	183	634	451	-36	-36	0	-38	-41	-3	2.7	12.9	10.2
PBP-OCS West 1	420	480	60	-46.5 to -47.5	-46.5 to -47.5	0	-48 to -49.5	-48 to -52.5	-3	3.1	5.6	2.5
PBP-OCS West 2	192	200	8	-47.5 to -48	-47.5 to -48	0	-49.5 to -50	-49.5 to -53	-3	1.6	2.6	1
PBP-OCS West 3	275	310	35	-61 to -65.5	-61 to -65.5	0	-63 to -67.5	-63 to -70.5	-3	5.5	7.1	1.6
PBP-OCS West 4	195	236	41	-49 to -62.5	-49 to -62.5	0	-51 to -64.5	-51 to -67.5	-3	2.4	3.7	1.3
PBP-OCS West 5	155	193	38	-53	-53	0	-55	-58	-3	1.3	2.4	1.1
PBP-OCS West 6	146	182	36	-56.5	-56.5	0	-58.5	-61.5	-3	1.5	2.5	1
PBP-OCS East 1	51	64	13	-49.5 to -54	-49.5 to -54	0	-51.5 to -56	-55 to -59	-3	0.4	0.7	0.3
PBP-OCS East 2	302	344	42	-53 to -56	-53 to -56	0	-55 to -58	-58 to -61	-3	2.9	4.6	1.7
PBP-OCS East 3	39	50	11	-57.5	-57.5	0	-59.5	-62.5	-3	0.3	0.5	0.2
PBP-OCS East 4	43	51	8	-59 to -61.5	-59 to -61.5	0	-61 to -63.5	-64 to -66.5	-3	0.3	0.5	0.2
PBP-OCS East 5	29	45	16	-56.5 to -57.5	-56.5 to -57.5	0	-58.5 to -59.5	-62 to -62.5	-3	0.3	0.5	0.2
Ship Island Pass (Old Gulport Channel)	n/a	22	n/a	n/a	-36	n/a	n/a	-38	n/a	n/a	0.6	n/a

Note: 1 Current is defined as the coordinated design documented within the 2016 MsCIP SEIS

Table 1: Borrow Areas as Currently Authorized, Proposed Changes, and Differences

4. ALTERNATIVES CONSIDERED

4.1. Preferred Alternative

The preferred alternative is the proposed action as described above. This alternative would allow for maximum utilization of current borrow areas, and provide an additional source of sediment to facilitate in a more cost-effective manner for the completion of the MsCIP Barrier Island Restoration Project. In addition, this alternative would also terminate the need to purchase material from the state of Alabama, saving the project millions of dollars.

4.2. No Action Alternative

The NEPA defines a “no action” as the continuation of existing conditions in the affected environment without the implementation, or in the absence of the proposed action. Inclusion of the “no action” alternative is prescribed by the Council on Environmental Quality regulations as the benchmark against which Federal actions are to be evaluated.

The no action alternative would consist of dredging in the existing borrow areas that include USACE Mobile District purchasing sandy material from the state of Alabama. A recent increase in dredging around the country has caused dredging prices to increase. Due to these increases in dredging costs, the purchasing of sandy material from Alabama would exhaust the remaining funds for the MsCIP Comprehensive Barrier Island Restoration and prevent the completion of the Ship Island restoration. Failing to complete restoration of Ship Island would continue to leave the Mississippi coast more vulnerable to coastal storm damage, as well as put the project performance at risk.

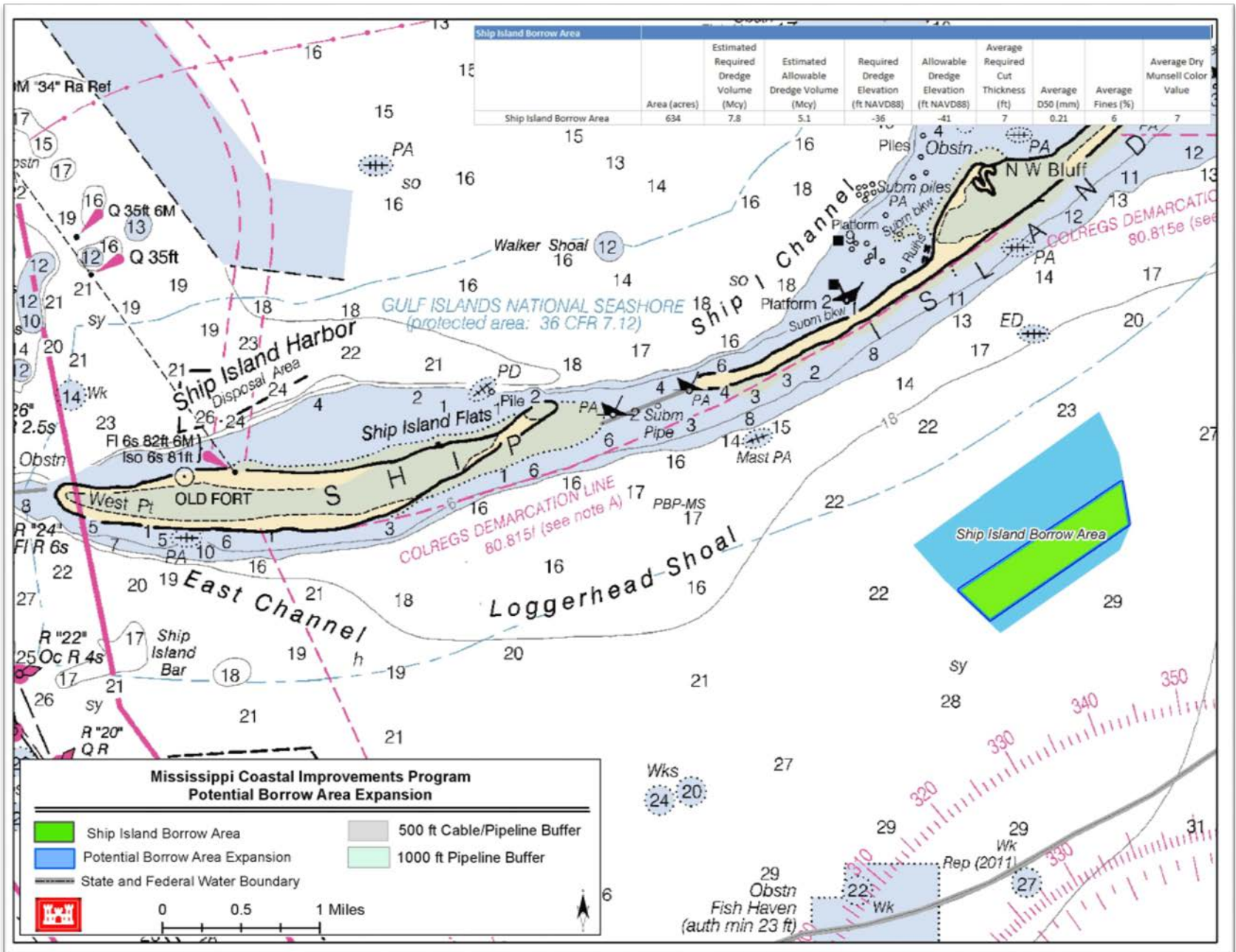


Figure 1: Ship Island Borrow Area Proposed Expansion

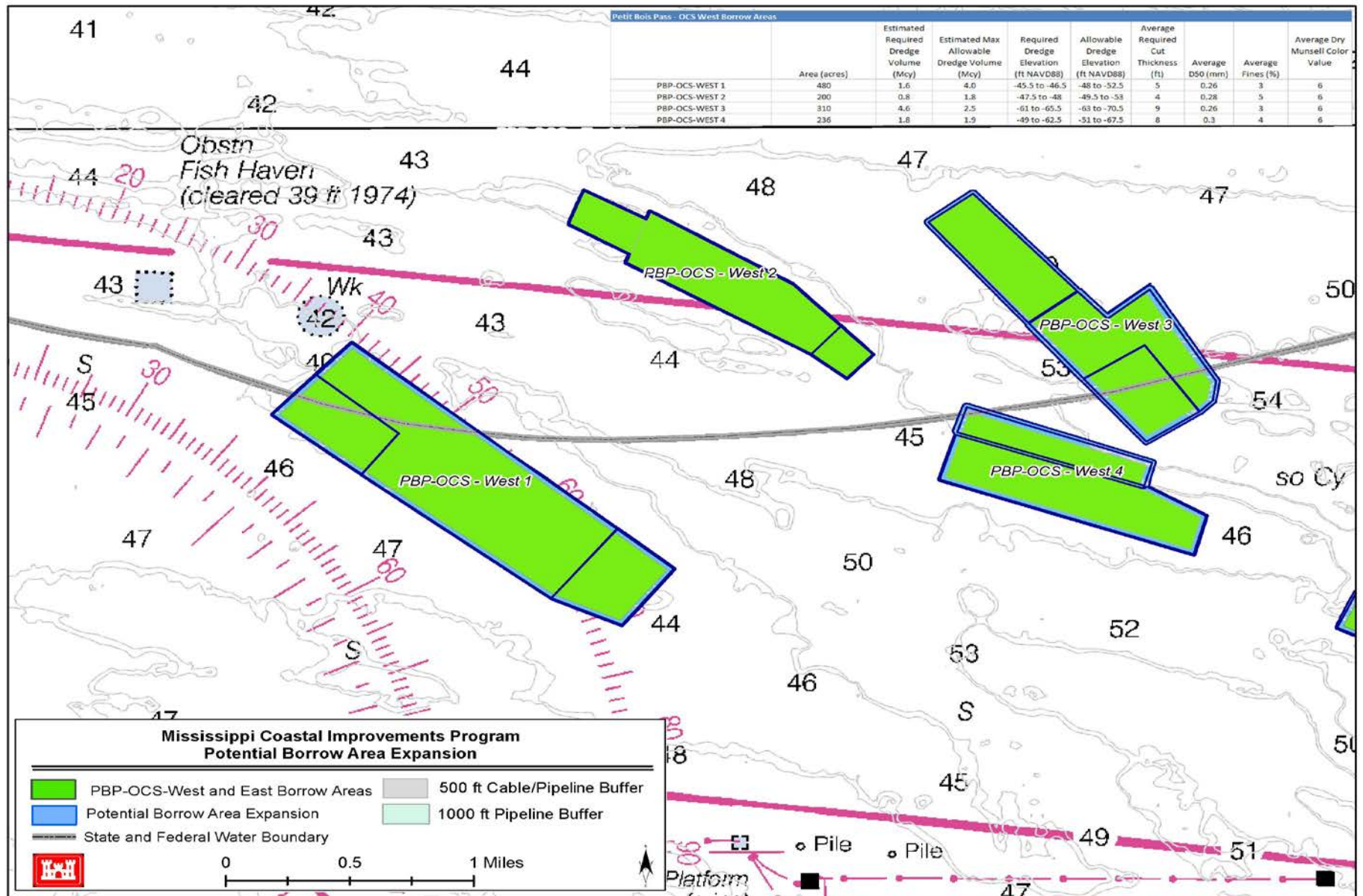


Figure 2: PBP-OCS West Borrow Areas 1-4 Proposed Expansion

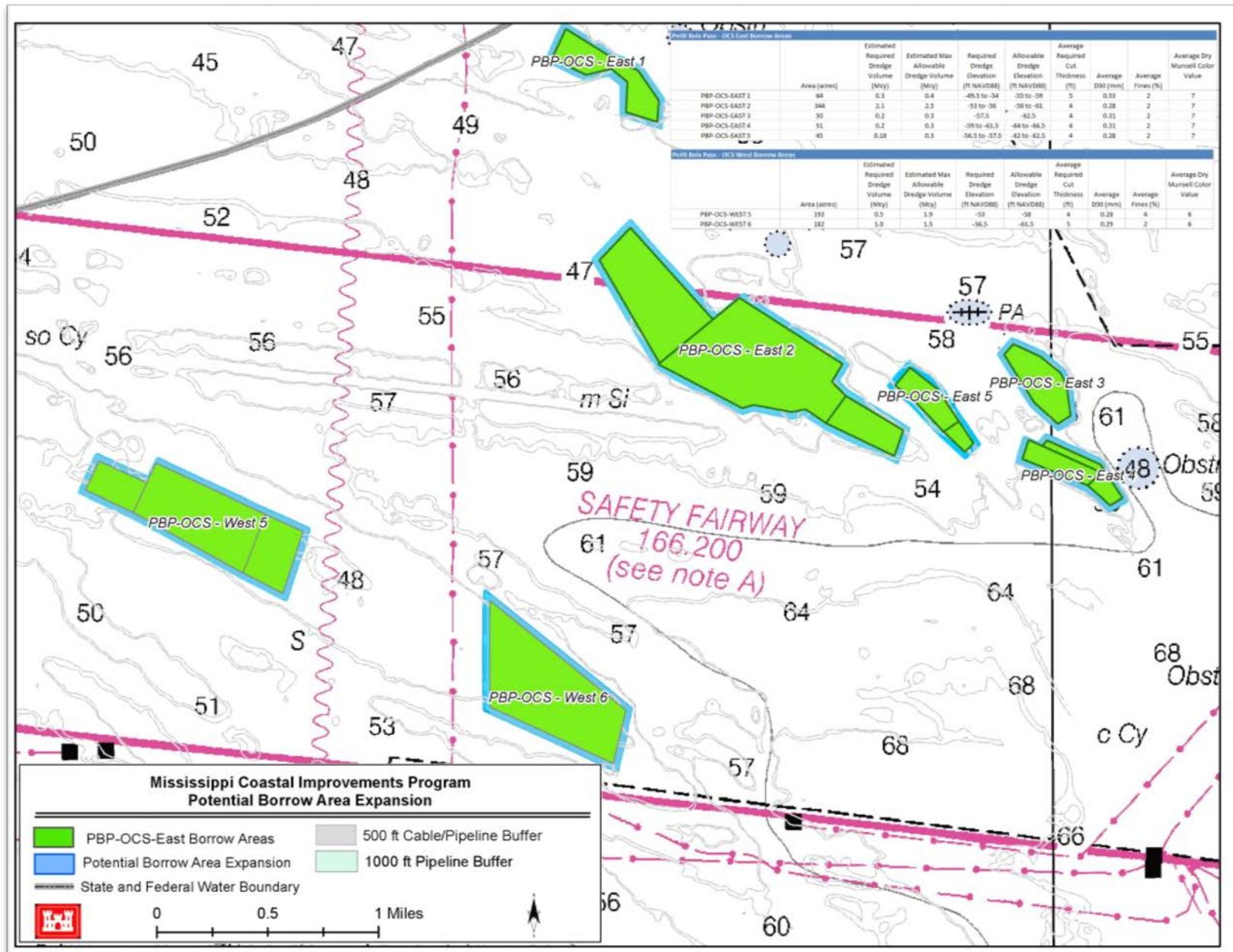


Figure 3: PBP-OCS West 5-6 and East 1-5 Borrow Areas Proposed Expansion

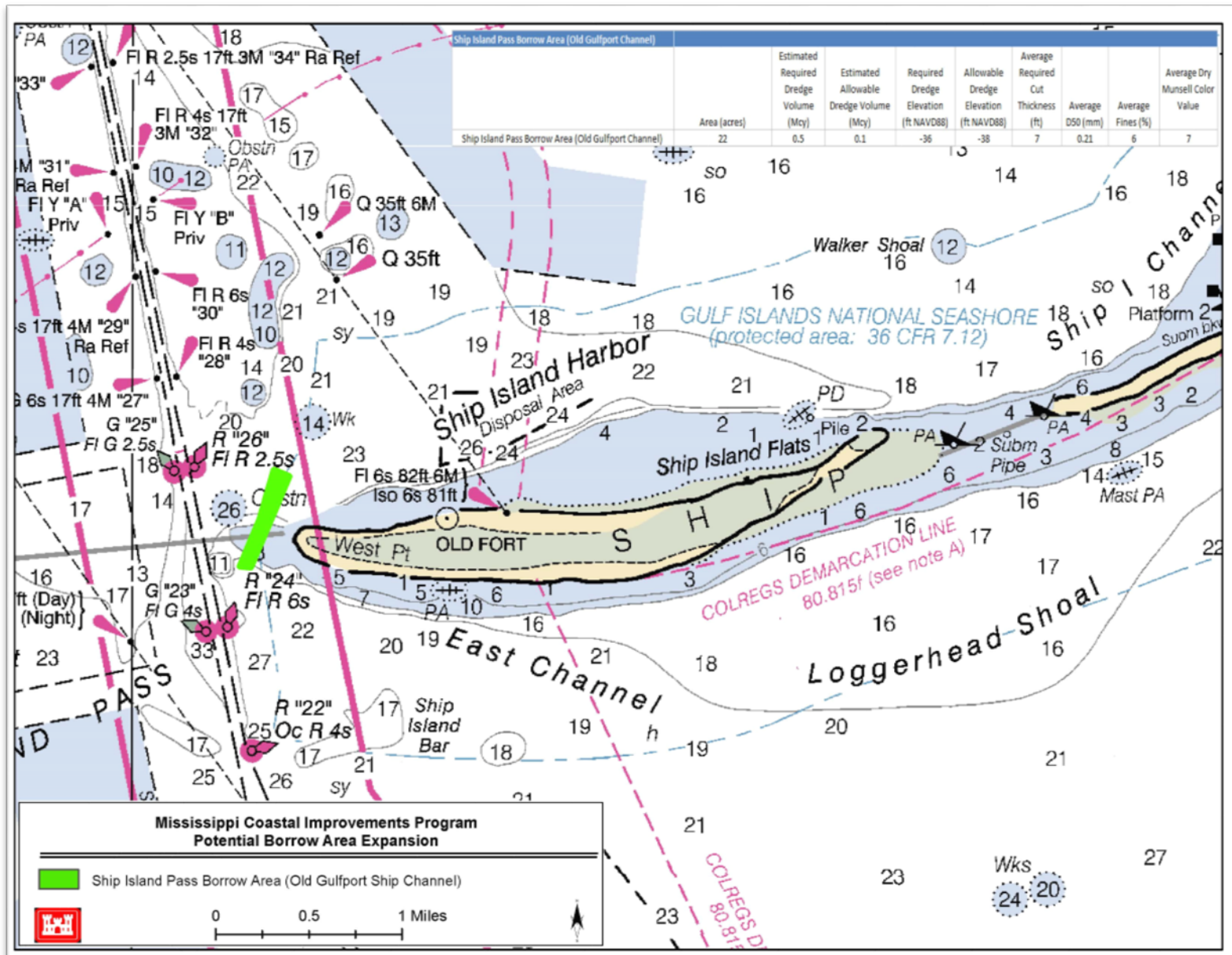


Figure 4: Ship Island Pass Borrow Area (Old Gulfport Channel) Proposed Borrow Area

5. AFFECTED ENVIRONMENT

The 2016 MsCIP SEIS characterizes the existing conditions and the affected environment of the Barrier Island Restoration project area, including the barrier islands and the currently authorized sand borrow areas. Section 4 of the SEIS describes the affected environment and is incorporated by reference into this section. The 2010 EA for the West Ship Island North Shore Restoration describes the existing conditions as well as the effects of the dredging and placement of material from the Ship Island Pass (Old Gulfport Harbor channel) on West Ship Island. Section 5 of the 2010 EA describes the affected environment and is incorporated by reference into this section.

5.1. Hydrology and Coastal Processes

The Mississippi Sound receives freshwater drainage from three basins on the Mississippi coastal plain: the Pascagoula River basin, the Coastal Streams basin, and the Pearl River basin. Of the three basins, the Pascagoula River basin is the largest contributor of fresh water directly to the Sound. Approximately half of the total freshwater that flows into the Mississippi Sound does so through the Pascagoula River basin, and the remainder comes from the combined contributions of the Coastal Streams and Pearl River basins. (2016 MsCIP SEIS, Section 4.3.3)

The hydrology of the Mississippi Sound is strongly influenced by wind-driven currents and the tides of the Gulf of Mexico. Tides across the northeastern Gulf of Mexico approach the coast from the south and enter the Sound through the natural passes between the barrier islands. Tidally based circulation in the eastern portion of the Mississippi Sound has a strong clockwise rotation, whereas the western parts of the Sound have a weaker counter-clockwise rotation. These circulation patterns will drive how the sediments used in the barrier island restoration will be distributed within the Sound. (2016 MsCIP SEIS, Section 4.3.3)

5.2. Water Quality

Water quality within the Mississippi Sound is influenced by several factors, including the discharge of freshwater from rivers, seasonal climate changes, and variations in tide and currents. The primary drivers of water quality are the rivers that flow into the Sound, with the largest contributors in the project area being the Pascagoula River, the Pearl River, and collectively the loading from the predominantly westward flow of the Mobile Bay system. Freshwater inputs from these major contributors and others provide nutrients and sediments that serve to maintain productivity both in the Sound and in the extensive salt marsh habitats bordering the estuaries of the Sound. (2016 MsCIP SEIS, Section 4.4)

The dynamic features of this area create variations in many water quality parameters throughout the project area, including temperature, salinity, dissolved oxygen, sediment oxygen demand, nutrients, total organic carbon, and others that influence the biological and ecological processes naturally occurring in the estuary. Temperature and salinity strongly influence chemical, biological, and ecological patterns and processes. (2016 MsCIP SEIS, Section 4.4)

The State of Mississippi classifies the Gulf of Mexico as an estuary within Mississippi waters to the state boundary located 3 nautical miles south of the barrier islands. The Mississippi Department of Environmental Quality designates a use classification for this area primarily as Recreation with a small area near the mainland as Shellfish Harvesting and Recreation (2016 MsCIP SEIS). All waters are classified to support aquatic life. (2016 MsCIP SEIS, Section 4.4)

5.3. Sediments

The primary source of sediment to the barrier islands and passes fronting the Mississippi Sound is sand transported west from western Florida and coastal Alabama beaches. Local sources of sediment to the barrier islands are eastern Dauphin Island and the Mobile Pass ebb shoal complex. (2016 MsCIP SEIS, Section 4.3.5.3)

The 2016 MsCIP SEIS characterized the sand on Ship Island as being predominantly light gray in color, from fine-grained to medium-grained, poorly graded, and having grain sizes ranging from 0.21 to 0.48 mm (2016 MsCIP SEIS, Section 4.3.5.3). The sandy material from the Ship Island and PBP-OCS borrow areas consists primarily of fine to coarse-grained sand with less than 10 percent fines. The range of mean grain sizes at these borrow sites is 0.20-0.33 mm, similar to the range of material found on Ship Island (2016 MsCIP SEIS, Section 4.3.5.3).

Material contained in the Ship Island Pass (Old Gulfport Harbor channel) has been used several times in the past as a sand source for beach nourishment near Fort Massachusetts on West Ship Island. The abandoned channel acts as an efficient sediment trap for sand migrating westward from the tip of West Ship Island. In the 2010 EA for the West Ship Island North Shore Restoration, the sandy material in the Ship Island Pass (Old Gulfport Harbor channel) was described as having a mean grain size of 0.48 mm, medium to fine grain, and poorly graded. The material has minimal fine content and is considered compatible for placement on Ship Island. (2010 EA, Sections 3.0 and 5.3)

5.4. Biological Resources

The Mississippi coast contains a wide diversity of flora and fauna associated with habitats found in coastal Mississippi counties (Hancock, Harrison, and Jackson Counties), as well as the Mississippi Sound and the barrier islands. These habitats provide essential services for the plants and animals that live within them, such as

physical habitat for many of the species and storm buffering capacity. The Mississippi Sound estuary includes shallow open waters, oyster reefs, tidal pools, mud and sand flats, and river deltas. (2016 MsCIP SEIS, Section 4.5)

The Mississippi barrier islands that lie approximately 6-12 miles offshore include a dynamic and diverse integrated system of beaches, dunes, marshes, bays, maritime forests, tidal flats, and inlets. These island habitats are host to a wide variety of plants and animals including various beach grasses, submerged aquatic vegetation, numerous species of resident and migratory birds, various infaunal and epifaunal invertebrates, crustaceans, various fish, and multiple marine mammal species. For an in depth analysis of all biological resources for the area, see Section 4.5 – Biological Resources in the 2016 MsCIP SEIS.

5.4.1. Essential Fish Habitat

Essential Fish Habitat (EFH) is defined in the Magnuson-Stevens Fishery Conservation and Management Act 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 National Marine Fisheries Service (NMFS) Habitat Conservation Division (HCD) has identified EFH habitats 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, mud, sand, shell, and rock substrates, and the estuarine water column. **Table 2** provides a list of the species that NMFS-HCD manages under the federally implemented Fishery Management Plans in the Gulf of Mexico.

Management Plan	Common Name	Scientific Name
Coastal Migratory Pelagic	King mackerel	<i>Scomberomorus cavella</i>
	Spanish mackerel	<i>Scomberomorus maculatus</i>
	Cobia	<i>Rachycentron canadum</i>
Red Drum	Red drum	<i>Sciaenops ocellatus</i>
Snappers	Queen snapper	<i>Etelis oculatus</i>
	Mutton snapper	<i>Lutjanus analis</i>
	Blackfin snapper	<i>Lutjanus buccanella</i>
	Red snapper	<i>Lutjanus campechanus</i>
	Cubera snapper	<i>Lutjanus cyanopterus</i>
	Gray (Mangrove) snapper	<i>Lutjanus griseus</i>
	Lane snapper	<i>Lutjanus synagris</i>
	Silk snapper	<i>Lutjanus vivanus</i>
	Yellowtail snapper	<i>Ocyurus chrysurus</i>
	Wenchman	<i>Pristipomoides aquilonaris</i>
	Vermillion snapper	<i>Rhomboplites aurorubens</i>
Groupers	Speckled hind	<i>Epinephelus drummondhayi</i>
	(Atlantic) Goliath grouper	<i>Epinephelus itajara</i>
	Red grouper	<i>Epinephelus morio</i>
	Yellowedge grouper	<i>Hyporthodus flavolimbatus</i>
	Warsaw grouper	<i>Hyporthodus nigritus</i>
	Snowy grouper	<i>Hyporthodus niveatus</i>
	Black grouper	<i>Mycteroperca bonaci</i>
	Yellowmouth grouper	<i>Mycteroperca interstitialis</i>
	Gag grouper	<i>Mycteroperca microlepis</i>
	Scamp grouper	<i>Mycteroperca phenax</i>
	Yellowfin grouper	<i>Mycteroperca venenosa</i>
Tilefishes	Goldface tilefish	<i>Caulolatilus chrysops</i>
	Blueline tilefish	<i>Caulolatilus microps</i>
	Tilefish	<i>Lopholatilus chamaeleonticeps</i>
Jacks	Greater amberjack	<i>Seriola dumerili</i>
	Lesser amberjack	<i>Seriola fasciata</i>
	Almaco jack	<i>Seriola rivoliana</i>
	Banded rudderfish	<i>Seriola zonata</i>
Triggerfishes	Gray triggerfish	<i>Balistes capriscus</i>
Hogfish	Hogfish	<i>Lachnolaimus maximus</i>
Shrimp	Brown shrimp	<i>Penaeus aztecus</i>
	White shrimp	<i>Penaeus setiferus</i>
	Pink shrimp	<i>Penaeus duorarum</i>
	Royal red shrimp	<i>Pleoticus robustus</i>
Spiny Lobster	Caribbean spiny lobster	<i>Panulirus argus</i>
Coral and Coral Reefs	Hydrozoa corals (stinging and hydrocorals)	* 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.
	Anthozoa (stony and black corals)	

Table 2. Gulf Coast Council Fishery Management Plans and Managed Species for the Gulf of Mexico (2017)

5.4.2. Threatened and/or Endangered Species

Table 3 provides the species listed by NMFS Protected Resources Division (PRD) as either threatened, endangered, or a candidate for Federal protection within the Gulf of Mexico. The species most likely to be found within the project area are the Green, Kemp’s ridley, Leatherback, and Loggerhead sea turtles, Gulf sturgeon, and the Giant manta ray. With the exception of the Giant manta ray, these species have been thoroughly discussed in Section 4.5.8 – Rare, Threatened, and Endangered Species of the 2016 MsCIP SEIS and the September 2015 NMFS-PRD issued Biological Opinion (BO) for the MsCIP. The Giant manta ray was listed since the original 2015 coordination was completed and therefore is discussed further in this EA. The Nassau grouper, Oceanic whitetip shark, and Bryde’s whale were also listed since the 2015 coordination was completed; however, these species are not found within the project area.

Species	Scientific Name	Status
Fin whale	<i>Balaenoptera physalus</i>	Endangered
Sei whale	<i>Balaenoptera borealis</i>	Endangered
Sperm whale	<i>Physeter macrocephalus</i>	Endangered
Gulf of Mexico Bryde’s whale	<i>Balaenoptera edeni</i> – subspecies	Proposed – Endangered
Green sea turtle	<i>Chelonia mydas</i>	Threatened
Hawksbill sea turtle	<i>Eretmochelys imbricate</i>	Endangered
Kemp’s ridley sea turtle	<i>Lepidochelys kempii</i>	Endangered
Leatherback sea turtle	<i>Dermochelys coriacea</i>	Endangered
Loggerhead sea turtle	<i>Caretta caretta</i>	Threatened
Gulf sturgeon	<i>Acipenser oxyrinchus desotoi</i>	Threatened
Nassau grouper	<i>Epinephelus striatus</i>	Threatened
Smalltooth sawfish	<i>Pristis pectinata</i>	Endangered
Oceanic whitetip shark	<i>Carcharhinus longimanus</i>	Threatened
Giant manta ray	<i>Manta birostris</i>	Threatened

Table 3. NMFS-PRD Listed Threatened and/or Endangered Species within the Gulf of Mexico

Table 4 provides the species listed by the U.S. Fish and Wildlife Service (USFWS) as either threatened, endangered, or protected, and also lists any designated critical habitat. Of these species listed, those most likely to be found within the project area include the Gulf sturgeon, West Indian manatee, Kemp’s ridley, Green and Loggerhead sea turtles, Piping plover, Red knot, and the Bald eagle. For this project, the Gulf sturgeon and its associated critical habitat fall under the purview of NMFS-PRD. For a complete description of the species listed, see Section 4.5.8 – Rare, Threatened, and Endangered Species of the 2016 MsCIP SEIS as well as the September 2015 USFWS issued BO.

Species	Scientific Name	Status
West Indian manatee	<i>Trichechus manatus</i>	Protected
Eastern black rail	<i>Laterallus jamaicensis</i>	Proposed - Threatened
Piping plover	<i>Charadrius melodus</i>	Threatened / Critical habitat
Red knot	<i>Calidris canutus rufa</i>	Threatened
Red-cockaded woodpecker	<i>Picooides borealis</i>	Endangered
Wood stork	<i>Mycteria americana</i>	Endangered
Hawksbill sea turtle	<i>Eretmochelys imbricate</i>	Endangered
Kemp's ridley sea turtle	<i>Lepidochelys kempii</i>	Endangered
Leatherback sea turtle	<i>Dermochelys coriacea</i>	Endangered
Loggerhead sea turtle	<i>Caretta caretta</i>	Endangered
Gulf sturgeon	<i>Acipenser oxyrinchus desotoi</i>	Threatened / Critical habitat
Bald eagle	<i>Haliaeetus leucocephalus</i>	Protected

Table 4. USFWS Listed Threatened and/or Endangered Species within the Project Area

Gulf Sturgeon and Gulf Sturgeon Critical Habitat

The Gulf sturgeon (*Acipenser oxyrinchus desotoi*) is listed as threatened by both USFWS and NMFS-PRD. For this project, NMFS-PRD has purview for the sturgeon and its associated critical habitat. An ongoing Gulf sturgeon monitoring effort at Ship Island is being conducted by USACE Engineer Research and Development Center (ERDC). The objective is to characterize the seasonal occurrences and movements of the sturgeon around Ship Island, and within Camille Cut prior to its closure. Pre-construction monitoring began in 2011 and concluded in 2015. A compilation of the detection histories at Ship Island for these years shows that 63 Gulf sturgeon utilize the area. Tagging and monitoring is ongoing for construction and post-construction. Details about this study can be found in Section 3.1.7 of the 2015 NMFS-PRD BO.

Piping Plover and Red Knot

The Piping plover (*Charadrius melodus*) and Red knot (*Calidris canutus rufa*), which are both listed as threatened by USFWS, can be found over-wintering on the Mississippi barrier islands. In accordance with the September 2015 USFWS issued BO, monitoring for Piping plover, Red knot, and other winter migratory birds is conducted July through May. Monitoring during construction at Ship Island is ongoing, and as of October 2018, 492 Piping plover and 612 Red knot have been observed. For an in-depth discussion about these species, see Section 4.5.8 of the 2016 MsCIP SEIS.

Sea Turtles

Endangered or threatened sea turtle species that are likely to be found within the project area include the Kemp's ridley (*Lepidochelys kempii*), Loggerhead (*Caretta caretta*), Green (*Chelonia mydas*), and Leatherback (*Dermochelys coriacea*) sea turtles. During the Ship Island Phase I dredging, a total of 376 sea turtles were relocated by trawlers (i.e. non-lethal take), including 263 Kemp's ridley, 106 Loggerheads, 6 Green, and 1 Leatherback.

As a requirement of USFWS issued BO, daily early morning monitoring for sea turtle nests takes place during the nesting and hatching season (April 15 through November 30). Monitoring efforts on Ship Island have so far documented 2 Loggerhead nests and one Kemp's ridley nest. Loggerhead sea turtles do not nest along the Mississippi barrier islands in large numbers, nor do Kemp's ridley, Green, and Leatherback sea turtles commonly nest there. For an in-depth discussion of the sea turtle species of concern, see Section 4.5.8 of the 2016 MsCIP SEIS.

Giant Manta Ray

The Giant manta ray (*Manta birostris*) is the world's largest ray with a wingspan of up to 29 feet. Their bodies are diamond-shaped with long wing-like pectoral fins, ventrally placed gill slits, laterally placed eyes, and wide terminal mouths. They have two structures in front of their mouths called cephalic lobes which help introduce water into the mouth for feeding. There are two color variants with this species, chevron and black. Chevron variants have a black dorsal surface and a white ventral surface. Distinct patterns on the ventral surface allow for identification of individuals. The black color variants are entirely black on the dorsal side and almost completely black on the ventral side.

The Giant manta ray is a migratory species and can be found in all ocean basins. However, sightings are often sporadic, and the timing of sightings varies by region and seems to correspond with the movement of zooplankton, current circulation and tidal patterns, seawater temperature, and possibly mating behavior. Within its range, the Giant manta ray inhabits tropical, subtropical, and temperate bodies of water and is commonly found offshore, in oceanic waters, and near productive coastlines. The species has also been observed in estuarine waters near oceanic inlets, with use of these waters as potential nursery grounds. They feed mostly at night on planktonic organisms such as euphausiids, copepods, mysids, decapod larvae, and shrimp. Typically they give birth to one pup every two to three years, with gestation believed to last around a year. Giant manta rays have been reported to live at least 40 years, but not much is known about their growth and development.

The largest threat to the Giant manta ray is over-utilization for commercial purposes. They are both targeted and caught as bycatch throughout their range, and are most susceptible to industrial purse-seine and artisanal gillnet fisheries. Efforts to address over-utilization of the species through current regulatory measures are inadequate, as targeted fishing still occurs. Also, measures to address bycatch of the species in industrial fisheries are rare.

5.5. Cultural Resources

In accordance with Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended) and its implementing regulations at 36 CFR § 800, USACE must consider potential effects of this project on historic properties (cultural resource sites

potentially eligible for, or listed on, the National Register of Historic Places (NRHP)). In addition, USACE must provide State Historic Preservation Officers (SHPO), Native American Tribes, and other interested parties the opportunity to comment on its determination of effects to historic properties.

Previously identified historic properties will be avoided by the project. The results of the background research and previous surveys will be coordinated with both Mississippi and Alabama SHPOs, BOEM archaeologists, Tribes, and interested parties. If potential historic properties are identified during inventory efforts, avoidance will be the preferred method used to resolve effects.

Based on the proposed inventory efforts and through implementing strategies early in the planning process to avoid cultural resources, USACE has determined that the action should have no effect on historic properties in accordance with 36 CFR §800.4(d)(1). Therefore, the project is expected to have no significant impact to cultural resources.

Should unavoidable historic properties be found within the project APE, or previously undiscovered sites be located, or consultation with the SHPOs or Tribes reveal unknown resources or Traditional Cultural Properties, further consultation and evaluation may become necessary.

5.6. Aesthetics

Aesthetic resources in the project area consist of the Mississippi barrier islands, the Mississippi Sound, and offshore in the Gulf of Mexico. These areas are commonly used for a variety of activities, including boating, recreational fishing, camping, and viewing nature and wildlife. (2016 MsCIP SEIS, Section 4.9)

5.7. Noise

Noises in the project area consist of natural background sounds (e.g., the ocean, coastal winds, and fauna) and anthropogenic noise sources (e.g., fishing/shrimp boats, pleasure craft, dredges, shipping traffic, oil/natural gas rigs, and aircraft from Keesler Air Force Base and Gulfport-Biloxi International Airport). (2016 MsCIP SEIS, Section 4.10)

5.8. Air Quality

The Clean Air Act (CAA) requires the U.S. Environmental Protection Agency (USEPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. NAAQS include two types of air quality standards. Primary standards protect public health, including the health of sensitive populations, such as asthmatics, children, and the elderly. Secondary standards protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. USEPA has established NAAQS for six principal pollutants, which are called “criteria pollutants.” Criteria pollutants include carbon monoxide, lead, nitrogen dioxide, particulate matter, ozone, and sulfur dioxide. Areas

that meet the air quality standard for the criteria pollutants are designated as being “in attainment.” Areas that do not meet the air quality standard for one of the criteria pollutants may be subject to the formal rule-making process and designated as being “in non-attainment” for that standard. Coastal counties in Mississippi are in attainment for all NAAQS (2016 MsCIP SEIS, Section 4.11).

6. ENVIRONMENTAL IMPACTS

This section describes the environmental effects of the proposed action. Performing an evaluation of environmental consequences 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.

Overall, the environmental effects of the proposed action will be similar to what was discussed for the borrow areas in Section 5 of the 2016 MsCIP SEIS and Section 6 of the 2010 EA for the West Ship Island North Shore Restoration. These documents are incorporated into this EA by reference.

6.1. Hydrology and Coastal Processes

The significance criteria for hydrology and coastal processes would be a permanent disruption in current or tide patterns in the Mississippi Sound, the sediment transport system, or channel shoaling and frequency of dredging within the Gulfport Navigation Channel.

With the proposed action, removal of material from the borrow areas would cause long-term localized minor impacts to wave energy, with wave reductions over most of the borrow area and wave increases only at the edges of the borrow area. These impacts would lessen and dissipate at inshore borrow sites as the slopes flatten and the borrow areas naturally fill in over time. At the PBP-OCS borrow areas, the expected angle of repose based on the sediment characteristics is 1:5, but over time additional sloughing and filling in of the borrow area would be expected due to currents.

For the Ship Island borrow area, wave modeling that was conducted for the 2016 MsCIP SEIS concluded that use of a smaller section of the original Ship Island Borrow Area would not adversely affect the long-term overall morphological development of

Ship Island (2016 MsCIP SEIS, Section 3.2.1.2). The 2016 MsCIP SEIS looked at three different options for the Ship Island placement area. Option 1 included 22 mcy, Option 2 was 8.7 mcy, and Option 3 included 2.7 mcy. In the study, it was concluded that the much larger Option 1 could have potential adverse shoreline impacts due to wave focusing at the northeast corner of the borrow area. The elimination of the northeast corner of the borrow area eliminated the potential for significant wave focusing. For the current action, USACE is proposing to expand the Ship Island borrow area to what the 2016 MsCIP SEIS described as Option 2. The Option 2 expansion will still have the problematic northeast corner eliminated, and therefore no potential for significant wave focusing on the existing or restored island. Littoral sediment transport at the Barrier Island and adjacent coastal areas would not be adversely impacted. No significant impacts to hydrology or coastal processes would occur from implementation of the proposed action. (2016 MsCIP SEIS, Section 5.2.3)

6.2. Water Quality

The significance criteria for water quality would be a permanent change in water quality from organic and inorganic chemicals; and/or a temporary 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 (e.g., submerged aquatic vegetation).

Potential impacts on water quality would occur during dredging at the borrow areas. During sediment removal, temperature, salinity, and dissolved oxygen parameters in the water-column profile would be temporarily affected as a result of the sediment and water being mixed. However, these parameters would return to background conditions following completion of activities. Any impacts to these water quality profiles would be temporary and minor. To prevent excessive impacts to water quality at the borrow areas, dredging will be performed in a uniform and continuous manner so as to avoid creating multiple holes, valleys, or ridges. Changes in dissolved oxygen and nutrients could also occur at the placement site due to mixing and releasing of sediments into the water column during dredging and placement activities. Dissolved oxygen could also be affected by short-term increases in organic material and associated aerobic decomposition. Any impacts would likely be restricted to the immediate vicinity. Once activities cease and disturbed material settles, dissolved oxygen concentrations would return to pre-disturbance levels. Any impacts would be temporary and minor, and therefore not significant. (2016 MsCIP SEIS, Section 5.3)

The borrow areas were identified based upon criteria of having predominantly sands with low fine sediment (silts and clays) content. These fine sediments contribute mostly to turbidity because they can stay suspended in the water column for extended periods of time if there are active currents and waves. The generation of turbidity could reduce light penetration through the water column, thereby reducing photosynthesis and

affecting surface water temperatures and aesthetics in the vicinity. These conditions could also alter visual predator-prey relations and result in respiratory stresses in fish. (2016 MsCIP SEIS, Section 5.3) Based upon this sandy criteria, only minimum, localized turbidity immediately adjacent to the borrow areas would be anticipated

Because impacts would be temporary and localized, no significant water quality impacts would be anticipated from the borrow activities.

6.3. Sediments

The significance criteria for sediments would be a change in sediment characteristics that results in a permanent decline in sediment quality; a change in grain size permanently impacting biological communities; a permanent decline in water quality as a result of sediment/water interactions; or a decline in sediment quality that causes permanent impacts to biological resources.

As was stated in Section 5.5.1.1 of the 2016 MsCIP SEIS, bathymetric changes resulting from dredging would be relatively insignificant compared to the adjacent seafloor. The excavation of the borrow material would not result in the formation of significant depressions or basins in relation to the surrounding seafloor surface since the material would be excavated from existing shoals and not from areas of natural seafloor elevations. Once excavated, the borrow sites will be reworked through natural processes such as waves and currents. Overall, the sediment already present would still consist of sandy material because the borrow area cut elevations are designed to leave a buffer of sandy substrate on the seafloor. However, the remaining material may be a finer-grained material.

The sediments placed on Ship Island would be consistent in grain size, as measured by the D50 size, and color found on the existing East Ship Island and West Ship Island. The placement of material would not negatively impact the overall sediment characteristics of the restored Ship Island.

6.4. Biological Resources

The significance criteria for biological resources would be a permanent change in one of the following: 1) the health of population; 2) community structure and composition; 3) trophic structure; and 4) system function.

In addition to the criteria listed, additional criteria are in place for fish, marine mammals, birds, and hard bottom habitats. All criteria as well as impacts are discussed in detail in Section 5.4 of the 2016 MsCIP SEIS. The 2016 SEIS concluded the impacts to be either negligible or minor, and therefore not significant. Impacts from the modifications to the previously analyzed actions would result in nominal changes that would not alter the conclusions determined in the 2016 MsCIP SEIS

6.4.1. Essential Fish Habitat

The significance criterion for the EFH in the project area would be a permanent change in or loss of the habitat designated as critical to fish species of concern in the Mississippi Sound. Section 5.5 of the 2016 MsCIP SEIS and Section 6.5 of the 2010 EA addressed the effects to EFH caused by the dredging and placement of material. USACE determined that due to the relatively small area of ecosystem that would be affected, and given the rapid benthic recovery rates, no significant long-term impacts to EFH would be expected.

NMFS-HCD agreed with USACE's determination in correspondences dated September 21, 2010 and April 13, 2016. The proposed action will not affect EFH any further than what was discussed in these documents; however, coordination with NMFS-HCD will be completed prior to the end of the public review period.

6.4.2. Threatened and/or Endangered Species

The overall potential impacts to threatened and endangered species are summarized in the 2016 MsCIP SEIS, 2010 EA, and 2015 USFWS and NMFS issued BOs. The determinations made in these documents would not change for the proposed action.

Gulf Sturgeon and Gulf Sturgeon Critical Habitat

Section 5.4.8 of the 2016 MsCIP SEIS, Section 6.6.1 of the 2010 EA, the September 2010 NMFS-PRD BO for Dredging and Disposal of Sand Along West Ship Island, and the 2015 NMFS-PRD BO addressed effects to Gulf Sturgeon and designated Gulf sturgeon critical habitat. The NMFS-PRD 2010 issued BO concluded that the dredging of the Ship Island Pass (Old Gulfport Channel) is not likely to destroy or adversely modify designated Gulf sturgeon critical habitat. The proposed action will be within the same area that was previously dredged in 2010, and therefore USACE has concluded that the effects will be similar.

NMFS-PRD concluded in their 2015 BO that the project is likely to adversely affect, but is not likely to jeopardize the continued existence of the Gulf sturgeon. In addition, it was determined that activities associated with the project may affect, but are not likely to destroy or adversely modify Gulf sturgeon critical habitat. The proposed action would have similar effects as described in the above mentioned documents.

Piping Plover and Red Knot

Section 5.4.8 of the 2016 MsCIP SEIS and 2015 USFWS BO addressed effects to Piping plover, Piping plover critical habitat, and Red knot. USFWS determined that the project is likely to adversely affect, but will not jeopardize the continued existence of these species. Additionally, USFWS determined the project will not adversely

modify designated Piping plover critical habitat and would actually result in a net gain of usable piping plover habitat. The proposed action would have no new or additional impacts to Piping plover and Red knot, nor would result in changes to Piping plover habitat.

Sea Turtles

Section 5.4.8 of the 2016 MsCIP SEIS, 2015 USFWS BO, and 2015 NMFS-PRD BO addressed effects to sea turtles. NMFS-PRD concluded in their BO that the project is likely to adversely affect, but is not likely to jeopardize the continued existence of the Loggerhead, Kemp's ridley, Green, and Leatherback sea turtles. USACE has initiated informal consultation with NMFS-PRD through a separate effort to increase the amount of allowable relocation (non-lethal) takes for the Barrier Island Restoration project. Per the 2015-NMFS-PRD BO, USACE may continue dredging and relocation trawling while the consultation is taking place. The proposed action described in this EA is not expected to further effect the amount of non-lethal takes for the project.

USFWS concluded in their BO that the project is not likely to jeopardize the continued existence of the Loggerhead, Green, and Kemp's ridley sea turtles. USACE concurred with both of the agencies' determinations and their associated terms and conditions. The proposed action would have similar impacts.

Giant Manta Ray

Informal consultation with NMFS-PRD has been initiated for this species through a separate effort. The Giant Manta Ray would not likely be adversely impacted by the proposed action. Potential impacts to the Giant manta ray are increased turbidity and noise, and possible interactions with dredging equipment and trawlers. USACE anticipates these temporary impacts are discountable due to the species' mobility and pelagic nature. In addition, no known incidents of entrainment have been documented. USACE has requested concurrence with the determination.

6.5. Cultural Resources

Pursuant to Section 106 of the NHPA, USACE's cultural resources contractor conducted a records and literature search of available data related to the project area and completed archaeological Phase I remote sensing surveys of the APE that have not been previously dredged. Three reports were also prepared by the contractor which present the results of the records search and describe potential historic properties identified during the remote sensing surveys. These reports also contain baseline contextual information and site data used to assess NRHP eligibility of potential historic properties identified during these inventory efforts (Enright et al. 2014, Enright et al.

2015, and Hanks et al. 2014). The surveyed portions of the APE comprised all new, expanded, or modified borrow areas that will be utilized for the Camille Cut Fill Project of the MsCIP. These specifically included the Ship Island borrow expansion area (Figure 5), PBP-OCS East 1–4, and PBP-OCS West 1–6 (Figure 6).

A Phase I remote sensing survey of the Ship Island borrow area expansion portion of the APE was conducted in 2014, resulting in the identification of 29 acoustical contacts. None of these, however, displayed characteristics typical of submerged cultural resources. Additionally, no magnetic anomalies indicating the presence of potential submerged cultural resources were identified (Hanks et al. 2014:94).

Portions of the APE comprising borrow areas PBP-OCS East 1–5 and PBP-OCS West 1–5 were also surveyed in 2014 resulting in 129 acoustical contacts within the APE. Only 4 of these were associated with magnetic anomalies and potentially represent submerged historic properties. One acoustical contact was not associated with a magnetic anomaly and could also represent a submerged property. None of these, however, are situated within the PBP-OCS East or West borrow areas nor do any of the remaining 124 acoustical contacts display characteristics typical of submerged historic properties (Enright et al. 2014).

Borrow area PBP-OCS West 6 was surveyed in 2015 resulting in 54 magnetic anomalies and 10 acoustic contacts. Four of the magnetic anomalies and 1 acoustic contact display characteristics indicative of shipwrecks, however, none of these are located within the APE. The remaining remote sensing targets do not resemble potential submerged historic properties and likely represent debris (Enright et al. 2015).

The Ship Island Pass (Old Gulfport channel) Borrow Area (**Figure 5**) is located within the Old Gulfport Harbor Channel that runs just past the western tip of Ship Island. This section was realigned and abandoned in the 1990s. The abandoned channel efficiently traps migrating sand from the western tip of Ship Island and has been dredged five times between 1974 and 2002 for sand to re-nourish the beach near Fort Massachusetts by the National Park Service as (USACE 2010:6).

The Environmental Assessment for the MsCIP, Barrier Islands Restoration Plan, West Ship Island North Shore Restoration project indicated that an archaeological study encompassing the Ship Island Pass (Old Gulfport channel) Borrow Area was completed. This study, entitled “Underwater Archaeological Investigations, Ship Island Pass, Gulfport Harbor, Mississippi (Irion 1989),” did not identify any historic properties. The study also concluded that the project would have no impacts and recommended no further investigations. Additionally, the locations of potential and known historic shipwrecks were plotted by Pearson and Forsyth (2006). This indicated that no sites were present in the abandoned navigation channel (USACE 2018:27-28). Construction for the West Ship Island North Shore Restoration project was completed in 2012 during which the Ship Island Pass (Old Gulfport channel) Borrow Area was dredged again for sand to nourish the northern shore of West Ship Island.

The Ship Island Pass (Old Gulfport channel) Borrow Area was subjected to maintenance dredging as part of the former Navigation Channel alignment and was repeatedly dredged for beach nourishment on West Ship Island between 1974 and 2012. Previous studies (Irion 1989 and Pearson and Forsyth 2006) also indicated that no historic properties are present in this portion of the APE. Therefore, there is no reason to believe that historic properties exist within this portion of the APE and pursuant to 33 CFR § 336.1(6) an archaeological survey of the Ship Island Pass (Old Gulfport channel) Borrow Area was not conducted for the present EA.

The results of the background research and surveys were coordinated with both the Mississippi and Alabama SHPOs, BOEM archaeologists, Tribes, and interested parties. While potential historic properties were identified during inventory efforts within the APE, all are located outside the proposed borrow areas and will be avoided. Based on the completed studies and historic property avoidance, USACE has determined that the proposed project will have no effect on historic properties in accordance with 36 CFR §800.4(d)(1). Concurrence on the results of these surveys and USACE's finding of no effect was provided by the Mississippi SHPO in a letter dated July 11, 2014 for borrow areas within the State of Mississippi and by the Alabama SHPO in a letter dated October 17, 2014 for borrow areas within the state of Alabama. Therefore, the project is expected to have no significant impact to cultural resources.

Should unavoidable historic properties be found within the project APE, or previously undiscovered sites be located, or consultation with the SHPO or Tribe reveal unknown resources or Traditional Cultural Properties, further consultation and evaluation may become necessary. Should potential adverse effects be found, a Memorandum of Agreement may be necessary in order to resolve those effects to historic properties. In addition, the Advisory Council on Historic Preservation shall be notified and invited to participate as per 36 CFR § 800.6(a)(1).



Figure 5: Ship Island Borrow Area with Survey Footprint and Ship Island Pass (Old Gulfport Channel) Borrow Area

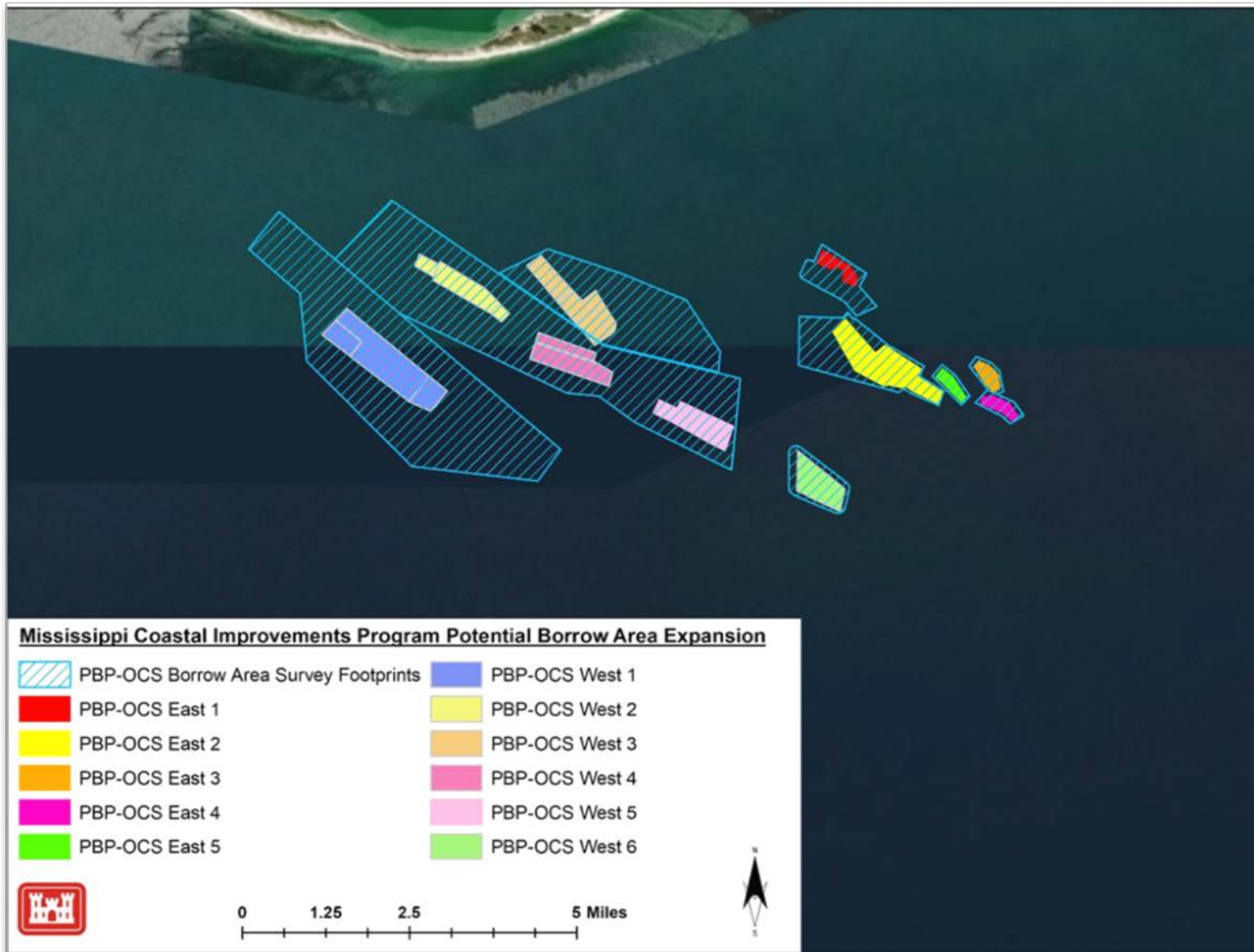


Figure 6: PBP-OCS Borrow Areas and Survey Footprints

6.6. Aesthetics

As was discussed in Section 5.8 of the 2016 MsCIP SEIS, temporary impacts to aesthetics would occur in the immediate vicinity of dredging and placement activities due to the presence of heavy equipment and working vessels. However, impacts from dredging and placement activities would be temporary and minor.

6.7. Noise

The significance criteria for noise impacts 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 human receptors.

Noise impacts were addressed fully in Section 5.9 of the 2016 MsCIP SEIS for dredging and placement areas. In summary of the 2016 MsCIP SEIS, noise would not occur near any sensitive human receptors at the borrow areas. Therefore, impacts would not be significant.

Noise impacts to bird and marine species would be temporary, and would occur at levels that would not cause injury, temporary or permanent, and therefore would be considered not significant. Similar impacts are anticipated from the proposed action.

6.8. Air Quality

The significance criterion for air quality impacts would be an exceedance of a chronic or acute state air quality standard. The coastal counties of Mississippi are currently in attainment for all NAAQS.

Air emissions associated with dredging and placement operations would likely be temporary and minor. Appropriate technologies would be used to minimize air emissions in the project area, including the use of electric equipment, low sulfur diesel fuel in equipment (such as dredges, tugs, and other diesel-powered equipment), fuel additives, and particulate filters.

7. OTHER PERTINENT ENVIRONMENTAL LAWS AND REGULATIONS

7.1. Coastal Zone Consistency

The Mississippi Department of Marine Resources granted Coastal Zone Consistency (CZC) for the placement of fill at Ship Island on April 6, 2016. USACE, Mobile District has determined the proposed action is consistent to the maximum extent practicable and will request CZC from the Mississippi Department of Marine Resources following the distribution of the Public Notice and comment period.

7.2. Water Quality Certification

The Mississippi Department of Environmental Quality issued a Water Quality (WQ) certification for the dredging of material in Mississippi state waters, and the placement of dredged material at Ship Island on April 8, 2016. An additional WQ certification to include the expansion of the Ship Island Borrow Area Option 2, PBP-OCS West sites that fall in state waters, as well as the addition of the Ship Island Pass (Old Gulfport channel) as a borrow area will be requested following the distribution of the Public Notice and comment period.

7.3. Protection of Children

Executive Order 13045, The Protection of Children from Environmental Health Risks and Safety Risks, was issued April 23, 1997. Executive Order 13045 applies to significant regulatory actions that concern an environmental health or safety risk that could disproportionately adversely affect children.

Environmental health risks or safety risks refer to risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest. The proposed action would not impact the health and safety of children. Barriers, site workman, and other measures would be implemented to provide protection to non-project workers.

7.4. Environmental Justice

The Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations (February 11, 1994), requires that Federal agencies conduct their programs, policies, and activities that substantially affect human health or the environment in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons (including populations) from participation in, denying persons (including populations) the benefits of, or subjecting persons (including populations) to discrimination under such programs, policies, and activities because of their race, color, or national origin. The proposed project is not designed to create a benefit for any group or individuals. The proposed construction activities do not create disproportionately high or adverse human health or environmental impacts on any low-income populations of the surrounding area. Review and evaluation of the proposed project have not disclosed the existence of identifiable minority or low-income communities that will be adversely affected by the proposed project.

8. CUMULATIVE EFFECTS SUMMARY

Federal regulations implementing NEPA (40 C.F.R. § 1500-1508) require that the cumulative impacts be assessed. NEPA defines a cumulative impact as an impact on the environment which results from the incremental impact of the action when added to

other past, present, and reasonably foreseeable future actions (40 C.F.R. § 1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The cumulative effects analysis discussed in the 2016 MsCIP SEIS, as well as the 2010 EA give a comprehensive discussion of the possible effects of the restoration efforts on Ship Island. The conclusion in the 2016 SEIS stated that earlier projects in the area are unlikely to interact with the proposed action due to the effects Hurricane Katrina as well as other major hurricanes had on the Mississippi gulf coast. Concurrent operations and maintenance dredging of the nearby Federal navigation channels during the Ship Island project implementation could create temporary cumulative impacts to recreation activities, water quality, and biological resources. Furthermore, the addition of sand to the existing sediment budget of the barrier islands would help combat the negative effects of climate change and sea level rise over time. In summary, the overall minor and temporary adverse impacts that would result from the project action are outweighed by the long-term beneficial impacts of the sustainability and habitat restoration of the barrier island; therefore no significant adverse cumulative impacts are foreseen. The impacts from the proposed action when added to other similar past, present and foreseeable future projects would not result in a significant cumulative impact. Additionally, the cumulative impacts of the proposed action would be similar to those described in the 2016 MsCIP SEIS.

9. CONCLUSION

The proposed action would have short term, minor impacts to environmental resources. This is consistent with the conclusions in the 2016 SEIS and the 2010 EA. No mitigation actions are required for the proposed action. Best Management Practices such as turbidity controls would be employed if needed during the proposed actions to minimize any identified adverse impacts from equipment operation, the quality of materials being placed, turbidity control, and placement locations. The implementation of the proposed action would not have a significant adverse impact on the quality of the environment and an environmental impact statement is not required.

10. LIST OF PREPARERS

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